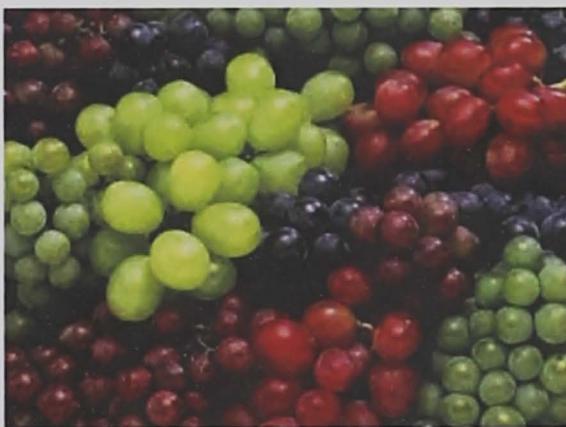


AERC Report

**Agro-Economic
Research Centre
(AERC)**

Relationship Between Wholesale Prices, Retail Prices, Export Prices (FOB), Prices Realized by Farmers and Details of Contributing Factors for the Price Difference for Onion and Grapes for Maharashtra

Deepak Shah



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Deepak Shah



**Agro-Economic Research Centre
Gokhale Institute of Politics and Economics
(Deemed to be University)
Pune – 411 004**

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FOREWORD

Agricultural commodities in general and horticulture in particular are beset with high price fluctuations due to their unstable production. Weak supply chain and market inefficiencies also influence prices of high value commodities. High price variability in case of primary products not only affects producers but also consumers, which in turn affects other sectors, resulting in high inflation in the economy. The involvement of large number of market functionaries in the supply chain leads to lower share of producer in consumer rupee. It is generally seen that at the farm level price of the produce is much lower than the prevailing market price. This is owing to the fact that various marketing operations involve significant margins in the form of cost of performing marketing functions and the profit of various market functionaries. As a result, the consumer's price turns out to be much higher than producer's price. Greater price fluctuations also affect producers' share in consumer rupee. Fluctuations in prices occur when there is either glut in the market due to favourable production or lack of supply of the crop due to poor harvest. This creates demand-supply gap of the crop in the market. Fluctuations in annual prices, which are generally cyclical in nature, also affect the export performance. These facts make it necessary to understand the nature of these fluctuations and the present study is an attempt in this direction. The study, carried out in Maharashtra, attempts to assess the relationship of prices of onion and grapes not only at the farm level but also at wholesale, retail and export level with a view to understand price mechanism involved in the marketing of these valued crops.

The study showed that the producer's share in consumer's rupee for various varieties of onion varied from 49 per cent to 52 per cent in domestic market and 30 per cent to 35 per cent in export channel. In case of grapes, producer's share in consumer's rupee for various varieties varied from 43 per cent to 46 per cent in domestic market and 29 per cent to 30 per cent in export channel. The lower share of farmer in export price as against retail price was due to higher export price. Since in export trade of grapes the exporter cornered the major net margin, there is need for the farmers to directly export their grape produce in export market using cooperative societies or farmers' groups without involving exporters, which will ensure much higher returns for their grape produce in the export market. Another suggestion of the study is in favour of announcement of MSP for rabi onion, which has shelf life of 4-5 months. The government support for rabi onion will not only protect farmers but also consumers.

I hope the findings of the report would assume increasing significance, especially with growing concern of value chain management of high value crops in our country.

Gokhale Institute of Politics and Economics
(Deemed to be a University)
Pune 411 004

Rajas Parchure
Professor and Offg. Director

PREFACE

Although it is widely believed that the marketing of fruits and vegetables is a complex process due to their perishability, fragility, seasonality and bulkiness, it is expected that measures and programme initiatives such as adoption of improved pre- and post-harvest technology and water and pest control practices will not only increase the productivity of individual horticultural crops and their quality, these are likely to substantially minimize the post-harvest losses, increase the total crop area cover and generate adequate quality surplus for their conversion into value-added food products. Generally, a producer farmer has to bear most of the expenses incurred during various marketing functions. It is generally seen that at the farm level price of the produce is much lower than the prevailing market price. This is owing to the fact that various marketing operations involve significant margins in the farm of cost of performing the marketing functions and the profit of various market functionaries. As a result, the consumer's price turns out to be much higher than producer's price. Greater price fluctuations also affect producers' share in consumer rupee. Fluctuations in prices occur when there is either glut in the market due to favourable production or lack of supply of the crop due to poor harvest. This creates demand-supply gap of the crop in the market. Fluctuations in annual prices, which are generally cyclical in nature, also affect the export performance. These facts make it necessary to understand the nature of these fluctuations and the present study is an attempt in this direction. The study, carried out in the state of Maharashtra, attempts to assess the relationship of prices of onion and grapes not only at the farm level but also at wholesale, retail and export level with a view to understand price mechanism involved in the marketing of these valued crops.

One of the major observations of this study was the highly profitable nature of grape cultivation as against onion cultivation since grapes generated more than 100 per cent per quintal net returns over per quintal variable cost as against generation of 64-77 per cent per quintal net returns over per quintal variable cost for onion. The study also showed that the producer's share in consumer's rupee for various varieties of onion varied from 49-52 per cent in domestic market and 30-35 per cent in export channel In case of grapes, producer's share in consumer's rupee for various varieties varied from 43-46 per cent in domestic market and 29-30 per cent in export channel.

One of the major factors responsible for lower share of producer in retail and export prices of onion and grapes was the higher cumulative marketing margins cornered

by various market functionaries. The situation is unlikely to be altered unless various regulative measures are brought in place to check practices of these functionaries involved in the marketing of high value crops. Introduction of appropriate market regulatory framework to check the practices of various market functionaries involved in the marketing of high value crops will lead to reduced marketing margins of these market intermediaries, resulting in higher share of producer in retail and export price. One of the major suggestions of this study is in favour of direct export trade of grapes by farmers through cooperative societies or farmers' groups without involving exporters, which will ensure much higher retunes in the export market. Another suggestion is in favour of announcement of MSP for rabi onion, which has shelf life of 4-5 months. The government support for rabi onion will not only protect farmers but also consumers.

At the initial stage of this study, I had fruitful discussions with senior officers of the Commissionrate of Agriculture, Government of Maharashtra, Pune. I am extremely grateful to them for providing inputs for this study. I am equally grateful to D.N. Bote (Superintendent Agriculture Officer, Pune district) and Dr. Korhale (TAO, Shirur Taluka, Pune district) for not only supplying the requisite information but also extending all possible help during the conduct of this study. I also extend special thanks to Mr. Ankush Mane, SAO and Mr. Kulkarni, TAO, Ahmednagar district, Mr. Madhukar Panhale, SAO, Mr. D.K. Kapadnis, TAO, Nasik district, Mr. A.A. More, TAO (Pandharpur) and Mr. S. Rasik Naikwade, SAO, Solapur district, and Mr. S.M Jamdade, SAO, Sangli district for their support in this study.

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CHAPTER – I

INTRODUCTION

1.1 Background

The land-use pattern in Indian agriculture has traditionally promoted cereal-based cropping systems. However, diversification to more productive and remunerative crops has become the new milestone to be achieved in Indian agriculture. A shift in favour of horticultural development as a more viable and attractive alternative is a part of such diversification drive and strategy (Kaul, 1993). Many policy makers, trade analyst and development specialists today realise the potential that horticulture has in generating employment and earning foreign exchange for the country. It is also realized that improvement in income levels would result in a shift in the pattern of use of land and other resources in favour of horticultural crops since income elasticity of demand for fruits and vegetables is higher than other food crops. According to Islam (1990), horticultural products have a high income elasticity of demand. As income goes up, demand rises rapidly. The recent spurt in demand for these high value commodities is due mainly to this income buoyancy.

Despite their inherent production and export advantages, horticultural crops received little attention from various development experts and policy pundits in the past and, as a result, this sector remained a neglected one for long. Hardly any attention was paid to country's horticultural development until the fourth five year plan. This can be substantiated by the fact that the budgetary support for horticultural development in the 4th plan was a meagre Rs.3.5 crores. Nonetheless, in view of several positive features in favour of horticultural crops, a breakthrough was achieved in horticultural development in the seventh plan when the allocation for this activity rose dramatically to Rs.32 crores from its level of Rs.7.6 crores in the fifth plan. Development of horticulture became a major thrust area in the eighth five year plan when the total plan allocation for horticulture development was stepped up to Rs.789 crores that accounted for an increase of a whopping 2365 per cent over the seventh plan allocation (Singh and Mathur, 2008). Thus, the Eighth plan can be considered as a milestone in the growth of horticulture sector in the country. The plan allocation for horticulture development in India increased further to Rs.1453 crores in ninth plan, and to Rs.5650 crores in tenth plan. At present, the horticulture crops programmes form around 30 per cent of the total outlay for agriculture development of the Department of Agriculture and Cooperation, GOI (2007).

The National Agricultural Policy (NAP) document released in July 2000 envisaged agricultural growth in excess of four per cent per year over the next two decades, along with further institutional and structural reforms necessary to improve the productivity of agriculture and the conservation of resources, and to increase returns to farmers and maximize benefits from exports. Even Eleventh Five-Year Plan targeted four per cent growth in agriculture and allied sector. However, the achievement of this growth to a greater extent depends on infrastructure development for horticulture sector. The initiatives undertaken in the Eighth, Ninth and Tenth plans towards development of horticulture sector coupled with growers' enthusiasm for the cultivation of horticultural crops have been rewarding so far. During 2011-12, horticulture sector accounted for 30 per cent of India's agricultural GDP from 8.5 per cent of the cropped area. Further, increasing investment in horticulture sector during the last decade has paid rich dividend in terms of accelerated production and productivity of horticultural crops with enhanced export potential, and with India emerging as the second largest producer of fruits and vegetables in the world. As per the estimates reported in Indian Horticulture Database (2013), Indian had 12.77 million hectares of land under its horticultural crops during 1991-92 and 23.69 million hectares in 2012-13, showing thereby 86 per cent rise in area under these high value crops during the period between 1991-92 and 2012-13. Use of modern technologies has also brought about improvement in productivities of these crops, which in turn has led to significant increase (178 per cent) in production of various horticultural crops from 96.56 million tones in 1991-92 to 268.85 million tones in 2012-13. At present, India accounts for 10.29 per cent share in World's fruit production and 17.07 per cent share in World's vegetable production.

Notably, recognizing the significance of cultivation of high value crops, the National Agricultural Policy (NAP) announced in July 2000 has accorded a major thrust/foremost priority towards development of rainfed and irrigated horticulture, floriculture, roots and plantation crops, aromatic and medicinal plants, particularly with a view to augment food supply, exports and generating employment in the rural areas. The policy document also emphasizes upon the need to promote the network of regional nurseries, tissue culture laboratories and seed farms, aside from generating adequate supply of hybrid seeds and disease-free planting materials of improved varieties, especially in the light of having a systematic development of horticulture with emphasis on increased production, post-harvest management, precision farming, bio-control of pests and quality regulation mechanism and exports.

With the passage of time, Indian agriculture is becoming more competitive and commercial oriented with focus on horticultural crops since they have potential of replacing subsistence farming not only in the rainfed dryland, hills and arid regions but also in coastal agro-ecosystems. Diversification drive in favour of horticultural crops is chiefly due to economic factors since these crops are not only characterized by high productivity per unit area coupled with higher net returns but also in generating substantially high employment and exports (Kaul, 1997). The water requirement for these crops is relatively low as compared to other field crops. Added to this, these valued crops not only yield higher input-output ratio as compared to field crops but they also help in improving environment. Earlier, a synthesis of crop diversification attempted by Kaul (1997) showed much higher availability of biomass from some of the tree crops as it either got recycled into the soil to enhance its fertility or was amenable to industrial use for value addition, which in turn led to enhance their economic viability.

The crop diversification drive over time in favour of horticultural products has also resulted in significant expansion in value of horticultural products in relation to value of agricultural products produced in India. The estimates relating to value of agricultural products and horticultural products at different points of time encompassing the period between 1970-71 and 2010-11 are provided in Table 1.1. These estimates, based on National Accounts Statistics, are at current prices.

Table 1.1: Value of Agricultural and Horticultural Products in India: Current Prices

(Rs. in crores)

Items	At current prices						
	1970-71	1980-81	1990-91	1995-96	2003-04	2005-06	2010-11
(i) Total agricultural products (Net)	17,531	46,278	1,28,657	2,62,302	494,245	523,389	1,051,894
(ii) Total horticultural products	2,280	6,254	19,621	68,077	147,024	167,428	333,974
(iii) Fruits and vegetables	1,791	5,202	15,773	59,454	131,896	132,895	251,014
(iv) Share of (iii) in (ii)	78.55	83.18	80.39	87.33	89.71	79.37	75.16
(v) Share of (ii) in (I)	13.01	13.51	15.25	25.95	29.75	31.99	31.75
(vi) Percentage increase of (ii) over							
- 1970-71	-	174.30	760.57	2,885.83	6,348.42	7,243.33	14,547.98
- 1980-81	-	-	213.74	988.54	2,250.88	2,577.13	5,240.17
- 1990-91	-	-	-	246.96	649.32	753.31	1,602.13
- 1995-96	-	-	-	-	115.97	145.94	390.58
- 2003-04	-	-	-	-	-	13.88	127.16
- 2005-06	-	-	-	-	-	-	99.47

Source: National Accounts Statistics, CSO, 2012

At current prices, the total value of horticultural products produced in the country in 2010-11 was estimated at Rs.3,33,974 crores with fruits and vegetables together accounting for 75 per cent share in this value. It is to be noted that the value of horticultural products produced in India has been steadily growing over the past four decades. The increase in this value was estimated at about 175 per cent between 1970-71 and 1980-81, 215 per cent between 1980-81 and 1990-91, 116 per cent between 1990-91 and 2003-04 and about 99 per cent between 2005-06 and 2010-11. Not only this, the share of horticultural products in total value of agricultural products was also estimated to be growing steadily from 13 per cent in 1970-71 to over 32 per cent in 2010-11.

It is to be noted that a study conducted by National Council of Applied Economic Research (NCAER) identified banana, grape, sapota and lychee among fresh fruits, onions and tomato among vegetables, and mushroom among processed vegetables as having high degree of export competitiveness. The study further identified mango, potato and tomato paste as moderately competitive. The export competitiveness of agricultural commodities in this study was assessed through computation of Nominal Protection Coefficient (NPC) with NPC being determined as the ratio of domestic price to the border price (Gaulti et. al., 1994). Thus, while, banana, grape, sapota, lychee, onion, tomato and mushroom among horticultural commodities were seen to be highly competitive, mango, potato and tomato paste (processed vegetables) were found to be only moderately competitive. And, apple, mango pulp and apple juice (processed fruits) were not seen to be export competitive at the point of study.

Recognizing the significance of horticultural crops in generating substantial income, employments and exports, several states in the country have diversified their cropping pattern in favour of these high value crops. The states which have taken a lead in this diversification process are Maharashtra, Gujarat, Karnataka, A.P., Kerala, T.N., Punjab, Haryana and Rajasthan.

In terms of fruits and vegetable production, Maharashtra is considered to be the most important state of the country. During the last 20 years period, there has been significant increase in the area and production of horticultural crops in the state. The area under fruits and vegetables in Maharashtra grew from 4.97 lakh hectares during 1991-92 to 20.29 lakh hectares in 2012-13 registering more than four folds increase in the area. It is to be noted that this state leads the country in the production of grapes, bananas, oranges and onions. Apart from these horticultural crops, wide range of other fruits and vegetables are also grown in the state. While grapes are cultivated in Nasik, Pune,

Solapur, Sangli and Satara districts, bananas predominate in Jalgaon and Vasai; Chikoos' in Dahanu and Gholvad; Cashews' in Konkan; Oranges in Nagpur and Amravati; Mangos in Ratnagiri; and Onions in Nasik, Pune and Ahmednagar districts.

Among various horticulture crops, onion is an important vegetable crop grown in Maharashtra. Although onion is cultivated in many states, most of the onion produced in India still comes from the state of Maharashtra. However, there has been fall in share of Maharashtra in total area as well output of onion in India. The share of Maharashtra in total area under onion crop in India has fallen from 30 per cent in 2008-09 to 25 per cent in 2012-13. Similarly, the share of Maharashtra in total onion production of India has fallen from 29 per cent in 2008-09 to 28 per cent in 2012-13 (Table 1.2). The district of Nasik in Maharashtra accounts for the largest share in the production of onions in India. Lasalgaon near Nasik is the biggest onion *mandi* in the whole of Asia. Onion is also grown in Pimpalgaon, Manmad, Yeola, Saikheda, Chandwad and Satana- all located around Nasik. All these places have marketing centres set up by NAFED. The onion produced in Nasik district is transported and distributed throughout the country. Nasik onion is not only consumed in the farthest corners of India, it is also exported to many countries. Bulk of the onions' exported from India originate from Nasik.

Table 1.2: State-wise Area Production, Productivity of Onion and Grapes in India
(Area in '000' Ha; Production in '000' MT; Productivity in MT/Ha)

State	2008-09			2012-13			Share			
	Area	Production	Productivity	Area	Production	Productivity	2008-09	2012-13	Area	Prod.
Onion										
Maharashtra	250.0	3952.5	15.7	260.0	4660.0	17.9	30.0	29.1	24.7	27.7
Karnataka	165.1	3031.8	18.4	159.6	2395.9	15.0	19.8	22.4	15.2	14.3
Gujarat	57.6	1409.6	24.5	28.9	704.4	24.4	6.9	10.4	2.7	4.2
Bihar	51.6	946.6	18.3	53.0	1107.8	20.9	6.2	7.0	5.0	6.6
M.P.	53.0	881.8	16.6	111.73	2691.0	24.1	6.4	6.5	10.6	16.0
A.P.	39.0	662.6	17.0	86.7	1560.1	18.0	4.7	4.9	8.2	9.3
Rajasthan	41.0	369.1	9.0	139.1	476.2	3.4	4.9	2.7	13.2	2.8
Haryana	18.8	347.9	18.5	27.8	604.5	21.7	2.3	2.6	2.6	3.6
T.N.	35.0	305.5	8.7	37.7	429.7	11.4	4.2	2.3	3.6	2.6
Orissa	Included in Others			34.9	419.1	12.0	-	-	3.3	2.5
U.P.	22.3	308.0	13.8	26.6	474.0	17.8	2.7	2.3	2.5	2.8
Others	100.7	1369.1	13.6	85.6	1290.3	15.1	12.1	10.1	8.1	7.7
Total	834.2	13564.5	16.3	1051.5	16813.0	16.0	100.0	100.0	100.0	100.0
Grapes										
Maharashtra	55.7	1415.0	25.4	90.0	2050.0	22.8	70.0	75.3	76.5	82.6
Karnataka	14.9	269.0	18.0	19.7	320.9	16.3	18.7	14.3	16.8	12.9
T.N.	3.1	91.0	29.8	2.7	43.4	16.2	3.9	4.8	2.3	1.7
A.P.	3.0	62.2	21.0	1.6	31.5	20.0	3.8	3.3	1.4	1.3
Mizoram	Included in Others			2.4	20.8	8.7	-	-	2.0	0.8
Others	3.0	41.1	13.8	1.3	16.5	12.7	2.2	1.1	0.7	2.2
Total	79.6	1878.3	23.6	117.6	2483.1	21.1	100.0	100.0	100.0	100.0

Source: Computations are based on figures obtained from 'Indian Horticulture Database – 2011 and 2013'

Another most important fruit crop cultivated in Maharashtra is grape. At present, almost entire grape production of India comes from the state of Maharashtra, though Karnataka also has significant presence in area as well as production of grapes in India. At present, Maharashtra accounts for 77 per cent of the area and 83 per cent of the total output of grapes in India (Table 1.2). Grape is already established as an important commercial crop in Maharashtra. Although the cultivation is mainly concentrated in the three districts of Nasik, Sangli, and Solapur, a large number of farmers in the neighbouring districts like Pune, Ahmednagar and Satara are switching over to grape cultivation. In fact, grape cultivation is chiefly confined to Deccan Plateau in Western Maharashtra because of the congenial agro-climatic conditions prevailing in this region. Nasik district of Maharashtra is largest producer of grape in the country.

These observations clearly underscore the great potential that the state of Maharashtra has in the cultivation of various horticultural crops, particularly grapes among fruits and onion among vegetables. The cultivation of horticulture crops is one end of the spectrum, the other end being their efficient marketing. An efficient marketing system implies improving the whole gamut of marketing functions such as harvesting, grading, processing, packing, pricing, development of channels and production. This obviously necessitates determining the price mechanism of produce from the point of production to the point of consumption when some cost is incurred and value is added to the product, and inefficiency in marketing channel is determined when actual prices deviate from the normal price.

1.2 Need of the Study

Although it is widely believed that the marketing of fruits and vegetables is a complex process due to their perishability, fragility, seasonality and bulkiness, it is expected that measures and programme initiatives such as adoption of improved pre- and post-harvest technology and water and pest control practices will not only increase the productivity of individual horticultural crops and their quality, these are likely to substantially minimize the post-harvest losses, increase the total crop area cover and generate adequate quality surplus for their conversion into value-added food products. Generally, a producer farmer has to bear most of the expenses incurred during various marketing functions. It is generally seen that at the farm level price of the produce is much lower than the prevailing market price. This is owing to the fact that various marketing operations involve significant margins in the farm of cost of performing the marketing functions and the profit of various market functionaries in each marketing

function. As a result of this, the consumer's price turns out to be much higher than producer's price. One of the earlier studies conducted by Shah (1998) in the state of Maharashtra found significant difference in producers' share in consumer rupee for grapes and onions. While the producers' share in consumer rupee was found to be nearly 60 per cent for grapes, this share for onion stood at 45 per cent for onion (Shah, 1999 and 2000). Greater price fluctuations also affect producers' share in consumer rupee. Fluctuations in prices occur when there is either glut in the market due to favourable production or lack of supply of the crop in the market due to poor harvest. This creates demand-supply gap of the crop in the market. It is to be noted that during 1998 due to unseasonal rains the onion crop was damaged in most parts of the country. This had led to tremendous increase in onion prices throughout the country. Due to short fall in production India had to import onion from Gulf countries. The country suffered for several months and the consumers had to pay heavy prices for onion. However, the situation improved dramatically when *rabi* crop arrived in the market. Ironically, during this year, the state of Maharashtra, the 'onion basket' of the country, was filling its own basket from neighboring states like Gujarat. Unlike grapes, there are generally wide fluctuations in monthly prices of onion, which lead to seasonality and which cause a perpetual concern to producers. Added to this, fluctuations in annual prices, which are generally cyclical in nature, also affect the export performance. These facts make it necessary to understand the nature of these fluctuations and the present study is an attempt in this direction. The study attempts to assess the relationship of prices of onion and grapes not only at the farm level but also at wholesale, retail and export level with a view to understand price mechanism involved in the marketing of these valued crops.

1.3 Objectives of the Study

Keeping in view about this important subject, the present investigation is carried out with following specific objectives:

1. Studying the relationship between movements in market arrivals and market prices at important mandis (using secondary data)
2. Studying the divergence among farm harvest prices, wholesale prices, retail prices and export prices and the relationship between these movements (using primary and secondary data)

The second objective is addressed using primary and secondary data collected by the AERC, Pune, for Onion and Grape crops.

The second objective is further divided into following specific objectives:

- a. To study the cost structure and profitability of onion and grape crops in State
- b. To study the marketing of onion and grapes in State
- c. To study the divergence among farm harvest prices, wholesale prices, retail prices and export prices and the relationship between these movements
- d. To study stakeholders perceptions on production and trade of onion and grapes

1.4 Database and Methodology

The study is chiefly based on farm level data collected from onion and grape cultivating farmers belonging to the state of Maharashtra. However, since the study attempts to assess relationship between wholesale prices, retail prices, export prices and prices realized by the farmers, it also uses data collected from wholesalers, retailers and exporters of onions and grapes belonging to the State.

In order to collect the primary data, a sample survey was conducted in six districts of Maharashtra, which encompassed three districts for the reference crop ‘onion’ and another three districts for the reference crop ‘grape’. The reference agricultural year 2013-14 was considered as the reference period for data collection on relevant parameters. The selected six sampled districts belonged to Western Maharashtra region, which account for bulk of the onion and grape cultivation of the State. Based on higher allocation of area under onion crop, the districts of Pune, Ahmednagar and Nasik were selected for primary data collection for onion crop. These three districts are major onion producing districts of Maharashtra. Similarly, based on higher allocation of area under grape crop, the districts of Nasik, Sangli and Solapur were selected for primary data collection for the grape crop. The grape cultivation is chiefly concentrated in these three districts of Maharashtra.

From each of the selected sampled districts for onion and grape crop, one Taluka was selected based on higher area allocation under the reference crops onion and grape. A further stratification included selection of two villages from each Taluka/ district for canvassing the questionnaire.

It was decided to select a sample of 25 farmers from each of the selected twelve sampled villages belonging to five districts of Maharashtra. Therefore, a complete enumeration of the twelve selected villages drawn from the districts of Pune, Ahmednagar, Nasik, Sangli and Solapur was done with view to further categorization of farmers into small (less than 2 hectares), medium (2-4 hectares) and large (above 4 hectares). The probability proportion to sample size technique (PPS) was used for further selection of farmers under each of the land holding size category from the selected

sampled villages. The number of sampled farmers for onion crop selected from six villages of Pune, Ahmednagar and Nasik districts encompassed 113 in small category, 25 in medium and 12 in large category with a sum of 150 farmers drawn from the districts of Pune, Ahmednagar and Nasik. Similarly, the number of sampled farmers for grape crop selected from six villages of Nasik, Sangli and Solapur districts encompassed 114 in small category, 30 in medium and 6 in large category with a sum of 150 farmers drawn from the districts of Nasik, Sangli and Solapur. The distribution sampled farmers for the selected crops across selected districts, Talukas, villages and land holding size categories is provided in Table 1.3.

Table 1.3: Sampled Farmers and Selected Districts for Onion and Grape Crops in Maharashtra

District	Selected Crop	Selected Taluka	Name of the Selected Villages	Sampled Farmers			
				Small	Medium	Large	Total
Pune	Onion	Shirur	Warude	17	4	4	25
			Takli Haji	18	5	2	25
Ahmednagar	Onion	Parner	Panoli	17	5	3	25
			Kalkup	21	3	1	25
Nasik	Onion	Satana	Parner	19	5	1	25
			Tarsali	21	3	1	25
			Total	113	25	12	150
Nasik	Grape	Dindori	Tisgaon	20	3	2	25
			Jawulkewani	22	3	-	25
Sangli	Grape	Miraj	Narwad	22	3	-	25
			Earndoli	23	2	-	25
Solapur	Grape	Pandharpur	Karkamb	7	16	2	25
			Bhose	20	3	2	25
			Total	114	30	6	150
			Grand Total	227	55	18	300

Thus, altogether 150 sampled onion farmers from Pune, Ahmednagar and Nasik districts and another 150 sampled grape farmers from Nasik, Sangli and Solapur districts with a sum of 300 sampled farmers from the state of Maharashtra were selected for the present investigation for assessing various parameters on farmers' field with respect to onion and grape crops.

The study also covered wholesalers, retailers and exporters of onion and grape crops. In case of onion, 10 wholesalers and 10 retailers were selected from Pune. Similarly, as for grape, 10 wholesalers and 10 retailers were selected from Nasik. Apart from wholesalers and retailers, 10 exporters of grapes and 10 exporters of onions were also selected from Pune and Mumbai. Separate questionnaires were used for the collection of data from farmers, wholesalers, retailers and exporters.

Primary data from the sampled farmers were collected through the well structured schedule by personal interview method. In-depth information related to family size and

composition, education status, caste composition, land use pattern, cropping pattern, irrigated area, sources of irrigation, production, consumption and disposal of onion and grape crops, cost and return structure for onion and grape crops, channels of marketing used and quantity sold through various channels, farmers' opinion regarding reasons for growing study crops, problems confronted in cultivating study crops, ranking of major problems with respect to study crops, etc. was collected from each of the sampled onion and grape farmers.

The information collected from wholesalers, retailers and exporters of onion and grape chiefly encompassed sources of their supply, their trade details with respect to average purchase price, sale price, markup, etc., and ranking of problems faced by them.

1.5 Data Sources

In addition to the collection of primary data from the sampled farmers/wholesalers/ retailers/ exporters, secondary data related to various performance indicators viz. area, production and productivity of selected crops cultivated in the state of Maharashtra encompassing the period between 2000-01 and 2012-13 were collected from 'Statistical Division, Commissionerate of Agriculture, Government of Maharashtra, Pune'. Data on relevant parameters were also collected from 'Indian Horticulture Database – 2011 and 2013', National Horticulture Board (NHB), Ministry of Agriculture, Government of India, Gurgaon. Data on monthly and annual market prices for onion and grape crops were collected from the website of NHB with the link (http://nhb.gov.in/price_arrival.html). The list of exporters of grapes and onion was obtained by using the link (http://agriexchange.apeda.gov.in/About_Agri_Exchange.aspx - 'Product Profiles'- 'Business Contacts & Opportunities' – 'Active Exporters'). In addition to this, data on various other aspects were also collected from various secondary sources such as "Economic Survey of Maharashtra", Directorate of Economics & Statistics, Planning Department, Government of Maharashtra, Mumbai, State Government offices, market centres, etc.

1.6 Analytical Technique

Seasonal indices for the average wholesale and retail prices of onion and grapes prevailing in Nasik, Pune and Mumbai market centres have been computed to understand intra-year movement of prices based upon monthly data (Croxton and Cowden, 1967). The data used to compute seasonal variations in monthly prices encompassing the period from 2006 to 2014 were obtained from NHB website. The wholesale and retail prices for

onion and grapes were not available prior to 2006 on NHB website. The following procedure was used to compute seasonal index of wholesale and retail prices:

- (a) Thirteen month moving total with weights 1,,2,2,2,.....,2,2,1 from January first year to January second year were computed for the entire time series monthly data on wholesale and retail prices encompassing the period from 2006 to 2014.
- (b) In the second step, centered 12-month moving averages were computed by dividing 13-month moving total by 24.
- (c) In the third step, percent of 12-month moving average were computed by dividing the corresponding wholesale/retail prices by centered 12-month moving averages.
- (d) The percentage of centered 12-month moving averages for wholesale and retail prices were tabulated for the corresponding month and year encompassing the period from 2006 to 2014. In this process, since the 12 month moving averages started from July 2006 and ended at June 2014, the tabulated monthly figures corresponded to the period 2007 – 2013. As per the procedure, the first year (2006) and the last year (2014) need to be omitted from the tabulation since they contain only six month data.
- (e) The tabulated monthly data/figures corresponding the period 2007 – 2013 were ranked in descending order for every month, and subsequently modified total, mean and seasonal index were computed using correction factor.

The logic of the above procedure is as follows: Time series are assumed to be composed of $T \times C \times S \times I$ (Trend x Cycle x Seasonal x Irregular). The 12-month moving average is a rough estimate of $T \times C$ because the 12-month average smoothes out seasonal movements and, for the most part, irregular movements, since the latter are largely movements of small amplitude and short duration. If now we divide the original data by the 12-month moving average, we have an estimate of the seasonal and irregular movements combined:

$$\frac{T \times C \times S \times I}{T \times C} = S \times I$$

The seasonal indices for wholesale and retail prices of onion and grapes so obtained were plotted to see the movement of monthly prices during the entire period between 2006 and 2014. The inter-year and intra-year instability in wholesale and retail prices of onion and grapes were computed through coefficient of variation (CV).

CHAPTER – II

DEMOGRAPHIC PROFILE AND CROPPING PATTERN OF THE STUDY REGION

This chapter mainly deals with the socio-economic profile of sampled farmers drawn from the districts of Pune, Ahmednagar, Nasik, Sangli and Solapur since the socio-economic characteristics of farmers have a profound influence on the decision making process and profitability of crop enterprise. The study districts for onion farmers encompass Pune, Ahmednagar and Nasik, whereas grape farmers belong to the districts of Nasik, Sangli and Solapur. These five districts, therefore, represent study region of Maharashtra. The resource endowments have been compared for different categories of sampled farmers belonging to the above five districts of Maharashtra. The information relating to family size and composition, education status, caste composition, land use pattern, cropping pattern, irrigated area, sources of irrigation, etc. has been analysed and discussed for various categories of sampled farmers of study districts. The knowledge of the background of the sampled farmers is essential since the viability of any enterprise heavily depends on the favorable attitudinal changes towards adoption of superior technical inputs or technique of production, which in turn, depends on technical skills and resource position of the farmers. Apart from providing general background information of the sampled farmers, this chapter also provides a general overview of Maharashtra and also the selected sampled districts of the state of Maharashtra.

2.1 General Overview: Maharashtra State

Maharashtra, positioned between $16^{\circ}4'$ and $22^{\circ}1'$ North Latitude and $72^{\circ}6'$ and $80^{\circ}9'$ East Longitudes, and located on the west coast abutting the Arabian Sea and carved out as a linguistic entity of Marathi speaking people, is the second largest state in terms of population and the third largest in terms of area. As per 2011 census figures, Maharashtra accounted for 9.42 per cent of total human population of India with its spread over 3,07,713 square kilometers. The per capita income of Maharashtra is estimated to be 40 per cent higher than the all-India average. Secondary and tertiary sectors account for significant share in total annual income of Maharashtra. Agriculture has not only made the state self-sufficient in foodgrains but also an inclination towards cultivation of commercial crops has also given rise to a vibrant agro-processing industry in the state, though mostly confined to sugarcane and to some extent cotton and fruits and

vegetables. The extensive cultivation of sugarcane in western region of the state has reduced the scope for equity in sharing a precarious resource, i.e., water for irrigation.

Maharashtra also occupies second position in India in terms of urban population with about 43 out of every 100 persons living in towns and cities. States like Gujarat, Madhya Pradesh, Chhattisgarh, Andhra Pradesh and Karnataka surround the state of Maharashtra. It has 720 km long coastline stretched from Daman in the north to Goa in the south. It falls in the resource development zone called the Western Plateau and Hill Regions, which is one of the 15 such zones of India divided on the basis of agro-climatic features. Maharashtra's topography is diverse. It is classified into five broad regional groups such as Greater Mumbai, Western Maharashtra, Marathwada, Konkan and Vidarbha, and six revenue divisions for administrative purposes like Navi Mumbai, Nashik, Pune, Aurangabad, Nagpur and Amravati. All the 35 districts of Maharashtra are divided amongst these six divisions.

Konkan division consists of Mumbai, Thane, Raigad, Ratnagiri and Sindhudurg districts on the coast where landholdings are small but evenly distributed with no irrigation facilities. Nashik, Dhule, Nandurbar, Jalgaon and Ahmednagar districts with characteristics like large tribal population, large landholdings, high level of landlessness, forests, a few fertile tracts and good rainfall comprise the Nashik division. Pune division is comprised of Pune, Sangli, Satara, Kolhapur and Solapur districts and witnesses relatively lower rainfall with its smaller landholding being served by canal and wells. The districts belonging to Marathwada region like Aurangabad, Jalna, Parbhani, Hingoli, Nanded, Osmanabad, Beed and Latur constitute the Aurangabad division and are culturally well tied as all of them represent the erstwhile State of Hyderabad. The region is rocky and dry with low and uncertain rainfall, large landholdings and some landlessness. One part of Vidarbha region comprising Buldhana, Akola, Amravati, Washim and Yavatmal districts is administered by Amravati division and rest of this region comprising Nagpur, Wardha, Bhandara, Gondia, Chandrapur and Gadchiroli districts stands governed by Nagpur division. The two divisions of Vidarbha cover part of a plateau characterized by deep block soil, assured rainfall, medium and large landholdings, and high levels of landlessness. The districts like Bhandara, Gondia, Chandrapur and Gadchiroli have a large tribal population and forest cover.

The total human population of Maharashtra stood at 7,89,37,000 according to 1991 census and 9,68,79,000 as per 2001 census with 61 per cent population belonging to rural and 39 per cent to urban area. These estimates are concomitant of the fact that there

has been 23 per cent rise in human population in Maharashtra in 2001 over 1991-census figures. The population density in the state has also grown from 257 persons per square km in 1991 to 315 persons per square km in 2001.

The state of Maharashtra is comprised of 336 towns, 326 talukas, 43,027 villages and 1,53,44,435 households with 60 per cent belonging to rural and 40 per cent to urban areas. Out of the total human population, around 11 per cent belong to scheduled castes and 9 per cent to scheduled tribes. The overall literacy rate of Maharashtra is relatively high among males as compared to females. The literacy rate of Maharashtra among males is found to be 86 per cent in contrast to 67 per cent among females. Further, occupational break-up of Maharashtra reveals that out of the total population, about 57 per cent are non-workers, 4 per cent marginal workers and 39 per cent main workers with 13 per cent cultivators and 11 per cent agricultural labourers. The remaining 15 per cent of total 39 per cent working population of Maharashtra are engaged in other activities such as livestock, forestry, fishing, horticulture, etc., activities, mining and quarrying, manufacturing, processing, repairing, etc., construction, trade and commerce, transport, storage and communication, etc.

Maharashtra's net sown area stands at around 1,77,44,000 hectares, of which 18.5 per cent is irrigated. Well irrigation accounts for around 55 per cent of the total irrigated area of Maharashtra. The lower proportion of area under irrigation renders agriculture vulnerable to draughts, resulting in periodic fluctuation in farm output, which in a normal year is only 90 per cent of the State's total foodgrain requirement. The cropping intensity of Maharashtra is relatively higher than irrigation intensity.

In spite of Maharashtra's higher level of economic growth and despite being one of the higher-income States with growth rates exceeding several other States, Maharashtra was ranked third among 17 states in 1991 in terms of Human Development Index (HDI) with a HDI value of 0.532.

Though India has become self sufficient in foodgrains production in spite of tremendous increase in population, mere self sufficiency in agriculture is not the chief objective of Maharashtra, which accords higher priority to assuring more remunerative net income to the farmers through efficient and sustainable use of available resources. The state has been implementing various schemes from time to time not only to increase agricultural production and exports but also to encourage agro-processing industries with a view to reap the benefits of liberalized economy and global trade. Agricultural department in the state is firmly heading towards economic progress along with self-

sufficiency through agriculture with the ultimate goal of achieving important position in the global agriculture produce market. The innovative horticulture plantation scheme under employment guarantee scheme implemented by the state is a part of this policy.

2.2 General Overview: Study Districts

Pune district is situated between $17^{\circ}50'$ - $19^{\circ}20'$ North Latitudes and $73^{\circ}20'$ - $75^{\circ}10'$ East Longitudes. The district belongs to the Western region of Maharashtra. It is bounded by Thane district to the northwest, Raigad district to the west, Satara district to the south, Solapur district to the southeast, and Ahmednagar district to the north and northeast. Pune district lies in the Western Ghats or Sahyadri mountain range and it extends on to the Deccan Plateau on the east. Pune stands on the leeward side of the Western Ghats. Pune is at an altitude of 559m (1863 ft.). In Pune district, there are two municipal corporations, namely Pune Municipal Corporation (PMC) and Pimpri-Chinchwad Municipal Corporation (PCMC). The district occupies an area of 58 thousand km². According to the 2011 census, the population of Pune district is 9429 thousand with 3678 thousand belonging to rural and 5751 thousand belonging to urban area. The district has a population density of 603 inhabitants per square kilometer. Its population growth rate over the decade 2001–2011 was 30.34 per cent. Pune district has a sex ratio of 915 females for every 1000 males with a literacy rate of 80.02 per cent among males and 71.73 per cent among females. Administratively, the district is divided into 15 Talukas and 13 Panchayat Samitis. The 15 Talukas of the district encompass Junnar, Ambegaon, Khed, Maval, Mulshi, Velhe, Bhor, Haveli, Purandar, Pimpri-Chinchwad City, Pune City, Indapur, Daund, Baramati and Shirur. Pune city is the administrative headquarters of the district. There are 1,866 villages in the district. Average rainfall in the district is 600 to 700 mm. Major rivers of the district encompass Pushpavati, Krushnavati, Kukadi, Meena, Ghod, Bhima, Bhama, Andhra, Indryani, Pavna, Mula, Mutha, Ambi, Mose, Shivganga, Kanandi, Gunjavni, Velvandi, Neera, Karha, Velu etc. The major crops cultivated in Pune district encompass jowar, bajra, rice, *tur*, *moong*, *udid*, groundnut and soybeans in kharif season and jowar, wheat, gram, maize, sunflower, etc. in rabi season. The major fruit crops cultivated in Pune district encompass mango, banana, grapes, chiku and Pomegranate. Sugarcane is cultivated as perennial crop in the district.

The district of Ahmednagar is situated between $18^{\circ}20'$ - $19^{\circ}90'$ North Latitudes and $73^{\circ}90'$ - $75^{\circ}50'$ East Longitudes. It is bounded by Solapur, Osmanabad and Beed districts to the southeast, Aurangabad district to the northeast, Nasik and Thane districts

to the northwest, and Pune district to the southwest. The district occupies an area of 17 thousand km². According to the 2011 census, the population of Ahmednagar district is 4544 thousand with 3631 thousand in rural and 913 thousand in urban area. The district has a population density of 261 inhabitants per square kilometer. Ahmednagar district has a sex ratio of 934 females for every 1000 males. The literacy rate of Ahmednagar district is 79.05 per cent with 86.82 per cent among males and 70.89 per cent among females. Administratively, the Ahmednagar district is divided into 14 Talukas, namely Akole, Sangamner, Kopargaon, Rahata, Srirampur, Newasa, Shevgaon, Pathdri, Nagar, Rahuri, Parner, Srigonda, Karjat, and Jamkhed. There are 1,584 villages in the district. Average rainfall in the district is 501.8 mm. The district is drained by chief rivers, the Godavari and the Bhima a tributary of the Krishna. The important rivers flowing through the district are Paravara, Mula, Sina and Dhora. Pravara is tributary of the river Godavari. The rainfed area of the district is 73.73 per cent. Of the total cropped area of the district, 4,60,000 ha is under kharif crops, 7,58,000 ha under rabi crops, and 1,10,500 ha under multiple cropping. The major crops cultivated in Ahmednagar district encompass jowar, bajra, rice, cotton, maize, soyabean, etc. in kharif season and jowar, wheat, soyabean, pulses, etc. in rabi season. The major horticulture crops cultivated in Ahmednagar district encompass kagzi lime, pomegranate, mango, papaya, banana, guava, sapota and onion. Sugarcane is cultivated as perennial crop in the district. On an average, 26.27 per cent of the cultivated area of the district is under irrigation, out of which 71.46 per cent is under well irrigation (including lift irrigation) and remaining area is under canal irrigation.

Nasik district is situated between 18°.33' - 20°.53' North Latitudes and 73°.16' - 75°.16' East Longitudes. It is bounded by Dhule district to the north, Jalgaon district to the east, Aurangabad district to the southeast, Ahmednagar district to the south, Thane district to the southwest, Valsad and Navsari districts of Gujarat to the west, and the Dangs district of Gujarat to the northwest. The district has an area of 15,530 square kilometres. The larger eastern portion of the district, which lies on the Deccan Plateau, is open, fertile, and well cultivated. As per 2011 census figures, the human population of Nasik district is 6107 thousand with 3510 thousand belonging to rural and 2597 thousand belonging to urban area. The district has a population density of 393 inhabitants per square kilometer. The sex ratio of Nasik district shows 931 females for every 1000 males. The literacy rate of Nasik district is 82.31 per cent with 88.17 per cent among males and 76.08 per cent among females. Administratively, the Nasik district is divided into 15 Talukas, namely Surgana, Kalvan, Devla, Baglan, Malegaon, Nandgaon, Chandwad,

Dindori, Peth, Trenbak, Nasik, Igatpuri, Sinnar, Niphad and Yeola. There are 1,930 villages in the district. Average rainfall in the district is 1029.6 mm. The major rivers of Nasik district encompass Godavari, Girana, Vaitarana, Darna, Kadwa, Manaid and Mosam. The total geographical area of Nasik district is 1426 thousand hectares, which encompasses 20.31 per cent under forest, 49.90 per cent cultivated land, 10.39 per cent non-cultivable (hilly, rocky), 12.24 per cent cultivable but unused land, and 7.16 per cent non-cultivable land due to poor quality. Further, about 92 per cent of irrigation is available from underground water resources like wells and only 8 per cent from canals or dams. The crops like wheat, paddy and other cereals are grown in various parts of the district. However, bajra and maize are the major crops. Paddy is mainly grown in Tribal belt, i.e. Igatpuri, Peth, and Surgana Blocks. Vegetables and Onion have been main cash crops of the district for the past several decades. Because of variety of vegetables and its supply to Mumbai, the district is known as Backyard of Mumbai. After establishment of sugar factories, sugarcane has acquired important position in the agriculture economy of the district. One of major fruit crop cultivated in Nasik district is grape. The agricultural economy of the district is predominated by grape crop cultivation. However, due to water shortage in Kalwan, Deola, Baglan and Malegaon blocks, the farmers have shifted to pomegranate from sugarcane and grape crop cultivation. Some progressive farmers are cultivating flowers in green houses. These developments also indicate that the farmers in the district adopt new technology and methods of cultivation very fast. The district has been identified for the purpose of establishment of Wine Park and Food Park. The State Agriculture Department makes arrangement for issuance of Certificate to the exporters about chemical residues in the grape fruits.

The district of Sangli is situated in western part of Maharashtra state in India. It is bounded by Bijapur district to the east, Ratnagiri district to the west, Kolhapur and Belgaum district to the south, and Solapur district to the north. It is lying between $16^{\circ}40'$ - $17^{\circ}10'$ north latitudes and $73^{\circ}43'$ - $75^{\circ}00'$ east longitudes. The district has an area of 8,572 square kilometres. The district forms part of Deccan Plateau. As per 2011 census figures, the human population of Sangli district is 2822 thousand with 2103 thousand belonging to rural and 719 thousand belonging to urban area. The district has a population density of 329 inhabitants per square kilometer. The sex ratio of Sangli district shows 965 females for every 1000 males. The literacy rate of Sangli district is 81.48 per cent with 88.22 per cent among males and 74.49 per cent among females. For administrative purpose, the district is divided into 10 Talukas namely, Miraj, Tasgaon,

Kavathe-Mahankal, Jath, Khanapur (Vita), Palus, Atpadi, Walwa (Islampur), Kadegaon and Shirala. It includes one *Mahanagar Palika* viz. 'Sangli-Miraj-Kupwad Corporation'. It also includes 4 *Nagarpalika's* viz. Vita, Ashta, Tasgaon and Islampur and 705 Gram and group gram panchayats. The gram panchayats are organized at Taluka level in Taluka Panchayat and Taluka Panchayat at district level into Zillah Parishad. There are 727 villages in the district. Average rainfall in the district is 400-450 mm in a year. The main rivers of Sangli district are Krishna and Warna. The Krishna is one of the three largest sacred rivers of southern India. Approximately 105 km. of the river course falls inside the district. Morna, Yerla, Manganga, Agrani, Nanni and Bor are small feeder rivers of Krishna. Warna is the largest tributary of the Krishna in the district. The total geographical area of Sangli district is 861 thousand hectares, which encompasses 595.6 thousand hectares cultivable area, 45.1 thousand hectares forest area, 46.0 thousand hectares land under non-agricultural use, 17.7 thousand hectares permanent pastures, 14.6 thousand hectares cultivable wasteland, 12.9 thousand hectares land under miscellaneous tree crops and groves, 38.8 thousand hectares barren and uncultivable land, 38.5 thousand hectares current fallow land, and 51.8 thousand hectares other fallow land. Gross cropped area of the district is 649 thousand hectares with 557 thousand hectares as net sown and 92 thousand hectares as area sown more than once. Sorghum is the main crop grown in Sangli district and the *maldandi* variety of Sangli is well known. The turmeric and turmeric market in Sangli are famous. The sugarcane crop is also extensively grown here. In the recent past, Sangli has carved out a name for itself for its grape cultivation and Tasgaon Taluka is at the forefront in grape production. Small units producing dried grapes are proliferating in the region. Some areas in the Miraj, Tasgaon and Walwa Talukas produce tobacco. Bajra, Jowar, Wheat, Rice, Groundnut, Turmeric, Soyabean, Pomegranates, grapes etc. are the major crops cultivated in Sangli District. Sugarcane is the annual crop. Sangli region is known as the "Sugar Belt" of India. Sangli has emerged as the biggest trade market place for turmeric powder in the entire country.

Solapur district is situated between $17^{\circ}10'$ - $18^{\circ}32'$ North Latitudes and $74^{\circ}42'$ - $76^{\circ}15'$ East Longitudes. It is bounded by Osmanabad and Ahmednagar districts to the northeast, Satara district to the southeast, and has a common boundary with Karnataka state. The total geographical area of Solapur district is 14,895 Sq. Km. As per 2011 census figures, the human population of Solapur district is 4318 thousand with 2919 thousand belonging to rural and 1399 thousand belonging to urban area. The district has a population density of 290 inhabitants per square kilometer. The sex ratio of Solapur

district shows 938 females for every 1000 males. The literacy rate of Solapur district is 77.02 per cent with 85.03 per cent among males and 68.55 per cent among females. Administratively, the Solapur district is divided into 11 Talukas, namely North Solapur, South Solapur, Barshi, Akkalkot, Mohol, Mangalwedha, Pandharpur, Sangola, Malshiras, Karmala, and Masha. There are 1155 villages in the district. Average rainfall in the district is 400-450 mm in a year. Rainfall varies from East to West ranging from 200 to 600 mm. The rivers like Bhima, Sina, Man, Nira Bhogawati and many other smaller tributaries drain in the district. The soil of the district is mainly of Deccan Trap Volcanic origin. The total geographical area of Solapur district is 1487.8 thousand hectares, which encompasses 1030.9 thousand hectares cultivable area, 35.3 thousand hectares forest area, 5.2 thousand hectares land under non-agricultural use, 66.1 thousand hectares permanent pastures, 39.4 thousand hectares cultivable wasteland, 6.0 thousand hectares land under miscellaneous tree crops and groves, 63.7 thousand hectares barren and uncultivable land, 111.2 thousand hectares current fallow land, and 121.0 thousand hectares other fallow land. Gross cropped area of the district is 1022.5 thousand hectares with 919.7 thousand hectares as net sown and 102.8 thousand hectares as area sown more than once. The major kharif crops cultivated in the district on medium deep and shallow soils are bajra, sunflower, red gram, groundnut, horse gram, and black gram. The rainfed rabi crops cultivated in the district on medium deep and deep soils are jowar, sunflower and gram. Sugarcane, sunflower, wheat, and summer groundnut are the major irrigated crops grown in Solapur district. The area under fruit and vegetable crops under irrigated condition is growing rapidly in Solapur district, especially area under grapes, pomegranate, mango, sapota, onion, chilli, brinjal, tomato, okra, bitter guard, leafy vegetables, etc. Solapur district also has some area under flower cultivation like Merigold, Chrysanthemum, Tuberose and Rose. Solapur district is also well known for its *Chadder*, Handloom, *Powerloom* and *Beedi* industries.

Having provided broad overview with respect to the state of Maharashtra and also the study districts for onion and grape crops, especially in terms of their population, geographical position, soil type, extent of irrigation, rainfall, literacy rate, sex ratio, population density, numerical strength of Talukas, rainfall status, land utilization pattern, cropping pattern, and other important features, the subsequent section chiefly throws light on the estimates relating to socio-economic status of sampled farmers and their land utilization and cropping pattern with extension to area under irrigation for various crops for the sampled districts of the state of Maharashtra.

2.3 Family Size of Onion and Grape Farmers

Running a crop enterprise is generally a labour intensive operation where the composition and size of the family of a farmer are important considerations. The viability of a crop enterprise at village level often depends on such important factors. Information on family size of sampled farmers belonging to onion and grape growing sampled districts is presented in Table 2.1 and Table 2.2.

The average size of family consisted of 7 persons with 5 adults and 2 children in the case of sampled farmers drawn from onion growing sampled districts since 150 sampled farmers consisted of 979 family members encompassing 682 persons belonging to adult males and females and 297 children (Table 2.1). The sex ratio of adults was invariably in favour of females in onion growing sampled districts. The family size for the onion growing sampled farmers was estimated at 6 persons for small category, nearly 7 persons for medium and 9 persons for large category with an overall average of the same at nearly 7 persons for the average category of farmers belonging to the onion growing sampled districts. Thus, the family size of sampled onion growing farmers increased with the increase in their land holding size.

Table 2.1: Family Size Composition of Onion Growing Farmers

Category	Sample Size	Adults			Children	Total
		Males	Females	Total		
Small	113	244	246	490	213	703
Medium	25	58	62	120	50	170
Large	12	37	35	72	34	106
Total	150	339	343	682	297	979
Family Size per Household						
Small	113	2.16	2.18	4.34	1.88	6.22
Medium	25	2.32	2.48	4.80	2.00	6.80
Large	12	3.08	2.92	6.00	2.83	8.83
Total	150	2.26	2.29	4.55	1.98	6.53

The percentage distribution of family size composition of sampled onion growing farmers revealed that the family size in general encompassed 70 per cent adult males and females, and 30 per cent children (Table 2.1 (a)). This trend held true for all the categories of sampled onion growing farmers. The large category of sampled onion farmers showed relatively higher male as against female members in the family.

2.1 (a): % Distribution of Family Size Composition of Onion Growing Farmers

Category	Sample Size	Adults			Children	Total
		Males	Females	Total		
Small	113	34.71	34.99	69.70	30.30	100.00
Medium	25	34.12	36.47	70.59	29.41	100.00
Large	12	34.91	33.02	67.92	32.08	100.00
Total	150	34.63	35.04	69.66	30.34	100.00

The grape growing sampled farmers also showed an average family size of 7 persons with 5 adults and 2 children since 150 sampled farmers consisted of 1018 family members encompassing 692 persons belonging to adult males and females and 326 children (Table 2.2). The sex ratio of adults was invariably in favour of males among grape growing sampled farmers. The family size for the grape growing sampled farmers was estimated at 7 persons for small category, nearly 6 persons for medium and 7 persons for large category with an overall average of the same at nearly 7 persons for the average category of farmers drawn from the grape growing sampled districts. Thus, the family size of sampled grape growing farmers remained by and large same for various land holding size categories.

Table 2.2: Family Size Composition of Grape Growing Farmers

Category	Sample Size	Adults			Children	Total
		Males	Females	Total		
Small	114	290	262	552	244	796
Medium	30	56	60	116	66	182
Large	6	14	10	24	16	40
Total	150	360	332	692	326	1018
Family Size per Household						
Small	114	2.54	2.30	4.84	2.14	6.98
Medium	30	1.87	2.00	3.87	2.20	6.07
Large	6	2.33	1.67	4.00	2.67	6.67
Total	150	2.40	2.21	4.61	2.17	6.79

The percentage distribution of family size composition of sampled grape growing farmers revealed that the family size in general encompassed 68 per cent adult males and females, and 32 per cent children (Table 2.2 (a)). This trend held true for all the categories of sampled grape growing farmers. However, the proportion of adult member in the family declined with the increase in land holding size of grape growing farmers. The medium category of sampled grape farmers showed relatively higher female as against male members in the family.

2.2 (a): % Distribution of Family Size Composition of Grape Growing Farmers

Category	Sample Size	Adults			Children	Total
		Males	Females	Total		
Small	114	36.43	32.91	69.35	30.65	100.00
Medium	30	30.77	32.97	63.74	36.26	100.00
Large	6	35.00	25.00	60.00	40.00	100.00
Total	150	35.36	32.61	67.98	32.02	100.00

Thus, both sampled onion and grape farmers showed an average family size of 7 persons with 5 adults and 2 children. However, while onion farmers showed sex ratio of adults in favour of females, the sex ratio was in favour of males in case of grape farmers.

2.4 Educational Status of Onion and Grape Farmers

The standard of education has a definite bearing on a farmer's response to improved technology and extension services. A responsive and enlightened farmer only acts to improve technology and market performance because of his higher motivation that helps him to take effective managerial decisions to contribute more to the market, to diversify his farm business and thereby, to earn more. Such motivated responsive farmers are very much needed to run any professional enterprise that warrants quality managerial inputs. In a village set up, the decision maker of a family is usually either its head or any other elderly economically active person of this family. All decisions regarding primary and secondary occupations that should be practiced by a family are taken by such a person. However, the level of education of other members of the family could be equally important in the decision making process if they have motivation towards gaining knowledge about modern techniques of production. Since such decision makers have important roles in determining the health of a crop enterprise, it was thought prudent and desirable to ascertain the education level of such members in case of producer family.

Information relating to the educational status of head of the household is provided in Table 2.3 for the sampled farmers belonging to onion growing sampled districts and in Table 2.4 in the case of sampled farmers belonging to grape growing sampled districts.

The educational status of head of the household was found to be quite high among onion growing sampled farmers since 106 out of 150 heads of households' attained education either up to secondary level or beyond (Table 2.3). Among various categories of onion farmers in sampled districts, the medium category showed relatively higher number of their heads attaining education up to secondary and higher level as compared to other categories of farmers since 78 out of 113 heads for small category, 19 out of 25 heads of medium, and 9 out of 12 heads of large category had obtained education up to secondary and above level. There were 22 heads of households among onion growing sampled farmers who turned out to be illiterate. Similarly, 22 heads of onion growing sampled households attained education up to primary level.

Table 2.3: Education Status of Head of Household of Onion Growing Farmers

Category	Sample Size	Illiterates	Primary	Secondary	High School	Higher	Total
Small	113	16	19	25	36	17	113
Medium	25	4	2	3	9	7	25
Large	12	2	1	3	4	2	12
Total	150	22	22	31	49	26	150

As for educational status, about 69 per cent heads of households in small category, 76 per cent in medium and 75 per cent in large category attained education up to secondary and higher level in the onion growing sampled districts (Table 2.3 (a)). The general trend among onion growing farmers showed that 71 per cent heads of households had attained education up to secondary and above level, 15 per cent up to primary level and 15 per cent did not attain any education and turned out to be illiterate.

Table 2.3 (a): % Distribution of Education Status of Head of Household of Onion Growing Farmers

Category	Sample Size	Illiterates	Primary	Secondary	High School	Higher	Total
Small	113	14.16	16.81	22.12	31.86	15.04	100
Medium	25	16.00	8.00	12.00	36.00	28.00	100
Large	12	16.67	8.33	25.00	33.33	16.67	100
Total	150	14.67	14.67	20.67	32.67	17.33	100

In the case grape growing sampled farmers, there were 123 out of 150 heads of households who attained education up to secondary and higher level, indicating relatively high education status of heads of the households of sampled grape growing districts as compared to the households belonging to sampled onion growing districts (Table 2.4). The educational status of heads of the households was higher for small and large category of grape growing households as against medium category since 94 out of 114 heads of small category, 24 out of 30 heads of medium category, and 5 out of 6 heads of large category had attained education up to secondary and higher level. There were 13 heads of households who were illiterate in grape growing sampled districts, whereas 14 heads of households attained education up to primary level.

Table 2.4: Education Status of Head of Household of Grape Growing Farmers

Category	Sample Size	Illiterates	Primary	Secondary	High School	Higher	Total
Small	114	7	13	14	36	44	114
Medium	30	5	1	7	6	11	30
Large	6	1	-	-	1	4	6
Total	150	13	14	21	43	59	150

Among various categories of sampled grape farmers, the heads of households receiving education up to secondary and higher level was 82 per cent for small category, 80 per cent for medium and 83 per cent for large category with an average of 82 per cent for the average category of farmers, indicating higher education status for small and large category as against medium category (Table 2.4 (a)). The proportion of heads of households attaining education up to primary level was found to be 9 per cent in sampled grape growing districts, whereas another 9 per cent of heads of households did not attain any education and turned out to be illiterate.

Table 2.4 (a): % Distribution of Education Status of Head of Household of Grape Growing Farmers

Category	Sample Size	Illiterates	Primary	Secondary	High School	Higher	Total
Small	114	6.14	11.40	12.28	31.58	38.60	100.00
Medium	30	16.67	3.33	23.33	20.00	36.67	100.00
Large	6	16.67	-	-	16.67	66.67	100.00
Total	150	8.67	9.33	14.00	28.67	39.33	100.00

The foregoing observations clearly underscore the fact that the sampled grape farmers were relatively more educated as compared to sampled onion farmers. While about 82 per cent of the head of the households of sampled grape growing farmers received education up to secondary and higher level, this proportion for sampled onion growing farmers stood at only 71 per cent. The illiteracy among heads of households was found to be more in case of onion growing farmers. However, the proportion of head of the households attaining education up to primary level was relatively higher in case of onion growing farmers as against grape growing farmers. In fact, not only all the categories of sampled grape farmers enjoyed higher education status as compared to sampled onion farmers but small and large category, in particular, showed very high status of education since majority of them attained education beyond secondary level.

2.5 Caste Composition of Onion and Grape Farmers

Information relating to caste composition of various categories of sampled farmers drawn from the onion growing and grape growing sampled districts is provided in Table 2.5 and Table 2.6.

In the case of onion growing sampled districts, majority of the sampled farmers belonged to general category, followed by Other Backward Class (OBC) since 94 out of 150 sampled farmers belonged to general category and 51 out of 150 sampled farmers belonged to OBC category (Table 2.5). The number of sampled farmers belonging to Scheduled Caste (SC) and Scheduled Tribe (ST) was 1 and 4, respectively. Medium and large category invariably showed higher number of farmers belonging to general category as against small category of onion farmers. Large category did not show any farmer belonging to SC and ST category.

Table 2.5: Caste Composition of Onion Growing Farmers

Category	Sample Size	SC	ST	OBC	Others	Total
Small	113	1	2	41	69	113
Medium	25	-	2	6	17	25
Large	12	-	-	4	8	12
Total	150	1	4	51	94	150

A further analysis with respect to caste composition revealed that 63 per cent of the total sampled farmers of onion growing districts belonged to general category, 34 per cent to OBC category, 3 per cent to ST, and 1 per cent to SC category (Table 2.5 (a)). Among various categories of sampled farmers drawn from onion growing districts, the proportion of farmers belonging to general category was 67 per cent for large category, 68 per cent for medium, and 61 per cent for small category.

Table 2.5 (a): % Distribution of Caste Composition of Onion Growing Farmers

Category	Sample Size	SC	ST	OBC	Others	Total
Small	113	0.88	1.77	36.28	61.06	100.00
Medium	25	-	8.00	24.00	68.00	100.00
Large	12	-	-	33.33	66.67	100.00
Total	150	0.67	2.67	34.00	62.67	100.00

As for grape growing sampled districts, as many as 126 out of 150 sampled farmers belonged to general category, 17 to OBC, 2 to ST and 5 to SC category (Table 2.6). Interestingly, all the sampled grape farmers in medium category belonged to general category with the sole exception of three farmers who belonged to OBC category. Similarly, all the sampled grape farmers in large category belonged to general category with the sole exception of one farmer who belonged to OBC category. It was only in the case of small category that some sampled grape farmers belonged to SC and ST category.

Table 2.6: Caste Composition of Grape Growing Farmers

Category	Sample Size	SC	ST	OBC	Others	Total
Small	114	5	2	13	94	114
Medium	30	-	-	3	27	30
Large	6	-	-	1	5	6
Total	150	5	2	17	126	150

As for per cent distribution, about 84 per cent of the total sampled grape farmers belonged to general category, 11 per cent to OBC, 1 per cent to ST and 3 per cent to SC category (Table 2.6 (a)). Among various categories of sampled farmers drawn from grape growing districts, the proportion of farmers belonging to general category was 83 per cent for large category, 90 per cent for medium, and 82 per cent for small category. The proportion of farmers belonging to OBC category was relatively high among large category of grape farmers, followed by small category.

Table 2.6 (a): % Distribution of Caste Composition of Grape Growing Farmers

Category	Sample Size	SC	ST	OBC	Others	Total
Small	114	4.39	1.75	11.40	82.46	100.00
Medium	30	-	-	10.00	90.00	100.00
Large	6	-	-	16.67	83.33	100.00
Total	150	3.33	1.33	11.33	84.00	100.00

Thus, caste composition revealed much higher proportion of sampled grape farmers belonging to general category as against sampled onion farmers since 84 per cent of grape farmers belonged to other category as against 63 per cent onion farmers belonging to other category. Further, while significant proportion of onion farmers also belonged to OBC category, this proportion was very less for grape farmers. As for various categories, 90 per cent of medium category of sampled grape farmers belonged to general category, whereas this proportion for medium category of onion farmers was 68 per cent. In case of both onion and grape farmers, the proportion of farmers belonging to SC and ST category was very low.

2.6 Irrigation Details for Onion and Grape Growing Farmers

Details regarding extent of area under irrigation and sources of irrigation on the farms belonging to sampled onion and grape growing farmers in the sampled districts are provided in Table 2.7 and 2.8.

In the case of sampled onion growing farmers, the total operational holding was estimated at 149.75 hectares for small category, 66.99 hectares for medium and 65.67 hectares for large category with a sum of 282.40 hectares for all the sampled farmers put together. All the categories of sampled onion growing farmers showed their entire irrigated area under open well irrigation (Table 2.7). The open well irrigated area was estimated at 144.23 hectares for small category, 60.36 hectares for medium and 53.32 hectares for large category with a sum of 257.90 hectares for all the sampled farmers put together. The estimates further revealed area under rainfed condition to be 5.52 hectares for small category, 6.63 hectares for medium and 12.35 hectares for large category with a sum of 24.50 hectares for all the sampled farmers put together.

Table 2.7: Irrigation Details for Onion Growing Farmers

(Area in Hectares)

Category	Sample Size	Irrigated					Unirrigated	Total
		Canal	Tubewell	Tank	Open Well	Total		
Small	113	-	-	-	144.23	144.23	5.52	149.75
Medium	25	-	-	-	60.36	60.36	6.63	66.99
Large	12	-	-	-	53.32	53.32	12.35	65.67
Total	150	-	-	-	257.90	257.90	24.50	282.40

The general trend showed 91 per cent of operational holding of average category of sampled onion farmers under open well irrigation and 9 per cent under rainfed condition. The proportion of open well irrigated area decreased with the increase in land holding size of sampled onion farmers. On the other hand, proportion of rainfed area increased with the increase in land holding size of sampled onion farmers (Table 2.7 (a)).

Table 2.7 (a): % Distribution of Irrigation Details for Onion Growing Farmers

Category	Sample Size	Irrigated					Unirrigated	Total
		Canal	Tubewell	Tank	Open Well	Total		
Small	113	-	-	-	96.31	96.31	3.69	100.00
Medium	25	-	-	-	90.11	90.11	9.89	100.00
Large	12	-	-	-	81.20	81.20	18.80	100.00
Total	150	-	-	-	91.32	91.32	8.68	100.00

As for sampled grape growing farmers, the total operational holding was estimated at 154.37 hectares for small category, 67.10 hectares for medium and 31.98 hectares for large category with a sum of 253.45 hectares for all the sampled farmers put together. The area under irrigation was estimated at 147.57 hectares for small category, 63.05 hectares for medium and 30.77 hectares for large category with a sum of 241.41 hectares for all the sampled farmers put together. All the categories of sampled grape growing farmers showed their major irrigated area under open well irrigation, followed by tubewell, canal and tank irrigation (Table 2.8). In general, all the sampled grape growing farmers put together showed 12.04 hectares of area under rainfed condition and 241.41 hectares under irrigation, which encompassed 188.26 hectares under open well irrigation, 35.23 hectares under tubewell, 10.73 hectares under canal and 7.19 hectares under tank irrigation. The estimates further revealed that the area under rainfed condition was 6.78 hectares for small category, 4.05 hectares for medium and 1.21 hectares for large category with a sum of 12.04 hectares for all the sampled farmers put together.

Table 2.8: Irrigation Details for Grape Growing Farmers

(Area in Hectares)

Category	Sample Size	Irrigated					Unirrigated	Total
		Canal	Tubewell	Tank	Open Well	Total		
Small	114	-	25.74	0.51	121.34	147.59	6.78	154.37
Medium	30	0.81	8.28	1.21	52.75	63.05	4.05	67.10
Large	6	9.92	1.21	5.47	14.17	30.77	1.21	31.98
Total	150	10.73	35.23	7.19	188.26	241.41	12.04	253.45

The average category of sampled grape farmers showed 95 per cent of their operational holding under irrigation and the remaining 5 per cent under rainfed condition (Table 2.8 (a)). The average category of sampled grape farmers further showed 74 per cent of their operational holding under open well irrigation, 14 per cent under tubewell, 4 per cent under canal and 3 per cent under tank irrigation. The estimates further revealed that the major sources of irrigation were open well and tank for small and medium category, and open well, canal and tank for the large category of grape farmers. The proportion of area under rainfed condition was noticed to be marginally higher for medium category as against small and large category of grape farmers.

Table 2.8 (a): % Distribution of Irrigation Details for Grape Growing Farmers

Category	Sample Size	Irrigated					Unirrigated	Total
		Canal	Tubewell	Tank	Open Well	Total		
Small	113	-	16.67	0.33	78.60	95.61	4.39	100.00
Medium	25	1.21	12.34	1.80	78.61	93.96	6.04	100.00
Large	12	31.02	3.78	17.10	44.31	96.22	3.78	100.00
Total	150	4.23	13.90	2.84	74.28	95.25	4.75	100.00

Thus, the estimates relating to irrigation status showed significantly high proportion of operational holding of both sampled onion and grape farmers under irrigation, which was as much as 91 per cent for onion farmers and 95 per cent for grape farmers. However, while sampled onion farmers showed their entire irrigated area under open well irrigation, the proportion of area under open well was 74 per cent of the operational holding for grape farmers. The sampled grape farmers also showed reasonable proportion of area under tubewell, canal and tank irrigation. The canal irrigated area was significantly high for large category, whereas small and medium category of grape farmers showed higher proportion of area under tubewell irrigation.

2.7 Cropping Pattern of Onion and Grape Growing Farmers

Cropping pattern assumes considerable significance in determining farmer's net annual income through crop husbandry. Though farmers prefer to grow those crops that yield higher net returns, they are constrained to grow several high value field crops due to varied agro-climatic conditions as well as topography and soil type across various regions or within the same region. In general, the cropping pattern of irrigated area differs from the cropping pattern of un-irrigated area. While on one hand, high value commercial field crops are usually grown under irrigated conditions, low value subsistence crops, on the other hand, find place under rainfed conditions. However, there are several important course cereal and pulses crops like *jowar*, *mung*, *tur*, etc. that find place in terms of output and area allocation even under dry or rainfed conditions. The information on area allocation under different crops grown under different seasons by the sampled farmers belonging to sampled onion and grape growing districts is provided in Table 2.9 and Table 2.10. The cropping pattern of various categories of sampled onion and grape farmers belonging to sampled district encompassing all the crops cultivated during various seasons is brought out in Appendix 1 and Appendix 2, respectively.

In the case of sampled onion growing farmers, the cropping pattern was seen to be in favour of cultivating onion, bajra, mung, and maize in kharif season and onion, *jowar*, wheat, gram and maize in rabi season. Various other crops like pomegranate, sugarcane,

grape, orange, mango, etc. were cultivated as perennial crops by the sampled onion farmers. All the categories of sampled onion farmers put together showed a net sown area of 224.51 hectares in kharif season, which encompassed 49.29 hectares of area under kharif onion, 69.18 hectares under bajra, 51.64 hectares under mung, and 54.40 hectares under other kharif crops like jowar, maize, tur, udid, groundnut, green pea, fodder crops, etc. (Table 2.9). The net sown area with all the sampled onion growing farmers put together was estimated at 196.04 hectares in rabi season, which encompassed 111.48 hectares under rabi onion, 45.08 hectares under jowar, 17.79 hectares under wheat, and 21.69 hectares under other rabi crops like maize, gram, groundnut, sunflower, potato, Lucerne, etc. The area under perennial crops with all the sampled onion farmers put together was estimated at 55.69 hectares, which encompassed 33.68 hectares under pomegranate, 15.55 hectares under sugarcane, and 22.00 hectares under other perennial crops like grape, orange, mango, chiku, etc.. Thus, onion crop predominated the cropping pattern of sampled onion farmers during both rabi as well kharif seasons since the average category of onion farmer showed 22 per cent of net sown area under onion crop in kharif season and as high as 57 per cent in rabi season (Table 2.9). The other crops that dominated the cropping pattern of sampled onion farmers in kharif season were bajra and mung with a share of 23-30 per cent in the net sown area of the average category of farmers. Similarly, other crops like jowar and wheat dominated the cropping pattern of sampled onion farmers in rabi with a share of 9-23 per cent in the net sown area of the average category of farmers. Another crop predominating the cropping pattern of sampled onion farmer was pomegranate, which accounted for as much as 60 per cent share in net sown area under perennial crops of sampled onion farmers.

Table 2.9: Cropping Pattern of Onion Growing Farmers – Over All Seasons

(Area in Hectares)

Category	Area Sown													G. Total	
	Kharif Season					Rabi Season					Perennial Crops				
	Onion	Bajra	Mung	Others	Total	Onion	Jowar	Wheat	Others	Total	Pomeg ranate	Others	Total		
Small	33.10	42.06	29.07	22.53	126.76	74.23	20.45	8.79	13.47	116.94	17.87	6.88	24.75	268.44	
Medium	10.32	12.75	11.66	13.95	48.68	18.02	10.96	4.35	4.82	38.15	10.96	6.84	17.81	104.64	
Large	5.87	14.37	10.91	17.91	49.07	19.23	13.66	4.66	3.40	40.95	4.86	8.28	13.14	103.16	
Total	49.29	69.18	51.64	54.40	224.51	111.48	45.08	17.79	21.69	196.04	33.68	22.00	55.69	476.23	

Note: In Kharif Season, 'Others' include crops viz. Jowar, Maize, Tur, Udid, Groundnut, Green Pea, Hulga, Moth Bean, Lucerne, Kadwal and Grass. In Rabi Season, 'Others' include crops viz. Maize, Gram, groundnut, sunflower, potato, Kadwal, Lucerne, etc. Under Perennial crops' 'Others' include crops viz. Grape, Orange, Sugarcane, Chiku, and Mango.

The percentage distribution of area under different crops showed 10.35 per cent of the gross cropped area (GCA) of the average category of sampled onion farmers under

kharif onion, 14.53 per cent under bajra, 10.84 per cent under mung, 11.42 per cent under other kharif crops, 23.41 per cent under rabi onion, 9.47 per cent under rabi jowar, 3.74 per cent under wheat, 4.55 per cent under other rabi crops, 7.07 per cent under pomegranate, and 4.62 per cent under other perennial crops (Table 2.9 (a)). In general, the average category of sampled onion farmer showed 47.14 per cent of GCA under kharif crops, 41.6 per cent under rabi crops, and 11.69 per cent under perennial crop.

**Table 2.9 (a): % Distribution of Cropping Pattern of Onion Growing Farmers – Over All Seasons
(% of Gross Sown Area)**

Category	Area Sown													G. Total	
	Kharif Season					Rabi Season					Perennial Crops				
	Onion	Bajra	Mung	Others	Total	Onion	Jowar	Wheat	Others	Total	Pomegranate	Others	Total		
Small	12.33	15.67	10.83	8.39	47.22	27.65	7.62	3.27	5.02	43.56	6.66	2.56	9.22	100.00	
Medium	9.87	12.19	11.14	13.33	46.52	17.22	10.48	4.16	4.61	36.46	10.48	6.54	17.02	100.00	
Large	5.69	13.93	10.58	17.37	47.57	18.64	13.25	4.51	3.30	39.70	4.71	8.03	12.74	100.00	
Total	10.35	14.53	10.84	11.42	47.14	23.41	9.47	3.74	4.55	41.16	7.07	4.62	11.69	100.00	

Note: In Kharif Season, 'Others' include crops viz. Jowar, Maize, Tur, Udid, Groundnut, Green Pea, Hulga, Moth Bean, Lucerne, Kadwal and Grass. In Rabi Season, 'Others' include crops viz. Maize, Gram, groundnut, sunflower, potato, Kadwal, Lucerne, etc. Under Perennial crops' 'Others' include crops viz. Grape, Orange, Sugarcane, Chiku, and Mango.

Among various categories of sampled onion farmers, small category of farmers showed higher proportion of GCA under onion crop during both kharif and rabi seasons. During kharif season, the area under onion crop as proportion to GCA was found to be about 12 per cent for small category, 10 per cent for medium and 6 per cent for large category with an average of 10 per cent for the average category of farmer (Table 2.9 (a)). As for rabi season, the area under onion crop as proportion to GCA stood at about 28 per cent for small category, 17 per cent for medium and 19 per cent for large category with an average of 23 per cent for the average category of farmer. Thus, the area under onion crop as proportion to GCA by and large decreased with the increase in land holding size of sampled onion farmers.

The sampled grape farmers showed their cropping pattern in favour of cultivating maize, various leafy vegetables, and onion in kharif season and jowar, wheat and maize in rabi season. The perennial crops cultivated by grape growing farmers included grape, betel, banana, Ber, Chiku, pomegranate and sugarcane. All the categories of sampled grape farmers put together showed a net sown area of 62.08 hectares in kharif season, which encompassed 29.38 hectares of area under kharif maize, 10.52 hectares under leafy vegetables, 5.06 hectares under kharif onion 17.12 hectares under other kharif crops like jowar, bajra, mung, tur, Horse Gram, groundnut, soybean, grass, Lucerne, etc. (Table 2.10). The net sown area with all the sampled grape growing farmers put together was

estimated at 44.79 hectares in rabi season, which encompassed 18.21 hectares under rabi jowar, 14.17 hectares under wheat, and 12.41 hectares under other rabi crops like rabi maize, gram, groundnut, turmeric, rabi onion, etc. The area under perennial crops with all the sampled onion farmers put together was estimated at 177.20 hectares, which encompassed 141.11 hectares under grapes, 28.44 hectares under sugarcane, and 7.65 hectares under other perennial crops like betel, banana, Ber, Chiku, etc. Thus, maximum net sown area of sampled grape farmers was noticed to be under perennial crops with grapes showing the highest area under perennial crops. The average category of sampled grape farmers showed 80 per cent of perennial cropped area under grape cultivation, followed by sugarcane, which accounted for 16 per cent of perennial cropped area. In kharif season, the average category of sampled grape farmers showed 47 per cent of kharif cropped area under maize and 17 per cent under leafy vegetables. As for rabi season, the average category of sampled grape farmers showed 41 per cent of rabi cropped area under jowar and 32 per cent under wheat (table 2.10). The other crops that dominated the cropping pattern of sampled grape farmers in kharif season were jowar, mung and soybean, showing a share of 5-7 per cent in the net sown area of the average category of farmers. Similarly, other crops like maize and gram showed a share of 3-5 per cent in the net sown area of the average category of grape farmers. Among perennial crops, pomegranate showed a share of 4 per cent in the net sown area of the average category of grape farmers.

Table 2.10: Cropping Pattern of Grape Growing Farmers – Over All Seasons

(Area in Hectares)

Category	Area Sown													G. Total	
	Kharif Season					Rabi Season					Perennial Crops				
	Maize	Vegetable	Onion	Others	Total	Jowar	Wheat	Others	Total	Grape	Sugarcane	Others	Total		
Small	12.2	7.07	1.82	13.5	34.59	12.34	6.28	8.76	27.38	89.7	17.71	4.01	111.42	173.39	
Medium	13.34	2.63	3.24	2.61	21.82	5.26	6.28	2.43	13.97	32.99	4.66	3.03	40.68	76.47	
Large	3.85	0.81	-	1.01	5.67	0.61	1.62	1.21	3.44	18.42	6.07	0.61	25.1	34.21	
Total	29.38	10.52	5.06	17.12	62.08	18.21	14.17	12.41	44.79	141.11	28.44	7.65	177.2	284.07	

Note: In Kharif Season, 'Others' include crops viz. Jowar, Bajra, Tur, Mung, Groundnut, Soybean, Lucerne, Kadwal and Grass. In Rabi Season, 'Others' include crops viz. Maize, Gram, Groundnut, Turmeric, Onion, Vegetables, and Kadwal. Under Perennial crops' 'Others' include crops viz. Betel, Banana, Ber, Chikku, and Pomegranate.

The proportion of area under different crops showed 10.34 per cent of the gross cropped area (GCA) of the average category of sampled grape farmers under kharif maize, 3.70 per cent under leafy vegetables, 1.78 per cent under kharif onion, 6.03 per cent under other kharif crops, 6.41 per cent under rabi jowar, 4.99 per cent under wheat, 4.37 per cent under other rabi crops, 49.67 per cent under grapes, 10.01 peer cent under

sugarcane and 2.69 per cent under other perennial crops (Table 2.10 (a)). The general trend further showed that the average category of sampled grape farmers had 21.85 per cent of GCA under kharif crops, 15.77 per cent under rabi crops, and as much as 62.38 per cent under perennial crop.

**Table 2.10 (a): % Distribution of Cropping Pattern of Grape Growing Farmers – Over All Seasons
(% of Gross Sown Area)**

Category	Area Sown													G. Total	
	Kharif Season					Rabi Season				Perennial Crops					
	Maize	Vegetable	Onion	Others	Total	Jowar	Wheat	Others	Total	Grape	Sugarcane	Others	Total		
Small	7.04	4.08	1.05	7.79	19.95	7.12	3.62	5.05	15.79	51.73	10.21	2.31	64.26	100.00	
Medium	17.44	3.44	4.24	3.41	28.53	6.88	8.21	3.18	18.27	43.14	6.09	3.96	53.20	100.00	
Large	11.25	2.37	-	2.95	16.57	1.78	4.74	3.54	10.06	53.84	17.74	1.78	73.37	100.00	
Total	10.34	3.70	1.78	6.03	21.85	6.41	4.99	4.37	15.77	49.67	10.01	2.69	62.38	100.00	

Note: In Kharif Season, 'Others' include crops viz. Jowar, Bajra, Tur, Mung, Groundnut, Soybean, Lucerne, Kadwal and Grass. In Rabi Season, 'Others' include crops viz. Maize, Gram, Groundnut, Turmeric, Onion, Vegetables, and Kadwal. Under Perennial crops' 'Others' include crops viz. Betel, Banana, Ber, Chikku, and Pomegranate.

Although all the categories of grape growing farmers showed very high proportion of GCA under grape crop, this proportion was relatively higher for small and large category as against medium category. The area under grape crop as proportion of GCA was estimated at 52 per cent for small category, 43 per cent for medium and 54 per cent for large category with an average of 50 per cent for the average category of grape farmers. In general, the area under perennial crops as proportion of GCA was estimated at 64 per cent for small category, 53 per cent for medium and 73 per cent for large category with an average of 62 per cent for the average category of grape farmers.

The foregoing observations bring us closer to the fact that the cropping pattern of sampled onion farmers differed significantly from sampled grape farmers. While onion crop predominated the cropping pattern of sampled onion farmers during kharif and rabi seasons, the area predominance was significantly high by grape crop for the sampled grape farmers. The average category of onion farmer showed 22 per cent of the net sown area under onion crop in kharif season and 57 per cent in rabi season. The area under onion crop as proportion of GCA was also high and the average category of onion farmers showed 10 per cent of GCA under onion crop in kharif season and 23 per cent of GCA under onion crop in rabi season. As for grape farmers, the average category of farmers showed 50 per cent of their GCA under grape crop. The other crops that predominated the cropping pattern of grape farmers were maize and leafy vegetables in kharif season, jowar and wheat in rabi season, and sugarcane among perennial crops. The sampled grape farmers showed lowest area in rabi season as proportion of GCA.

2.8 Area under Onion and Grape Crops

The present study encompassed onion among vegetables and grapes among fruit crops. Estimates relating to area under onion and grape crops for different categories of sampled onion and grape farmers are brought out in Table 2.11 and Table 12.

Table 2.11: Area under Onion Crop (All Varieties)

Category	Area Under Onion Crop (Hectare)			% Share in Total
	Kharif	Rabi	Total	
Small	33.10	74.23	107.33	66.76
Medium	10.32	18.02	28.34	17.63
Large	5.87	19.23	25.10	15.61
Total	49.29	111.48	160.77	100.00

It could be further noted that all the categories of sampled onion farmers put together showed 160.77 hectares of area under onion crop, which encompassed 49.29 hectares in kharif season and 111.48 hectares in rabi season (Table 2.11). As for various categories of farmers, 67 per cent of total area under onion crop was accounted for by small category, 18 per cent by medium and 16 per cent by large category, showing thereby decline in proportion of area under onion crop with the rise in land holding size of sampled onion farmers (Table 2.11).

As for grape growing farmers, the area under grape crop was estimated at 89.70 hectares for small category, 32.99 hectares for medium and 18.42 hectares for large category with a sum of 141.11 hectares for all the categories grape farmers put together (Table 2.12). The estimates further revealed that about 64 per cent of total area under grape crop was accounted for by small category, 23 per cent by medium and 13 per cent by large category, showing thereby decline in proportion of area under grape crop with the rise in land holding size of sampled grape farmers.

Table 2.12: Area under Grape Crop (All Varieties)

Category	Area Under Grape Crop (Hectare)	% Share in Total
Small	89.70	63.57
Medium	32.99	23.38
Large	18.42	13.05
Total	141.11	100.00

Thus, the estimates showed a decline in proportion of area under onion crop with the rise in land holding size of sampled onion farmers. Similarly, sampled grape farmers also showed a decline in proportion of area under grape crop with the rise in land holding size of sampled grape farmers. The area under onion crop with all the sampled onion farmers put together was estimated at 160.77 hectares. The estimated area under grape crop with all the sampled grape farmers put together was 141.11 hectares.

2.9 Area under Onion and Grape Crops – Variety-wise

The sampled onion and grape farmers were seen to cultivate large number of varieties of onion and grape on their farms. The variety of onion cultivated during kharif and rabi seasons differed across various categories of sampled farmers. However, the sampled onion farmers cultivated some of the varieties during both kharif and rabi seasons. Estimates relating to variety-wise area under onion and grape crops for different categories of onion and grape farmers are provided in Table 2.13 and Table 2.14.

The varieties of onion cultivated by sampled onion farmers during kharif season encompassed Baju 258, Chandwad, Fursungi, Lonand, Mahabij, Malav, N.53, Nashik Lal, Panchganga, and Prema. On the other hand, the major varieties of onion cultivated by sampled onion farmers during rabi season included Bhagwa, Chandwad, Double Pati, Fursungi, Halwa, Lasalgaon, Mahabij, N.53, Nashik Lal, Panchganga, and Sinnor Ghavti. The area allocation under various varieties of onion during kharif season revealed that the average category of sampled onion farmer allocated 43 per cent of the total area under onion crop towards Nashik Lal variety of onion, 36 per cent under Panchganga, 6 per cent under Fursungi, 5 per cent under N 53, 3 per cent under Mahabij, another 3 per cent under Malav, and the remaining 4 per cent under other varieties of onion viz. Baju 258, Chandwad, Lonand and Prema (Table 2.13). In general, all the sampled onion farmers put together allocated 49.29 hectares of area under various varieties of onion during kharif season, which encompassed 80 per cent of area allocation under Nashik Lal and Panchganga varieties of onion alone.

Table 2.13: Area under Onion Crop in Kharif Season – Variety-wise

Category	Variety-wise Area Under Onion Crop (Ha)										Total
	Baju 258	Chandwad	Fursungi	Lonand	Mahabij	Malav	N.53	Nashik Lal	Panchganga	Prema	
Small	0.40	-	2.95	-	-	0.40	2.23	17.57	8.74	0.81	33.10
Medium	-	0.40	-	0.40	-	1.01	-	3.85	4.66	-	10.32
Large	-	-	-	-	1.62	-	-	-	4.25	-	5.87
Total	0.40	0.40	2.95	0.40	1.62	1.42	2.23	21.42	17.64	0.81	49.29
Share in Total Area (%)											
Small	1.21	-	8.91	-	-	1.21	6.74	53.08	26.40	2.45	100.0
Medium	-	3.88	-	3.88	-	9.79	-	37.30	45.15	-	100.0
Large	-	-	-	-	27.60	-	-	-	72.41	-	100.0
Total	0.81	0.81	5.98	0.82	3.29	2.88	4.52	43.46	35.79	1.64	100.0

The proportion of area allocation under Panchganga variety of onion increased sharply with the increase in land holding size of sampled onion farmers, whereas a reverse trend was noticed in terms of area allocation under Nashik Lal variety of onion. The large category of onion farmers allocated 72 per cent of their total onion cropped

area under Panchganga variety and the remaining 28 per cent under Mahabij variety of onion during kharif season. The estimates further revealed that medium category of onion farmers allocated 45 per cent of their total onion cropped area under Panchganga variety, 37 per cent under Nashik Lal, nearly 10 per cent under Malav variety, and the remaining 8 per cent under Chandwad and Lonand varieties of onion during kharif season (Table 2.13). Similarly, small category of farmers allocated about 26 per cent of their total onion cropped area under Panchganga variety, 53 per cent under Nashik Lal, 9 per cent under Fursungi variety, 7 per cent under N 53 variety, and the remaining 5 per cent under Baju 258, Malav, and Prema varieties of onion during kharif season. Thus, the estimates clearly showed that the sampled onion farmers were mainly cultivating Nashik Lal and Panchganga varieties of onion on their farms during kharif season, though several other varieties of onion also found their place in the cropping pattern of farmers.

The sampled onion farmers were seen to cultivate more varieties of onion during rabi season. Not only this, the area allocation under various varieties of onion was much higher during rabi as against kharif season. However, the general trend showed major area allocation under Fursungi and Nashik Lal varieties of onion during rabi season. The average category of sampled onion farmers allocated 60 per cent of their total rabi onion cropped area under Fursungi variety, 19 per cent under Nashik Lal, 5 per cent under Panchganga, about 3 per cent under Sinnor Ghavti variety, 2 per cent under Halwa, and the remaining 5 per cent under other varieties of onion viz. Bhagwa, Chandwad, Double Pati, Lasalgaon, Mahabij, and N 53 (Table 2.13 (a)). In general, all the sampled onion farmers put together allocated 111.48 hectares of area under various varieties of onion during rabi season, which encompassed 85 per cent of area allocation under Fursungi and Nashik Lal varieties of onion alone.

Table 2.13 (a): Area under Onion Crop in Rabi Season – Variety-wise

Category	Variety-wise Area Under Onion Crop (Ha)										Total	
	Bhagwa	Chandwad	Double Pati	Fursungi	Halwa	Lasalgaon	Mahabij	N.53	Nashik Lal	Panchganga	Sinnor Ghavti	
Small	0.61	0.51	0.57	44.67	2.43	1.62	0.81	1.62	17.56	1.62	2.23	74.23
Medium	-	-	-	14.57	-	-	-	-	2.83	-	0.61	18.02
Large	-	-	-	14.37	-	-	-	-	0.81	4.05	-	19.23
Total	0.61	0.51	0.57	73.62	2.43	1.62	0.81	1.62	21.21	5.67	2.83	111.48
Share in Total Area (%)												
Small	0.82	0.68	0.76	60.17	3.27	2.18	1.09	2.18	23.66	2.18	3.00	100.0
Medium	-	-	-	80.90	-	-	-	-	15.73	-	3.37	100.0
Large	-	-	-	74.74	-	-	-	-	4.21	21.05	-	100.0
Total	0.55	0.46	0.51	66.03	2.18	1.45	0.73	1.45	19.02	5.08	2.54	100.0

Table 2.13 (b): Area under Onion Crop in Kharif and Rabi Seasons Combined – Variety-wise

Variety	Area Under Crop Variety (Ha)				Share in Total Area (%)			
	Small	Medium	Large	Total	Small	Medium	Large	Total
Combined Kharif and Rabi Area of Same Variety								
Chandwad	0.51	0.40	-	0.91	0.48	1.41	-	0.57
Fursungi	47.62	14.57	14.37	76.57	44.36	51.43	57.25	47.62
Mahabij	0.81	-	1.62	2.43	0.75	-	6.45	1.51
N.53	3.85	-	-	3.85	3.59	-	-	2.39
Nashik Lal	35.13	6.68	0.81	42.63	32.72	23.58	3.23	26.51
Panchganga	10.36	4.66	8.3	23.31	9.65	16.45	33.07	14.50
Combined Area	98.28	26.31	25.1	149.7	91.55	92.87	100.00	93.10
Kharif Variety-wise Area Under Onion Crop								
Baju 258	0.40	-	-	0.40	0.37	-	-	0.25
Lonand	-	0.40	-	0.40	-	1.41	-	0.25
Malav	0.40	1.01	-	1.42	0.37	3.57	-	0.88
Prema	0.81	-	-	0.81	0.75	-	-	0.50
Kharif Area	1.61	1.41	-	3.03	1.50	4.98	-	1.88
Rabi Variety-wise Area Under Onion Crop								
Bhagwa	0.61	-	-	0.61	0.57	-	-	0.38
Double Pati	0.57	-	-	0.57	0.53	-	-	0.35
Halwa	2.43	-	-	2.43	2.26	-	-	1.51
Lasalgaon	1.62	-	-	1.62	1.51	-	-	1.01
Sinnor Ghavti	2.23	0.61	-	2.83	2.08	2.15	-	1.76
Rabi Area	7.46	0.61	-	8.06	6.95	2.15	-	5.01
Total Onion Area	107.35	28.33	25.10	160.79	100.00	100.00	100.00	100.00

Among various categories, small category of onion farmers allocated 60 per cent of their rabi onion cropped area under Fursungi variety, 24 per cent under Nashik Lal, 3 per cent each under Halwa and Sinnor Ghavti, 2 per cent each under Lasalgaon, N 53 and Panchganga, and the remaining 4 per cent under other varieties viz. Bhagwa, Chandwad, and Double Pati. In case of medium category, the allocation of rabi onion cropped area was noticed to be 81 per cent under Fursungi variety, 16 per cent under Nashik Lal and the remaining 3 per cent under Sinnor Ghavti. Like medium category, large category of onion farmers also cultivated only few varieties of onion during rabi season. The large category of onion farmers allocated 75 per cent of their rabi onion cropped area under Fursungi variety, 21 per cent under Panchganga, and the remaining 4 per cent under Nashik Lal variety of onion.

A critical evaluation of area allocation under various varieties of onion further revealed that the sampled onion farmers allocated much larger area under rabi season as against kharif season. This was mainly due to much longer shelf life of rabi onion as against kharif onion. The onion crop cultivated during rabi season is of much better quality with 5-6 months of shelf life, which lead to much higher prices on offer for rabi onion as against kharif onion. Further, during rabi season, while small category of onion farmers cultivated large number of varieties, medium and large categories of farmers

concentrated only on few varieties of onion with much larger area allocation under Fursungi variety, followed by Panchganga and Nashik Lal variety. Even during kharif season, Panchganga variety of onion was preferred by large farmers, whereas small and medium category of farmers preferred Nashik Lal variety of onion during this season.

Like onion farmers, the sampled grape farmers also cultivated large number of varieties of grape on their farms. The varieties of grapes cultivated by sampled grape farmers encompassed Thompson, Sonaka, Ganesh, Jumbo, Sharad, Nanaheb Purple, Clone 2 and Manik chaman. The area allocation under various varieties of grapes revealed that the average category of sampled grape farmer allocated 68 per cent of the total area under grape crop towards Thomson variety of grapes, 15 per cent under Sonaka, 1 per cent under Ganesh, another 1 per cent under Jumbo, 5 per cent under Sharad, 3 per cent under Clone 2, and 6 per cent under other varieties of grapes viz. Manik chaman and Nanaheb Purple (Table 2.14). In general, Thomson and Sonaka varieties alone accounted for 83 per cent share in total area under grape crop with all the sampled grape farmers put together. The other important varieties of grapes were Sharad and Manik chaman, which accounted for 11 per cent share in total area under grape crop with all the sampled grape farmers put together. Some less important varieties of grapes cultivated by sampled grape farmers were Ganesh, Jumbo, Nanaheb Purple and Clone 2, which together accounted for 6 per cent share in total area under grape crop with all the sampled grape farmers put together.

Table 2.14: Area under Grape Crop – Variety-wise

Category	Variety-wise Area Under Grape Crop (Ha)								Total
	Thomson	Sonaka	Ganesh	Jumbo	Sharad	Nanaheb Purple	Clone 2	Manik chaman	
Small	62.08	16.45	1.21	0.81	3.56	0.61	2.70	2.28	89.70
Medium	22.16	4.66	0.81	-	0.81	-	2.23	2.33	32.99
Large	12.15	-	-	-	3.04	-	-	3.24	18.42
Total	96.38	21.11	2.02	0.81	7.41	0.61	4.93	7.85	141.11
Share in Total Area (%)									
Small	69.21	18.34	1.35	0.90	3.97	0.68	3.01	2.54	100.0
Medium	67.17	14.11	2.45	-	2.45	-	6.75	7.07	100.0
Large	65.94	-	-	-	16.48	-	-	17.58	100.0
Total	68.31	14.96	1.43	0.57	5.25	0.43	3.49	5.56	100.0

Among various categories, small category of onion farmers allocated 69 per cent of their grape cropped area under Thomson variety, 18 per cent under Sonaka, 1 per cent under Ganesh, 1 per cent under Jumbo, 4 per cent under Sharad, 1 per cent under Nanaheb Purple, 3 per cent under Clone 2, and another 3 per cent under Manik chaman. In case of medium category, the allocation of grape cropped area was noticed to be 67 per cent under Thomson, 14 per cent under Sonaka, 3 per cent under Ganesh, another 3 per

cent under Sharad, 7 per cent under Nanasahab Purple and another 7 per cent under Manik chaman (Table 2.14). The large category of farmers cultivated very few varieties of grapes. The large category of grape farmers allocated 66 per cent of their grape cropped area under Thomson variety, 16 per cent under Sharad and the remaining 18 per cent under Manik chaman variety of grapes.

Thus, the estimates relating to variety-wise area under onion and grapes showed large number of varieties of onion and grapes cultivated on the farms belonging to sampled onion and grape farmers. However, the major area allocation was only under few varieties. For instance, the average category of sampled onion farmers allocated 43 per cent of the total kharif onion cropped area under Nashik Lal variety and 36 per cent under Panchganga variety. Similarly, the average category of sampled onion farmers allocated 60 per cent of their total rabi onion cropped area under Fursungi variety and 19 per cent under Nashik Lal variety. In case of grapes, the average category of grape farmers allocated 68 per cent of the total grape cropped area under Thomson variety and 15 per cent under Sonaka variety. Therefore, both onion and grape farmers showed high proportion of area only under couple of varieties.

CHAPTER – III

ECONOMICS OF CULTIVATION OF ONION AND GRAPE CROPS

Having discussed and evaluated socio-economic characteristics, cropping pattern, land utilization pattern, irrigation status, variety-wise area under study crops, etc. of various categories of onion and grape farmers in chapter II, this chapter examines details of value of production, cost of production, and the extent of profit involved in the cultivation of onion and grapes on the sampled farms belonging to various categories of sampled onion and grape farmers. Generally, the extent of profit from any enterprise/crop depends on cost and return structure, which varies across various varieties of crop. The knowledge of cost and return structure is essential to examine economic viability of crop enterprise. Thus, this chapter evaluates area, production, consumption, retention, wastage, cost of production, and profitability analysis for major varieties of onion and grape crops on the sampled farms belonging to onion and grape farmers.

3.1 Production, Consumption and Marketed Surplus

As mentioned in earlier, the major varieties of onion cultivated by sampled onion farmers were Nashik Lal and Panchganga varieties in kharif season, and Fursungi and Nashik Lal varieties in rabi season. The major varieties of grapes cultivated by sampled grape farmers were Thomson and Sonaka variety. The production, consumption and marketed surplus estimates are, therefore, evaluated for these varieties of onion and gapes along with general scenario encompassing all the varieties put together.

The estimates relating to area, production, consumption, quantity retained for future use, wastage, quantity sold along with price for Nasik Lal variety of onion grown during kharif season by various categories of sampled onion farmers are brought out in Table 3.1.1. Similar estimates for Panchganga variety of onion grown during kharif season are brought out in Table 3.1.2. The average scenario in this respect with all the varieties of onion cultivated during kharif season put together is provided in Table 3.1.3. Similarly, the estimates relating to area, production, consumption, quantity retained for future use, wastage, quantity sold along with price for Fursungi variety of onion grown during rabi season by various categories of sampled onion farmers are brought out in Table 3.1.4. Similar estimates for Nasik Lal variety of onion grown during rabi season are brought out in Table 3.1.5. The average scenario in this respect with all the varieties of onion cultivated during rabi season put together is provided in Table 3.1.6. In case of

grapes, the estimates relating to area, production, consumption, quantity retained for future use, wastage, quantity sold along with price for Thomson variety of grapes grown by various categories of sampled grape farmers are brought out in Table 3.1.7. Similar estimates for Sonaka variety of grapes grown are brought out in Table 3.1.8. The average scenario in this respect with all the varieties of grapes is provided in Table 3.1.9. A detailed scenario with respect to area, production, consumption, quantity retained for future use, wastage, quantity sold along with price for all the varieties of onion grown during kharif and rabi season by various categories of sampled onion farmers is provided in Appendix 3 and Appendix 4, respectively, whereas Appendix 5 provides a detailed scenario in this respect for all the varieties of grapes cultivated on the farms belonging to sampled grape farmers.

3.1.1 Kharif Onion – Nashik Lal Variety

The average per farm production of Nasik Lal variety of onion during kharif season was estimated at 69.36 quintals from 0.63 hectare for small category and 92.05 quintals from 0.77 hectare for medium category with an overall average of 72.80 quintals from 0.65 hectare for the average category of onion farmers (Table 3.1.1).

Table 3.1.1: Area, Production, Consumption and Marketed Surplus for Kharif Onion – Nasik Lal Variety
(Per farm)

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	0.63	69.36	0.93	0.73	1.62	66.08	952.61
Medium	0.77	92.05	1.26	0.93	1.62	88.24	971.00
Large	-	-	-	-	-	-	-
Average	0.65	72.80	0.98	0.76	1.62	69.44	955.40

Table 3.1.1 (a): Share in Production for Kharif Onion – Nasik Lal Variety

(Per cent)

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	0.63	100.00	1.34	1.05	2.33	95.28	952.61
Medium	0.77	100.00	1.37	1.01	1.75	95.87	971.00
Large	-	-	-	-	-	-	-
Average	0.65	100.00	1.35	1.05	2.22	95.38	955.40

Table 3.1.1 (b): Area, Production, Consumption and Marketed Surplus for Kharif Onion – Nasik Lal Variety

(Actual)

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	17.57	1934.28	26.00	20.38	45.15	1842.74	952.61
Medium	3.85	460.27	6.31	4.66	8.09	441.21	971.00
Large	-	-	-	-	-	-	-
Total	21.42	2394.55	32.32	25.04	53.24	2283.95	955.40

The average category of sampled onion farmer showed 1.35 per cent of total production of Nasik Lal variety of onion as family consumption, 1.05 per cent as quantity retained for future use, 2.22 per cent as wastage and 95.38 per cent as quantity sold in the market at an average price of Rs.955.40 per quintal. The average per farm area under kharif Nasik Lal variety of onion as well as production, consumption, retention, wastage and sale of produce increased with the increase in land holding size of onion farmers. The average price for the Nasik Lal variety of onion produced during kharif season was noticed to be higher for medium category as against small category of onion farmers. The large category of sampled onion farmers did not cultivate Nasik Lal variety of onion during Kharif season.

3.1.2 Kharif Onion – Panchganga Variety

Panchganga variety of onion was found to be cultivated by all the categories of onion farmers during kharif season. The average per farm production of Panchganga variety of onion during kharif season was estimated at 88.95 quintals from 0.73 hectare for small category, 144.70 quintals from 1.16 hectares for medium category and 181.22 quintals from 1.42 hectares for large category with an overall average of 115.26 quintals from 0.93 hectare for the average category of onion farmers (Table 3.1.2).

**Table 3.1.2: Area, Production, Consumption and Marketed Surplus for Kharif Onion – Panchganga Variety
(Per farm)**

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	0.73	88.95	1.01	0.91	2.14	84.89	907.92
Medium	1.16	144.70	1.50	1.51	2.74	138.95	952.5
Large	1.42	181.22	2.17	1.95	5.23	171.87	841.67
Average	0.93	115.26	1.29	1.20	2.75	110.02	906.84

Table 3.1.2 (a): Share in Production for Kharif Onion – Panchganga Variety

(Per cent)

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	0.73	100.00	1.13	1.02	2.40	95.45	907.92
Medium	1.16	100.00	1.03	1.04	1.89	96.04	952.5
Large	1.42	100.00	1.20	1.08	2.89	94.83	841.67
Average	0.93	100.00	1.12	1.04	2.39	95.45	906.84

**Table 3.1.2 (b): Area, Production, Consumption and Marketed Surplus for Kharif Onion – Panchganga Variety
(Actual)**

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	8.74	1064.34	12.05	10.92	25.59	1015.77	907.92
Medium	4.66	578.79	5.99	6.03	10.95	555.83	952.5
Large	4.25	543.65	6.51	5.86	15.70	515.59	841.67
Total	17.64	2186.78	24.55	22.81	52.24	2087.19	906.84

The average category of sampled onion farmer showed 1.12 per cent of total production of Panchganga variety of onion as family consumption, 1.04 per cent as quantity retained for future use, 2.39 per cent as wastage and 95.45 per cent as quantity sold in the market at an average price of Rs.906.84 per quintal. The average per farm area, production, consumption, retention, wastage and sale of Panchganga variety of onion increased with the increase in land holding size of onion farmers. In case of Panchganga variety of onion, the medium category of sampled farmers received higher price, followed by small and large category.

3.1.3 Kharif Onion – Average of All Varieties

The average per farm area with all the varieties of kharif onion put together was estimated at 0.65 hectare for small category, 0.86 hectare for medium category and 1.47 hectares for the large category with an overall average of 0.74 hectare for the average category of onion farmers. The average per farm production of all the varieties of kharif onion put together was estimated at 75.45 quintals for small category, 105.67 quintals for medium and 179.93 quintals for large category with an overall average of 87.10 quintals for the average category of onion farmers (Table 3.1.3). The average per farm area, production, consumption, retention, wastage and sale of all the varieties of onion put together increased with the increase in land holding size of onion farmers.

**Table 3.1.3: Area, Production, Consumption and Marketed Surplus for Kharif Onion – Avg. All Varieties
(Per farm)**

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	0.65	75.45	0.95	0.80	1.73	71.97	924.57
Medium	0.86	105.67	1.32	1.13	2.09	101.13	945.42
Large	1.47	179.93	2.20	1.97	4.84	170.92	850.00
Average	0.74	87.10	1.09	0.93	1.98	83.10	923.85

Table 3.1.3 (a): Share in Production for Kharif Onion – Avg. All Varieties

(Per cent)

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	0.65	100.00	1.26	1.05	2.29	95.40	924.57
Medium	0.86	100.00	1.25	1.07	1.98	95.70	945.42
Large	1.47	100.00	1.22	1.09	2.69	94.99	850.00
Average	0.74	100.00	1.25	1.06	2.27	95.42	923.85

Table 3.1.3 (b): Area, Production, Consumption and Marketed Surplus for Kharif Onion – Avg. All Varieties

(Actual)

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	33.10	3834.94	48.37	40.30	94.26	3652.00	924.57
Medium	10.32	1267.97	16.28	13.60	17.09	1221.00	945.42
Large	5.87	719.71	8.79	7.90	18.02	685.00	850.00
Total	49.29	5822.62	73.44	61.81	129.37	5558.00	923.85

The average category of sampled onion farmers showed 1.25 per cent of total production of all the varieties of kharif onion put together as family consumption, 1.06 per cent as quantity retained for future use, 2.27 per cent as wastage and 95.42 per cent as quantity sold in the market at an average price of Rs.923.85 per quintal. The average price of kharif onion with all the varieties put together varied from Rs.850.00 per quintal for large category to Rs.945.42 per quintal for medium category. All the categories of sampled farmers showed about 95 per cent of total production of kharif onion as sold in the market as marketed surplus. The wastage of kharif onion as proportion of total production was the highest for large category and lowest for medium category, whereas small category showed marginally higher consumption as proportion of production.

3.1.4 Rabi Onion – Fursungi Variety

Fursungi variety of onion was cultivated by all the categories of sampled onion farmers during rabi season. The average per farm production of Fursungi variety of onion during rabi season was estimated at 147.92 quintals from 0.79 hectare for small category, 172.09 quintals from 0.91 hectare for medium and 356.24 quintals from 1.80 hectares for large category with an overall average of 173.27 quintals from 0.91 hectare for the average category of onion farmers (Table 3.1.4).

**Table 3.1.4: Area, Production, Consumption and Marketed Surplus for Rabi Onion – Fursungi Variety
(Per farm)**

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	0.79	147.92	3.55	2.27	4.35	137.75	1024.12
Medium	0.91	172.09	3.49	3.16	3.60	161.84	1062.97
Large	1.80	356.24	7.79	8.78	5.65	334.02	1047.50
Average	0.91	173.27	3.96	3.09	4.33	161.89	1034.10

Table 3.1.4 (a): Share in Production for Rabi Onion – Fursungi Variety

(Per cent)

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	0.79	100.00	2.40	1.53	2.94	93.13	1024.12
Medium	0.91	100.00	2.03	1.83	2.10	94.04	1062.97
Large	1.80	100.00	2.19	2.46	1.59	93.76	1047.50
Average	0.91	100.00	2.28	1.78	2.50	93.44	1034.10

**Table 3.1.4 (b): Area, Production, Consumption and Marketed Surplus for Rabi Onion – Fursungi Variety
(Actual)**

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	44.67	8364.01	200.57	128.20	246.13	7789.11	1024.12
Medium	14.57	2755.33	55.95	50.56	57.70	2591.13	1062.97
Large	14.37	2843.97	62.22	70.13	45.12	2666.50	1047.50
Total	73.62	13963.31	318.74	248.89	348.95	13046.73	1034.10

The average per farm area, production, consumption, retention, wastage and sale of Fursungi variety of onion increased with the increase in land holding size of onion farmers. The average category of sampled onion farmer showed 2.28 per cent of total production of Fursungi variety of onion as family consumption, 1.78 per cent as quantity retained for future use, 2.50 per cent as wastage and 93.44 per cent as quantity sold in the market at an average price of Rs.1034.10 per quintal. In case of Fursungi variety of onion cultivated during rabi season, the medium category of sampled farmers received higher price, followed by large and small category.

3.1.5 Rabi Onion – Nasik Lal Variety

The Nasik Lal variety of onion was cultivated by sampled onion farmers not only during kharif season but also during rabi season. However, the productivity of Nasik Lal variety of onion was substantially high during rabi as against kharif season, which held true for all the categories of sampled onion farmers. The average per farm production of Nasik Lal variety of onion during rabi season was estimated at 114.02 quintals from 0.68 hectare for small category, 170.26 quintals from 0.94 hectare for medium and 140.05 quintals from 0.81 hectare for large category with an overall average of 120.51 quintals from 0.71 hectare for the average category of onion farmers (Table 3.1.5).

Table 3.1.5: Area, Production, Consumption and Marketed Surplus for Rabi Onion – Nasik Lal Variety
(Per farm)

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	0.68	114.02	2.20	1.82	2.19	107.81	1041.5
Medium	0.94	170.26	2.82	2.25	4.22	160.97	1133.33
Large	0.81	140.05	2.51	3.30	4.19	130.05	1267.5
Average	0.71	120.51	2.27	1.91	2.46	113.87	1058.22

Table 3.1.5 (a): Share in Production for Rabi Onion – Nasik Lal Variety

(Per cent)

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	0.68	100.00	1.93	1.59	1.92	94.56	1041.5
Medium	0.94	100.00	1.66	1.32	2.48	94.54	1133.33
Large	0.81	100.00	1.80	2.36	2.99	92.85	1267.5
Average	0.71	100.00	1.88	1.58	2.04	94.50	1058.22

Table 3.1.5 (b): Area, Production, Consumption and Marketed Surplus for Rabi Onion – Nasik Lal Variety

(Actual)

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	17.56	2944.46	56.72	46.89	56.54	2784.31	1041.5
Medium	2.83	512.60	8.49	6.76	12.71	484.64	1133.33
Large	0.81	140.05	2.51	3.30	4.19	130.05	1267.5
Total	21.21	3597.11	67.72	56.95	73.44	3399.00	1058.22

During rabi season, the average category of sampled onion farmer showed 1.88 per cent of total production of Nasik Lal variety of onion as family consumption, 1.58 per cent as quantity retained for future use, 2.04 per cent as wastage and 94.50 per cent as quantity sold in the market at an average price of Rs.1058.22 per quintal. The price of Nasik Lal variety of onion produced during rabi season increased with the increase in land holding size of sampled farmers. The average per farm area, production, consumption, retention, wastage and marketed surplus of Nasik Lal variety of onion was the highest for medium category, followed by large and small category. In general, during rabi season, wastage as well as retention of Nasik Lal variety of onion as proportion of production increased with the increase in land holding size of sampled farmers, whereas small category showed higher proportion of production as consumption as against large and medium category of farmers. .

3.1.6 Rabi Onion – Average of All Varieties

The average per farm production of all the varieties of rabi onion put together was estimated at 137.87 quintals from 0.76 hectare for small category, 168.86 quintals from 0.90 hectare for medium and 377.02 quintals from 1.92 hectares for large category with an overall average of 161.40 quintals from 0.87 hectare for the average category of onion farmers (Table 3.1.6).

**Table 3.1.6: Area, Production, consumption and Marketed Surplus for Rabi Onion – Avg. All Varieties
(Per farm)**

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	0.76	137.87	3.07	2.29	3.62	128.89	1043.18
Medium	0.90	168.86	3.32	2.99	3.60	158.95	1075.38
Large	1.92	377.02	8.47	8.97	6.35	353.23	1079.75
Average	0.87	161.40	3.53	2.92	3.83	151.12	1051.07

Table 3.1.6 (a): Share in Production for Rabi Onion – Avg. All Varieties

(Per cent)

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	0.76	100.00	2.23	1.66	2.63	93.48	1043.18
Medium	0.90	100.00	1.96	1.77	2.13	94.14	1075.38
Large	1.92	100.00	2.25	2.38	1.68	93.69	1079.75
Average	0.87	100.00	2.19	1.81	2.37	93.63	1051.07

**Table 3.1.6 (b): Area, Production, consumption and Marketed Surplus for Rabi Onion – Avg. All Varieties
(Actual)**

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	74.23	13532.78	301.19	224.23	357.36	12650.00	1043.18
Medium	18.02	3380.93	66.31	59.71	71.96	3182.95	1075.38
Large	19.23	3764.27	84.75	89.70	63.46	3526.37	1079.75
Total	111.48	20677.98	452.25	373.64	492.78	19359.32	1051.07

During rabi season, the average per farm area, production, consumption, retention, wastage and sale of all the varieties of onion put together increased with the increase in land holding size of onion farmers. The average category of sampled onion farmer showed 2.19 per cent of total production of all the varieties of rabi onion as family consumption, 1.81 per cent as quantity retained for future use, 2.37 per cent as wastage and 93.63 per cent as quantity sold in the market at an average price of Rs.1051.07 per quintal. The wastage of rabi onion as proportion of total production decreased with the increase in land holding size of sampled onion farmers. On the other hand, the quantity of rabi onion retained as proportion of production increased with the increase in land holding size of sampled onion farmers. The consumption of rabi onion as proportion of production was the highest for large category and lowest for medium category. In general, all the categories of sampled farmers showed about 94 per cent of total production of rabi onion as sold in the market as marketed surplus. The price of rabi onion with all the varieties put together increased with the increase in land holding size of sampled farmers.

A critical evaluation of average estimates relating to area, production, consumption, retention, wastage, marketed surplus and price for kharif and rabi onion with all the varieties put together showed higher area, production, consumption, retention, wastage, marketed surplus and prices of onion during rabi season as compared to kharif season, which held true for all the categories of sampled onion farmers. However, in general, the consumption, retention and wastage of onion as proportion of production were higher during rabi season as against kharif season. On the other hand, the marketed surplus of onion as proportion of production was marginally higher during kharif season as against rabi season. The longer shelf life and better quality of produce were the major reasons for higher prices on offer for rabi onion as compared to kharif onion. The productivity of rabi onion is also significantly high as against kharif onion. The sampled onion farmers, therefore, allocated higher per farm area under rabi as against kharif onion. In general, the sampled farmers received 14 per cent higher prices for rabi onion as against kharif onion.

3.1.7 Grapes – Thomson Variety

The Thomson variety of grapes was cultivated by all the categories sampled grape farmers. The per farm area under Thomson variety of grapes increased with the increase in land holding size of sampled grape farmers. Even the productivity of Thomson variety of grapes was higher on large farms as against small and medium farms. The average per

farm production of Thomson variety of grapes was estimated at 102.31 quintals from 0.64 hectare for small category, 208.57 quintals from 1.38 hectares for medium and 361.70 quintals from 2.11 hectares for large category with an overall average of 127.93 quintals from 0.81 hectare for the average category of grape farmers (Table 3.1.7).

Table 3.1.7: Area, Production, Consumption and Marketed Surplus for Grapes – Thomson Variety (Per farm)

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	0.64	102.31	0.49	0.36	1.95	99.51	3245.15
Medium	1.38	208.57	1.19	0.68	4.77	201.93	3699.06
Large	2.11	361.70	1.20	1.22	8.29	350.99	3370.00
Average	0.81	127.93	0.62	0.44	2.60	124.27	3312.56

Table 3.1.7 (a): Share in Production for Grapes – Thomson Variety

(Per cent)

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	0.64	100.00	0.48	0.36	1.90	97.26	3245.15
Medium	1.38	100.00	0.57	0.33	2.29	96.81	3699.06
Large	2.11	100.00	0.33	0.34	2.28	97.05	3370.00
Average	0.81	100.00	0.48	0.35	2.04	97.13	3312.56

Table 3.1.7 (b): Area, Production, Consumption and Marketed Surplus for Grapes – Thomson Variety

(Actual)

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	62.08	9924.73	47.80	36.01	189.34	9650.96	3245.15
Medium	22.16	3349.04	19.28	11.08	76.67	3242.01	3699.06
Large	12.15	2082.75	6.80	6.93	47.75	2021.15	3370.00
Total	96.39	15356.52	73.88	54.01	313.77	14914.12	3312.56

The consumption and retention of Thomson variety of grapes as proportion of production was very low. The average category of sampled grape farmers showed 0.48 per cent of total production of Thomson variety of grapes as family consumption, 0.35 per cent as quantity retained for future use, 2.04 per cent as wastage and 97.13 per cent as quantity sold in the market at an average price of Rs.3312.56 per quintal. The average per farm area, production, consumption, retention, wastage and sale of Thomson variety of grapes increased with the increase in land holding size of grape farmers. In case of Thomson variety of grapes, the medium category of sampled farmers received higher price, followed by large and small category. In general, all the categories of sampled grape farmers showed 97 per cent of production of Thompson variety of grapes as sold in the market as marketed surplus.

3.1.8 Grapes – Sonaka Variety

The Sonaka variety of grapes was found to be cultivated by small and medium categories of sampled farmers. Although per farm area under Sonaka variety of grapes

was by and large same for small and medium category, the small category showed much higher productivity of Sonaka variety of grapes on their farms as against medium category. The average per farm production of Sonaka variety of grapes was estimated at 87.39 quintals from 0.57 hectare for small category and 65.01 quintals from 0.56 hectare for medium category with an overall average of 82.55 quintals from 0.57 hectare for the average category of grape farmers (Table 3.1.8).

Table 3.1.8: Area, Production, Consumption and Marketed Surplus for Grapes – Sonaka Variety
(Per farm)

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	0.57	87.39	0.45	0.24	2.14	84.56	3427.24
Medium	0.56	65.01	0.50	0.18	1.38	62.95	4205
Large	-	-	-	-	-	-	-
Average	0.57	82.55	0.46	0.23	1.97	79.89	3595.40

Table 3.1.8 (a): Share in Production for Grapes – Sonaka Variety

(Per cent)

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	0.57	100.00	0.52	0.27	2.45	96.76	3427.24
Medium	0.56	100.00	0.77	0.28	2.13	96.82	4205
Large	-	-	-	-	-	-	-
Average	0.57	100.00	0.56	0.27	2.39	96.78	3595.40

Table 3.1.8 (b): Area, Production, Consumption and Marketed Surplus for Grapes – Sonaka Variety
(Actual)

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	16.45	2521.95	12.83	6.75	61.69	2440.69	3427.24
Medium	4.66	541.03	4.10	1.44	11.56	523.92	4205
Large	-	-	-	-	-	-	-
Total	21.11	3062.98	16.93	8.19	73.24	2964.61	3595.40

The consumption and wastage of Sonaka variety of grapes as proportion of production were marginally higher as against Thomson variety of grapes. On the other hand, retention of Sonaka variety of grapes as proportion of production was marginally lower as against Thomson variety of grapes. The average category of sampled grape farmers showed 0.56 per cent of total production of Sonaka variety of grapes as family consumption, 0.27 per cent as quantity retained for future use, 2.39 per cent as wastage and 96.78 per cent as quantity sold in the market at an average price of Rs.3595.40 per quintal. Both small and medium categories of grape farmers showed 97 per cent of production of Sonaka variety of grapes as sold in the market as marketed surplus. However, medium category showed much higher price received for Sonaka variety of grapes as against small farmers. The medium category of farmers also showed lower proportion of wastage of Sonaka variety of grapes as against small farmers.

3.1.9 Grapes – Average of All Varieties

Although the average per farm area with all the varieties of grapes put together increased with the increase in land holding size of sampled grape farmers, the productivity of grapes was the highest for large category and lowest for medium category. The average per farm production of all the varieties of grapes put together was estimated at 93.84 quintals from 0.60 hectare for small category, 139.41 quintals from 0.96 hectare for medium and 331.80 quintals from 2.10 hectares for large category with an overall average of 111.92 quintals from 0.73 hectare for the average category of grape farmers (Table 3.1.6). The estimates also showed that the average per farm production, consumption, retention and marketed surplus of grapes increased with the increase in land holding size of sampled grape farmers.

Table 3.1.9: Area, Production, Consumption and Marketed Surplus for Grapes – Avg. All Varieties
(Per farm)

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	0.60	93.84	0.45	0.33	1.89	91.17	3336.91
Medium	0.96	139.41	0.82	0.50	3.11	134.98	3788.68
Large	2.10	331.80	1.27	1.30	7.69	321.54	3290.00
Average	0.73	111.92	0.55	0.40	2.35	108.62	3415.36

Note: Figures in parentheses are percentages to total production

Table 3.1.9 (a): Share in Production for Grapes – Avg. All Varieties

(Per cent)

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	0.60	100.00	0.48	0.35	2.02	97.15	3336.91
Medium	0.96	100.00	0.58	0.36	2.23	96.83	3788.68
Large	2.10	100.00	0.38	0.39	2.32	96.91	3290.00
Average	0.73	100.00	0.49	0.36	2.10	97.05	3415.36

Table 3.1.9 (b): Area, Production, Consumption and Marketed Surplus for Grapes – Avg. All Varieties

(Actual)

Category	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	89.70	13990.27	66.67	49.17	291.30	13583.12	3336.91
Medium	32.99	4639.71	27.54	17.42	101.18	4493.57	3788.68
Large	18.42	2946.09	11.18	11.94	67.68	2855.28	3290.00
Total	141.11	21576.07	105.40	78.54	460.16	20931.97	3415.36

The consumption and retention of grapes as proportion production was quite low among sampled grape farmers. On the other hand, the wastage of grapes as proportion of production was relatively high, which increased with the increase in land holding size of sampled grape farmers. The average category of sampled grape farmer showed 0.49 per cent of total production of all the varieties of grapes put together as family consumption,

0.36 per cent as quantity retained for future use, 2.10 per cent as wastage and 97.05 per cent as quantity sold in the market at an average price of Rs.3415.36 per quintal. Relatively higher wastage of grapes on large farms could be attributed to lack of management and supervision due to larger size of orchards. The average price of grapes with all the varieties put together was the highest for medium and lowest for large category. In fact, there was wide variation in grape prices, which varied from Rs.2300 per quintal for Manik variety in case of medium farmers to as much as to Rs.5000 per quintal for Jumbo variety produced by small category of farmers (Appendix 5). In general, all the categories of sampled farmers showed about 97 per cent of total production of grapes with all the varieties put together as quantity sold in the market as marketed surplus.

3.2 Cost of Cultivation

It has been widely argued that in the typical rural setting, maximization of net return is the ultimate goal of the producer which largely depends on the cost structure to be followed by such enterprising household. However, maximization of profit requires a balance between the increase in the production and various components of costs. In fact, it is the structure of cost and returns that is most crucial not only for the producers but also for the consumers and policy makers since these two key elements provide an effective linkage between the producer and consumers for rational fixation of prices of the produce. It is, therefore, essential to evaluate various components of costs involved in raising onion crop in the state of Maharashtra. Further, as the cost of production varies under different conditions, a close analysis and scrutiny of some of influencing factors becomes an imperative need. The estimates of various items of costs, both operational/input and marketing, in the production of onion crop during both kharif and rabi seasons are evaluated in this section.

As for grapes, a noteworthy feature is that the orchard comes in the bearing stage only in the third year of establishment and that in the first two years the orchardists have to make a fair amount of investment towards the upbringing of plants of the non-bearing orchard. The bearing orchard, on the other hand, passes through different stages of production such as increasing, constant and decreasing phase. The maintenance cost also differs significantly among these different categories of bearing orchards. However, in general, the gross maintenance cost of bearing orchards is classified into two major components such as input and marketing costs.

It is to be noted that the major varieties of onion cultivated by sampled onion farmers were Nashik Lal and Panchganga varieties in kharif season, and Fursungi and

Nashik Lal varieties in rabi season. The major varieties of grapes cultivated by sampled grape farmers were Thomson and Sonaka variety. The input and marketing costs are, therefore, evaluated for these varieties of onion and gapes along with general scenario encompassing all the varieties put together.

The estimates relating to cost of cultivation for Nasik Lal variety of onion grown during kharif season by various categories of sampled onion farmers are brought out in Table 3.2.1. Similar estimates for Panchganga variety of onion grown during kharif season are brought out in Table 3.2.2. The average scenario in this respect with all the varieties of onion cultivated during kharif season put together is provided in Table 3.2.3. Similarly, the estimates relating to cost of cultivation for Fursungi variety of onion grown during rabi season by various categories of sampled onion farmers are brought out in Table 3.2.4. Similar estimates for Nasik Lal variety of onion grown during rabi season are brought out in Table 3.2.5. The average scenario in this respect with all the varieties of onion cultivated during rabi season put together is provided in Table 3.2.6. In case of grapes, the estimates relating to cost of cultivation for Thomson variety of grapes grown by various categories of sampled grape farmers are brought out in Table 3.2.7. Similar estimates for Sonaka variety of grapes grown are brought out in Table 3.2.8. The average scenario in this respect with all the varieties of grapes is provided in Table 3.2.9. A detailed scenario with respect to cost of cultivation for all the varieties of onion grown during kharif and rabi season by various categories of sampled onion farmers is provided in Appendix 6 and Appendix 7, respectively, whereas Appendix 8 provides a detailed scenario in this respect for all the varieties of grapes cultivated on the farms belonging to sampled grape farmers.

3.2.1 Kharif Onion – Nashik Lal Variety

The estimates relating to cost of cultivation for Nasik Lal variety of onion cultivated during kharif season showed considerable difference in cost of cultivation for small and medium category of sampled farmers. The per hectare cost of cultivation for Nasik Lal variety of onion grown during kharif season was estimated at Rs.52,029 for small category and Rs.72,955 for medium category with an average of Rs.55,324 for the average category of sampled farmer (Table 3.2.1). The small category of sampled onion farmer was noticed to spend 74 per cent of the total cost on inputs and the remaining 26 per cent on marketing activities. The expenditure of medium category of sampled onion farmer was much higher on inputs as against small category of sampled onion farmer. The medium category of sampled onion farmer was seen to spend 80 per cent of total cost

on inputs and the remaining 20 per cent on various marketing activities. The input cost encompassed expenses towards seed, manure and fertilizer, labour cost, machine hiring charges, and expenses towards pesticides/weedicides. The marketing cost encompassed expenses towards, storage, transportation, market fee, cess, purchase of bags, etc.

Table 3.2.1: Cost of Cultivation for Kharif Onion – Nasik Lal Variety

(Rs. Per Ha)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	6321	9831	-	6852
Irrigation	3870	3952	-	3884
Manure and fertilizer	8522	13881	-	9334
Labour (bullock + human)	7534	12646	-	8308
Machinery hire charges	8114	10473	-	8586
Pesticides/weedicides	4045	7706	-	4599
I) Total input cost	38404	58490	-	41563
II) Storage, transportation and marketing cost				
Storage	-	-	-	-
Transportation cost	4423	5380	-	4562
Marketing & other (market fee, cess, etc.)	6547	6336	-	6522
Other cost (Bags & misc.)	2655	2750	-	2676
II) Total storage, transportation and marketing cost	13625	14465	-	13761
Percent share in total cost (I + II)				
I) Total Input Cost	38404	58490	-	41563
II) Total storage, transportation and marketing cost	13625	14465	-	13761
Productivity (qtls./ha)	110	120	-	112
Total Cost (I + II)	52029	72955	-	55324

Table 3.2.1 (a): Share of Input and Marketing Cost in Cost of Cultivation for Kharif Onion – Nasik Lal Variety
(Per cent)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	16.46	16.81	-	16.49
Irrigation	10.08	6.76	-	9.34
Manure and fertilizer	22.19	23.73	-	22.46
Labour (bullock + human)	19.62	21.62	-	19.99
Machinery hire charges	21.13	17.91	-	20.66
Pesticides/weedicides	10.53	13.18	-	11.0
I) Total input cost	100	100	-	100
II) Storage, transportation and marketing cost				
Storage	-	-	-	-
Transportation cost	32.46	37.19	-	33.15
Marketing & other (market fee, cess, etc.)	48.05	43.8	-	47.4
Other cost (Bags & misc.)	19.49	19.01	-	19.45
II) Total storage, transportation and marketing cost	100	100	-	100
Percent share in total cost (I + II)				
I) Total Input Cost	73.81	80.17	-	75.13
II) Total storage, transportation and marketing cost	26.19	19.83	-	24.87
Productivity (qtls./ha)	110	120	-	112
Total Cost (I + II)	100	100	-	100

Table 3.2.1 (b): Cost of Cultivation for Kharif Onion – Nasik Lal Variety

(in Rupees)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	111058	37848	-	148906
Irrigation	67993	15215	-	83208
Manure and fertilizer	149730	53443	-	203173
Labour (bullock + human)	132370	48689	-	181059
Machinery hire charges	142569	40320	-	182889
Pesticides/weedicides	71067	29670	-	100737
I) Total input cost	674787	225185	-	899972
II) Storage, transportation and marketing cost				
Storage	-	-	-	-
Transportation cost	77732	20712	-	98444
Marketing & other (market fee, cess, etc.)	115014	24394	-	139408
Other cost (Bags & misc.)	46655	10586	-	57241
II) Total storage, transportation and marketing cost	239402	55691	-	295093
Percent share in total cost (I + II)				
I) Total Input Cost	674787	225185	-	899972
II) Total storage, transportation and marketing cost	239402	55691	-	295093
Production (qtls.)	1934	460	-	2395
Total Cost (I + II)	914189	280876	-	1195065

The expenditure towards application of seed, manure and fertilizer, labour, and machine hiring accounted for the major share in total input cost in case of both small and medium category of onion farmers. The major expenditure of marketing cost was noticed to be on marketing charges, followed by transportation and other cost.

In general, the per hectare cost of cultivation for Nasik Lal variety of onion for the average category of sampled farmer was estimated at Rs.55,324, which encompassed 75 per cent expenses towards inputs and 25 per cent towards various marketing activities. The average category of sampled onion farmer was seen to spend 16 per cent of the total input cost on seed, 9 per cent on irrigation, 22 per cent on manure and fertilizer, 20 per cent on labour, 21 per cent on machine hiring and 11 per cent on pesticides/weedicides. Further, the average category of sampled onion farmer was found to spend 33 per cent of total marketing cost on transportation, 47 per cent towards various market charges, and 19 per cent towards other miscellaneous marketing related activities. The kharif onion did not show any storage cost due to low shelf life of the crop.

3.2.2 Kharif Onion – Panchganga Variety

The Panchganga variety of onion cultivated during kharif season showed higher per hectare cost of production as compared to Nasik Lal variety of onion. Various categories of sampled onion farmers also showed wide variation in per hectare cost of cultivation for Panchganga variety of onion. The per hectare cost of cultivation for Panchganga variety of onion grown during kharif season was estimated at Rs.62,134 for

small category, Rs.76,512 for medium and Rs.66,587 for the large category with an average of Rs.65,912 for the average category of sampled farmer (Table 3.2.2).

A break-up of cost of cultivation further revealed that 71 per cent of the total cost of cultivation was spent on input cost and 29 per cent on marketing cost for small category, 80 per cent on input cost and 20 per cent on marketing cost for medium category and large category with an average of 75 per cent on input cost and 25 per cent on marketing cost for the average category of farmer.

Table 3.2.2: Cost of Cultivation for Kharif Onion – Panchganga Variety

(Rs. Per Ha)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	8233	9880	8563	8632
Irrigation	4487	4117	3870	4323
Manure and fertilizer	9139	15438	9468	10517
Labour (bullock + human)	7369	12041	11527	9009
Machinery hire charges	10312	11733	12350	10933
Pesticides/weedicides	4528	8336	7410	5785
I) Total input cost	44069	61544	53187	49199
II) Storage, transportation and marketing cost				
Storage	-	-	-	-
Transportation cost	5483	4054	3616	4902
Marketing & other (market fee, cess, etc.)	8286	7172	6381	7766
Other cost (Bags & misc.)	4295	3742	3403	4045
II) Total storage, transportation and marketing cost	18065	14968	13400	16713
Percent share in total cost (I + II)				
I) Total Input Cost	44069	61544	53187	49199
II) Total storage, transportation and marketing cost	18065	14968	13400	16713
Productivity (qtls./ha)	122	125	128	123
Total Cost (I + II)	62134	76512	66587	65912

Table 3.2.2 (a): Share of Input and Marketing Cost in Cost of Cultivation for Kharif Onion – Panchganga Variety

(Per cent)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	18.68	16.05	16.1	17.55
Irrigation	10.18	6.69	7.28	8.79
Manure and fertilizer	20.74	25.08	17.8	21.38
Labour (bullock + human)	16.72	19.57	21.67	18.31
Machinery hire charges	23.4	19.06	23.22	22.22
Pesticides/weedicides	10.28	13.55	13.93	11.76
I) Total input cost	100	100	100	100
II) Storage, transportation and marketing cost				
Storage	-	-	-	-
Transportation cost	30.35	27.08	26.98	29.33
Marketing & other (market fee, cess, etc.)	45.87	47.92	47.62	46.46
Other cost (Bags & misc.)	23.78	25.00	25.40	(24.20)
II) Total storage, transportation and marketing cost	100	100	100	100
Percent share in total cost (I + II)				
I) Total Input Cost	70.93	80.44	79.88	74.64
II) Total storage, transportation and marketing cost	29.07	19.56	20.12	25.36
Productivity (qtls./ha)	122	125	128	123
Total Cost (I + II)	100	100	100	100

Table 3.2.2 (b): Cost of Cultivation for Kharif Onion – Panchganga Variety

(in Rupees)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	71917	45843	36477	154237
Irrigation	39195	19101	16485	74781
Manure and fertilizer	79828	71630	40335	191793
Labour (bullock + human)	64365	55871	49104	169340
Machinery hire charges	90076	54439	52611	197126
Pesticides/weedicides	39554	38680	31567	109801
I) Total input cost	384934	285565	226578	897077
II) Storage, transportation and marketing cost				
Storage	-	-	-	-
Transportation cost	47897	18810	15403	82110
Marketing & other (market fee, cess, etc.)	72377	33279	27182	132838
Other cost (Bags & misc.)	37519	17363	14497	69379
II) Total storage, transportation and marketing cost	157792	69452	57083	284328
Percent share in total cost (I + II)				
I) Total Input Cost	384934	285565	226578	897077
II) Total storage, transportation and marketing cost	157792	69452	57083	284328
Production (qtls.)	1064	579	544	2187
Total Cost (I + II)	542726	355017	283661	1181405

Various categories of sampled onion farmers showed major expenditure towards seed, manure and fertilizer, labour and machine hiring among input cost and towards various marketing charges and transportation among marketing cost. The average category of sampled onion farmer showed Rs.65,912 as per hectare cost of cultivation for Panchganga variety of onion, which encompassed 75 per cent expenses towards inputs and 25 per cent towards various marketing activities. A break-up of input cost revealed that the average category of sampled onion farmer had spent 18 per cent of input cost on seed, 9 per cent on irrigation, 21 per cent on manure and fertilizer, 18 per cent on labour, 22 per cent on machine hiring and 12 per cent on pesticides/weedicides. A break-up of marketing cost showed that the average category of sampled onion farmer had spent 30 per cent of total marketing cost on transportation, 46 per cent towards various market charges, and 24 per cent towards other miscellaneous marketing related activities.

3.2.3 Kharif Onion – Average of All Varieties

Although sampled onion farmers cultivated large number of varieties of onion on their farm, the average per hectare cost of cultivation with all the varieties of kharif onion put together was estimated at Rs.57,737 for small category, Rs.72,835 for medium and Rs.64,834 for the large category with an overall average of Rs.60,939 for the average category of onion farmers (Table 3.2.3). Thus, per hectare cost of cultivation for onion crop grown during kharif season was 26.15 per cent higher for medium category and 12.29 per cent higher for large category as against small category.

A break-up of cost of cultivation with all the varieties of kharif onion put together further revealed that 73 per cent of the total cost of cultivation was spent on input cost and 27 per cent on marketing cost for small category, 79 per cent on input cost and 21 per cent on marketing cost for medium category and 80 per cent on input cost and 20 per cent on marketing cost for large category with an overall average of 75 per cent on input cost and 25 per cent on marketing cost for the average category of sampled farmer. Thus, expenditure on input as proportion of total cost varied from 73 per cent to 80 per cent.

Table 3.2.3: Cost of Cultivation for Kharif Onion – Avg. All Varieties

(Rs. Per Ha)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	7383	9345	8583	7806
Irrigation	3968	3817	3674	3922
Manure and fertilizer	8902	13194	9880	9729
Labour (bullock + human)	8098	12885	11424	9154
Machinery hire charges	9237	10950	11115	9713
Pesticides/weedicides	4686	7287	7101	5296
I) Total input cost	42272	57478	51777	45619
II) Storage, transportation and marketing cost				
Storage	-	-	-	-
Transportation cost	4826	4742	3686	4750
Marketing & other (market fee, cess, etc.)	7552	7371	6144	7446
Other cost (Bags & misc.)	3087	3244	3226	3124
II) Total storage, transportation and marketing cost	15464	15357	13056	15320
Percent share in total cost (I + II)				
I) Total Input Cost	42272	57478	51777	45619
II) Total storage, transportation and marketing cost	15464	15357	13056	15320
Productivity (qtls./ha)	116	124	123	118
Total Cost (I + II)	57737	72835	64834	60939

Table 3.2.3 (a): Share of Input and Marketing Cost in Cost of Cultivation for Kharif Onion – Avg. All Varieties
(Per cent)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	17.46	16.26	16.58	17.11
Irrigation	9.39	6.64	7.10	8.60
Manure and fertilizer	21.06	22.95	19.08	21.33
Labour (bullock + human)	19.16	22.42	22.06	20.07
Machinery hire charges	21.85	19.05	21.47	21.29
Pesticides/weedicides	11.08	12.68	13.71	11.61
I) Total input cost	100	100	100	100
II) Storage, transportation and marketing cost				
Storage	-	-	-	-
Transportation cost	31.21	30.88	28.24	31.01
Marketing & other (market fee, cess, etc.)	48.83	48.00	47.06	48.61
Other cost (Bags & misc.)	19.96	21.12	24.71	20.39
II) Total storage, transportation and marketing cost	100	100	100	100
Percent share in total cost (I + II)				
I) Total Input Cost	73.22	78.92	79.86	74.86
II) Total storage, transportation and marketing cost	26.78	21.08	20.14	25.14
Productivity (qtls./ha)	116	124	123	118
Total Cost (I + II)	100	100	100	100

Table 3.2.3 (b): Cost of Cultivation for Kharif Onion – Avg. All Varieties

(in Rupees)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	244318	98350	50482	393150
Irrigation	131878	40227	21487	193592
Manure and fertilizer	293433	141968	58341	493742
Labour (bullock + human)	266904	128630	67110	462644
Machinery hire charges	301296	115137	64615	481048
Pesticides/weedicides	155072	77588	41570	274230
I) Total input cost	1392900	601900	303605	2298405
II) Storage, transportation and marketing cost				
Storage	-	-	-	-
Transportation cost	160657	47515	21565	229737
Marketing & other (market fee, cess, etc.)	251620	73844	35985	361449
Other cost (Bags & misc.)	101394	33401	18899	153694
II) Total storage, transportation and marketing cost	513671	154760	76450	744880
Percent share in total cost (I + II)				
I) Total Input Cost	1392901	601900	303605	2298406
II) Total storage, transportation and marketing cost	513671	154760	76450	744880
Production (qtls.)	3834.94	1267.97	719.71	5822.62
Total Cost (I + II)	1906572	756660	380055	3043286

The major expenditure of sampled onion farmers was noticed to be incurred on seed, manure and fertilizer, labour and machine hiring among inputs and on various marketing charges and transportation among marketing activities. The miscellaneous expenses mainly included purchase of bags.

In general, the per hectare cost of cultivation with all the varieties of onion cultivated during kharif season put together was estimated at Rs.60,939 for the average category of sampled onion farmer, which encompassed 75 per cent expenses towards inputs and 25 per cent towards various marketing activities. The average category of sampled onion farmer was seen to spend 17 per cent of the total input cost on seed, 9 per cent on irrigation, 21 per cent on manure and fertilizer, 20 per cent on labour, 21 per cent on machine hiring and 12 per cent on pesticides/weedicides. Further, the average category of sampled onion farmer was found to spend 31 per cent of total marketing cost on transportation, 49 per cent towards various market charges, and 20 per cent towards other miscellaneous marketing related activities. The sampled farmers did not show any storage cost for kharif onion due to low shelf life of the crop.

3.2.4 Rabi Onion – Fursungi Variety

The Fursungi was one of the major varieties cultivated by sampled onion farmers during rabi season. The per hectare cost of cultivation for Fursungi variety of onion grown during rabi season was estimated at Rs.1,17,333 for small category, Rs.1,23,016 for medium and Rs.1,38,575 for the large category with an average of Rs.1,20,768 for the

average category of sampled farmer (Table 3.2.4). Thus, per hectare cost of cultivation for Fursungi variety of onion increased with the increase in land holding size of farmers.

A critical evaluation further showed that 79 per cent of the total cost of cultivation was spent on input cost and 21 per cent on marketing cost for small category, 74 per cent on input cost and 26 per cent on marketing cost for medium category, 76 per cent on input cost and 24 per cent on marketing cost for large category with an average of 77 per cent on input cost and 23 per cent on marketing cost for the average category of farmer.

Table 3.2.4: Cost of Cultivation for Rabi Onion – Fursungi Variety

(Rs. Per Ha)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	10004	11347	10312	10299
Irrigation	8441	9046	8182	8535
Manure and fertilizer	23849	23125	26645	23982
Labour (bullock + human)	26260	27556	32573	27140
Machinery hire charges	15882	12659	17444	15399
Pesticides/weedicides	7930	7827	10343	8148
I) Total input cost	92365	91560	105500	93503
II) Storage, transportation and marketing cost				
Storage	4465	5106	6135	4726
Transportation cost	5935	7860	7298	6468
Marketing & other (market fee, cess, etc.)	7136	10980	11726	8386
Other cost (Bags & misc.)	7431	7510	7916	7494
II) Total storage, transportation and marketing cost	24968	31456	33076	27265
Percent share in total cost (I + II)				
I) Total Input Cost	92365	91560	105500	93503
II) Total storage, transportation and marketing cost	24968	31456	33076	27265
Productivity (qtls./ha)	187	189	198	189
Total Cost (I + II)	117333	123016	138575	120768

Table 3.2.4 (a): Share of Input and Marketing Cost in Cost of Cultivation for Rabi Onion – Fursungi Variety

(Per cent)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	10.83	12.39	9.77	11.01
Irrigation	9.14	9.88	7.76	9.13
Manure and fertilizer	25.82	25.26	25.26	25.65
Labour (bullock + human)	28.43	30.10	30.87	29.03
Machinery hire charges	17.19	13.83	16.53	16.47
Pesticides/weedicides	8.59	8.55	9.80	8.71
I) Total input cost	100	100	100	100
II) Storage, transportation and marketing cost				
Storage	17.88	16.23	18.55	17.33
Transportation cost	23.77	24.99	22.06	23.72
Marketing & other (market fee, cess, etc.)	28.58	34.91	35.45	30.76
Other cost (Bags & misc.)	29.76	23.87	23.93	27.49
II) Total storage, transportation and marketing cost	100	100	100	100
Percent share in total cost (I + II)				
I) Total Input Cost	78.72	74.43	76.13	77.42
II) Total storage, transportation and marketing cost	21.28	25.57	23.87	22.58
Productivity (qtls./ha)	187	189	198	189
Total Cost (I + II)	100	100	100	100

Table 3.2.4 (b): Cost of Cultivation for Rabi Onion – Fursungi Variety

(in Rupees)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	446856	165319	148187	760363
Irrigation	377074	131806	117574	626454
Manure and fertilizer	1065312	336937	382890	1785140
Labour (bullock + human)	1173034	401490	468076	2042600
Machinery hire charges	709434	184438	250676	1144548
Pesticides/weedicides	354233	114037	148631	616900
I) Total input cost	4125945	1334026	1516033	6976004
II) Storage, transportation and marketing cost				
Storage	199453	74394	88162	362009
Transportation cost	265128	114518	104871	484517
Marketing & other (market fee, cess, etc.)	318785	159981	168504	647270
Other cost (Bags & misc.)	331942	109426	113758	555126
II) Total storage, transportation and marketing cost	1115308	458319	475295	2048922
Percent share in total cost (I + II)				
I) Total Input Cost	4125945	1334026	1516033	6976004
II) Total storage, transportation and marketing cost	1115308	458319	475295	2048922
Production (qtls.)	8364	2755	2844	13963
Total Cost (I + II)	5241253	1792345	1991328	9024926

Among various inputs, major expenditure of sampled onion farmers was seen to be on manure and fertilizer, labour and machine hiring. Although transportation, various marketing charges and other miscellaneous expenses accounted for the major share in total marketing cost, the storage cost was also found to have reasonable share in marketing cost.

A further evaluation of Table 3.2.4 showed that the per hectare cost of cultivation for Fursungi variety of onion for the average category of sampled farmer was Rs.1,20,768, which encompassed 77 per cent share towards input cost and 23 per cent share towards marketing cost. The average category of sampled onion farmers cultivating Fursungi variety of onion was found to spend 11 per cent of total input cost on seed, 9 per cent on irrigation, 26 per cent on manure and fertilizer, 29 per cent on labour, 16 per cent on machine hiring and 9 per cent on pesticides/weedicides. A break-up of marketing cost showed that the average category of sampled onion farmer was spending 17 per cent of total marketing cost on storage, 24 per cent on transportation, 31 per cent towards various market charges, and 27 per cent towards other miscellaneous marketing related activities.

3.2.5 Rabi Onion – Nasik Lal Variety

The sampled onion farmers were also found to cultivate Nasik Lal variety of onion during rabi season. However, the per hectare cost of cultivation of Nasik Lal variety of onion was much higher during rabi as against kharif season. The per hectare

cost of cultivation for Nasik Lal variety of onion grown during rabi season was estimated at Rs.98,500 for small category, Rs.1,01,764 for medium and Rs.1,10,854 for the large category with an average of Rs.99,126 for the average category of sampled farmer (Table 3.2.5). Thus, the sampled farmers showed an increase in per hectare cost of cultivation with the increase in their land holding size.

Table 3.2.5: Cost of Cultivation for Rabi Onion – Nasik Lal Variety

Particulars	Farm Category				(Rs. Per Ha)
	Small	Medium	Large	Average	
I) Input Costs					
Seed	9125	8810	9880	9118	
Irrigation	8626	8233	7410	8546	
Manure and fertilizer	19760	19760	17290	19678	
Labour (bullock + human)	20748	17949	27170	20682	
Machinery hire charges	10355	12350	16055	10745	
Pesticides/weedicides	6460	8398	9880	6768	
I) Total input cost	75074	75500	87685	75537	
II) Storage, transportation and marketing cost					
Storage	4810	4830	3458	4745	
Transportation cost	5856	7547	4495	5973	
Marketing & other (market fee, cess, etc.)	6617	8151	10028	6875	
Other cost (Bags & misc.)	6144	5736	5187	5997	
II) Total storage, transportation and marketing cost	23426	26264	23169	23589	
Percent share in total cost (I + II)					
I) Total Input Cost	75074	75500	87685	75537	
II) Total storage, transportation and marketing cost	23426	26264	23169	23589	
Productivity (qtls./ha)	168	181	173	169	
Total Cost (I + II)	98500	101764	110854	99126	

Table 3.2.5 (a): Share of Input and Marketing Cost in Cost of Cultivation for Rabi Onion – Nasik Lal Variety
(Per cent)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	12.150	11.67	11.27	12.07
Irrigation	11.49	10.90	8.45	11.31
Manure and fertilizer	26.32	26.17	19.72	26.05
Labour (bullock + human)	27.64	23.77	30.99	27.38
Machinery hire charges	13.79	16.36	18.31	14.22
Pesticides/weedicides	8.60	11.12	11.27	8.96
I) Total input cost	100	100	100	100
II) Storage, transportation and marketing cost				
Storage	20.53	18.39	14.93	20.12
Transportation cost	25.00	28.74	19.40	25.32
Marketing & other (market fee, cess, etc.)	28.25	31.03	43.28	29.14
Other cost (Bags & misc.)	26.23	21.84	22.39	25.42
II) Total storage, transportation and marketing cost	100	100	100	100
Percent share in total cost (I + II)				
I) Total Input Cost	76.22	74.19	79.10	76.20
II) Total storage, transportation and marketing cost	23.78	25.81	20.90	23.80
Productivity (qtls./ha)	168	181	173	169
Total Cost (I + II)	100	100	100	100

Table 3.2.5 (b): Cost of Cultivation for Rabi Onion – Nasik Lal Variety

(in Rupees)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	160231	24931	8003	193165
Irrigation	151473	23300	6002	180775
Manure and fertilizer	346986	55921	14005	416911
Labour (bullock + human)	364335	50795	22008	437137
Machinery hire charges	181834	34951	13005	229789
Pesticides/weedicides	113438	23766	8003	145207
I) Total input cost	1318295	213664	71025	1602984
II) Storage, transportation and marketing cost				
Storage	84457	13670	2801	100928
Transportation cost	102827	21359	3641	127826
Marketing & other (market fee, cess, etc.)	116189	23067	8123	147380
Other cost (Bags & misc.)	107890	16233	4201	128324
II) Total storage, transportation and marketing cost	411363	74328	18767	504458
Percent share in total cost (I + II)				
I) Total Input Cost	1318295	213664	71025	1602984
II) Total storage, transportation and marketing cost	411363	74328	18767	504458
Production (qtls.)	2944	513	140	3597
Total Cost (I + II)	1729658	287992	89791	2107442

A break-up of cost of cultivation further showed that 76 per cent of the total cost of cultivation was spent on input cost and 24 per cent on marketing cost for small category, 74 per cent on input cost and 26 per cent on marketing cost for medium category, 79 per cent on input cost and 21 per cent on marketing cost for large category with an average of 76 per cent on input cost and 24 per cent on marketing cost for the average category of farmer. The expenditure on manure and fertilizer, labour and machine hiring accounted for major share in input cost. Further, transportation cost, various marketing charges and other miscellaneous expenses accounted for 80 per cent share in total marketing cost in case of Nasik Lal variety of onion cultivated during rabi season. The remaining 20 of marketing cost was accounted for by storage cost.

The average category of sampled onion farmer showed Rs.99,126 as per hectare cost of cultivation for Nasik Lal variety of onion cultivated during rabi season, which encompassed 76 per cent expenses towards inputs and 24 per cent towards various marketing activities. A break-up of input cost further showed that the average category of sampled onion farmer was spending 12 per cent of total input cost on seed, 11 per cent on irrigation, 26 per cent on manure and fertilizer, 27 per cent on labour, 14 per cent on machine hiring and 9 per cent on pesticides/weedicides. A break-up of marketing cost revealed that the average category of sampled onion farmer was spending 20 per cent of total marketing cost on storage, 25 per cent on transportation, 29 per cent towards various market charges, and 25 per cent towards other miscellaneous marketing related activities.

3.2.6 Rabi Onion – Average of All Varieties

The number of varieties of onion cultivated during rabi season was larger as against kharif season. The higher shelf life and better prices on offer were the major reasons for large number of varieties of onion cultivated during rabi season. The average per hectare cost of cultivation with all the varieties of rabi onion put together was estimated at Rs.1,14,496 for small category, Rs.1,22,286 for medium and Rs.1,34,392 for the large category with an overall average of Rs.1,15,907 for the average category of onion farmers (Table 3.2.6). These estimates clearly showed a rise in per hectare cost of cultivation with the rise in land holding size of onion farmers. Further, per hectare cost of cultivation of rabi onion with all the varieties put together was 6.80 per cent higher for medium category and 17.38 per cent higher for large category as against small category.

A critical evaluation of cost of cultivation with all the varieties of rabi onion put together further showed that 79 per cent of the total cost of cultivation was spent on input cost and 21 per cent on marketing cost for small category, 73 per cent on input cost and 27 per cent on marketing cost for medium category and 76 per cent on input cost and 24 per cent on marketing cost for large category with an overall average of 77 per cent on input cost and 23 per cent on marketing cost for the average category of sampled farmer. Thus, expenditure on input as proportion of total cost varied from 73 per cent for medium category to 79 per cent for small category. The expenditure on marketing as proportion of total cost varied from 21 per cent for small category to 27 per cent medium category.

Table 3.2.6: Cost of Cultivation for Rabi Onion – Avg. All Varieties

(Rs. Per Ha)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	10088	10954	10226	10072
Irrigation	9433	8966	8275	9269
Manure and fertilizer	22536	22452	24774	22698
Labour (bullock + human)	24968	25849	31122	25586
Machinery hire charges	15486	12844	17414	14256
Pesticides/weedicides	7511	8567	10498	7783
I) Total input cost	90021	89632	102307	89664
II) Storage, transportation and marketing cost				
Storage	4130	5866	5911	4468
Transportation cost	6075	8299	6840	6471
Marketing & other (market fee, cess, etc.)	7378	10858	11732	8238
Other cost (Bags & misc.)	6892	7630	7600	7067
II) Total storage, transportation and marketing cost	24475	32654	32084	26243
Percent share in total cost (I + II)				
I) Total Input Cost	90021	89632	102307	89664
II) Total storage, transportation and marketing cost	24475	32654	32084	26243
Productivity (qtls./ha)	181	188	195	183
Total Cost (I + II)	114496	122286	134392	115907

**Table 3.2.6 (a): Share of Input and Marketing Cost in Cost of Cultivation for Rabi Onion – Avg. All Varieties
(Per cent)**

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	11.21	12.22	10.00	11.23
Irrigation	10.48	10.00	8.09	10.34
Manure and fertilizer	25.03	25.05	24.22	25.31
Labour (bullock + human)	27.74	28.84	30.42	28.54
Machinery hire charges	17.20	14.33	17.02	15.90
Pesticides/weedicides	8.34	9.56	10.26	8.68
I) Total input cost	100	100	100	100
II) Storage, transportation and marketing cost				
Storage	16.87	17.96	18.42	17.03
Transportation cost	24.82	25.42	21.32	24.66
Marketing & other (market fee, cess, etc.)	30.15	33.25	36.57	31.39
Other cost (Bags & misc.)	28.16	23.37	23.69	26.93
II) Total storage, transportation and marketing cost	100	100	100	100
Percent share in total cost (I + II)				
I) Total Input Cost	78.62	73.30	76.13	77.36
II) Total storage, transportation and marketing cost	21.38	26.70	23.87	22.64
Productivity (qtls./ha)	181	188	195	183
Total Cost (I + II)	100	100	100	100

Table 3.2.6 (b): Cost of Cultivation for Rabi Onion – Avg. All Varieties

(in Rupees)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	733963	197031	196204	1127198
Irrigation	706589	161133	163590	1031312
Manure and fertilizer	1687427	404911	466920	2559258
Labour (bullock + human)	1862204	465845	585117	2913166
Machinery hire charges	1072247	229935	338706	1640888
Pesticides/weedicides	555928	145336	206651	907915
I) Total input cost	6618358	1604192	1957188	10179737
II) Storage, transportation and marketing cost				
Storage	313794	92018	122174	527986
Transportation cost	451457	141527	131920	724904
Marketing & other (market fee, cess, etc.)	547193	187003	231247	965443
Other cost (Bags & misc.)	514096	130179	149170	793445
II) Total storage, transportation and marketing cost	1826540	550727	634511	3011778
Percent share in total cost (I + II)				
I) Total Input Cost	6618358	1604191	1957188	10179737
II) Total storage, transportation and marketing cost	1826540	550727	634511	3011778
Production (qtls.)	13532.78	3380.93	3764.27	20677.98
Total Cost (I + II)	8444898	2154918	2591699	13191515

One of the important features of cost of cultivation was that all the varieties of onion cultivated during rabi season showed much higher per hectare cost of cultivation during rabi season as against kharif season. However, it is to be noted that the productivity of various varieties of onion cultivated during rabi season was also much higher as compared to kharif season. Even the prices of onion cultivated during rabi season were higher as against kharif onion. Therefore, sampled farmers devoted much larger area under rabi as against kharif onion.

In case of rabi onion, per hectare cost of cultivation with all the varieties of onion put together was estimated at Rs.1,15,907 for the average category of sampled onion farmer, which encompassed 77 per cent expenses towards inputs and 23 per cent towards various marketing activities. The average category of sampled onion farmer was seen to spend 11 per cent of the total input cost on seed, 10 per cent on irrigation, 25 per cent on manure and fertilizer, 29 per cent on labour, 15 per cent on machine hiring and 9 per cent on pesticides/weedicides. A further break-up showed that the average category of sampled onion farmer was spending 17 per cent of total marketing cost on storage, 25 per cent on transportation, 31 per cent towards various market charges, and 27 per cent towards other miscellaneous marketing activities. The estimates further revealed that the major expenditure of input cost was on manure and fertilizer, labour and machine hiring.

Thus, the cost of cultivation of onion on sampled farms differed significantly during kharif and rabi season. While the average per hectare cost of cultivation for the average category of sampled farmer with all the varieties put together was estimated at Rs.60,939 in Kharif season, the similar estimate in rabi season stood at Rs.1,15,907, showing thereby 90.20 per cent higher per hectare cost of cultivation of onion during rabi as against kharif season. The higher per hectare cost of cultivation during rabi season was mainly due to higher amount of expenditure incurred on inputs and to some extent on marketing activities. The cultivation of rabi onion was noticed to be more profitable due to higher productivity, better quality, longer shelf life and much higher prices. Therefore, sampled farmers mainly concentrated on rabi onion as against kharif onion. The number of varieties of onion cultivated during rabi season was also much higher as against kharif season. The sampled farmers were incurring higher expenditure on rabi onion in the hope of getting better returns.

3.2.7 Grapes – Thomson Variety

Thompson Seedless grapes are perhaps the most widely eaten and one of the older varieties of seedless grapes. Thompson Seedless grapes have a subtle sweet flavour, with a firm and juicy texture. The availability of Thomson grapes is seen during the period from January to May. Majority of the sampled grape farmers were seen to cultivate Thomson variety of grapes on their farm. The per hectare cost of cultivation for Thomson variety of grapes was estimated at Rs.2,59,161 for small category, Rs.2,76,496 for medium category and Rs.2,81,066 for the large category with an average of Rs.2,62,446 for the average category of sampled farmer (Table 3.2.7). Thus, the sampled grape

farmers cultivating Thomson variety of grapes showed an increase in per hectare cost of cultivation with the increase in their land holding size.

Table 3.2.7: Cost of Cultivation for Grapes – Thomson Variety

(Rs. Per Ha)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	-	-	-	-
Irrigation	30292	15129	14573	27546
Manure and fertilizer	46987	70241	50388	50312
Labour (bullock + human)	55729	52024	68172	55754
Machinery hire charges	42762	33654	19760	40533
Pesticides/weedicides	48422	70549	64220	52123
Any other cost (specify)	27497	26511	56810	28635
I) Total input cost	251689	268108	273923	254905
II) Storage, transportation and marketing cost				
Storage	-	-	-	-
Transportation cost	7472	8388	7143	7541
Marketing & other (market fee, cess, etc.)	-	-	-	-
Other cost (Bags & misc.)	-	-	-	-
II) Total storage, transportation and marketing cost	7472	8388	7143	7541
Percent share in total cost (I + II)				
I) Total Input Cost	251689	268108	273923	254905
II) Total storage, transportation and marketing cost	7472	8388	7143	7542
Productivity (qtls./ha)	159.87	151.13	171.42	159.07
Total Cost (I + II)	259161	276496	281066	262446

Note: (1) Any other cost includes cost of Gibberellic acid (GA3) for dipping grape bunches to increase berry size, and annual repair and maintenance charges for grape garden infrastructure.

(2) The cost of seed for grape orchards is not available

(3) Transportation cost includes cost of transportation of grapes from farm to road, including plucking expenses for grapes

(4) There is no storage cost for grapes. Marketing fee and other charges are borne by the buyer who brings trucks and crates for the collection of grapes

Table 3.2.7 (a): Share of Input and Marketing Cost in Cost of Cultivation for Grapes – Thomson Variety

(Per cent)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	-	-	-	-
Irrigation	12.04	5.64	5.32	10.81
Manure and fertilizer	18.67	26.20	18.39	19.74
Labour (bullock + human)	22.14	19.40	24.89	21.87
Machinery hire charges	16.99	12.55	7.21	15.9
Pesticides/weedicides	19.24	26.31	23.44	20.45
Any other cost (specify)	10.92	9.89	20.74	11.23
I) Total input cost	100	100	100	100
II) Storage, transportation and marketing cost				
Storage	-	-	-	-
Transportation cost	100	100	100	100
Marketing & other (market fee, cess, etc.)	-	-	-	-
Other cost (Bags & misc.)	-	-	-	-
II) Total storage, transportation and marketing cost	100	100	100	100
Percent share in total cost (I + II)				
I) Total Input Cost	97.12	96.97	97.46	97.13
II) Total storage, transportation and marketing cost	2.88	3.03	2.54	2.87
Productivity (qtls./ha)	159.87	151.13	171.42	159.07
Total Cost (I + II)	100	100	100	100

Table 3.2.7 (b): Cost of Cultivation for Grapes – Thomson Variety

(in Rupees)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	-	-	-	-
Irrigation	1880515	335253	177062	2392830
Manure and fertilizer	2916928	1556532	612214	5085674
Labour (bullock + human)	3459680	1152860	828290	5440830
Machinery hire charges	2654657	745767	240084	3640508
Pesticides/weedicides	3006056	1563374	780273	5349703
Any other cost (specify)	1707015	587491	690242	2984748
I) Total input cost	15624850	5941278	3328164	24894292
II) Storage, transportation and marketing cost				
Storage	-	-	-	-
Transportation cost	463851	185872	86781	736504
Marketing & other (market fee, cess, etc.)	-	-	-	-
Other cost (Bags & misc.)	-	-	-	-
II) Total storage, transportation and marketing cost	463851	185872	86781	736504
Percent share in total cost (I + II)				
I) Total Input Cost	15624850	5941278	3328164	24894292
II) Total storage, transportation and marketing cost	463851	185872	86781	736504
Production (qtls.)	9925	3349	2083	15357
Total Cost (I + II)	16088701	6127150	3414945	25630796

A critical evaluation of cost of cultivation further showed that 97 per cent of the total cost of cultivation of Thomson variety of grapes was spent on input cost and only 3 per cent on marketing cost. This held true for all the categories sampled grape farmers cultivating Thomson variety of grapes. It is to be noted that sampled grape farmers did not store grape and, therefore, there was no storage cost. The grape farmers incurred transportation cost only in terms of transportation of grapes from field to road, which also included plucking expenses for grapes. Generally, buyers bring trucks for the collection of grapes and park their truck on the road near the field. The buyers also bring crates for the collection of grapes, which are loaded on the trucks parked near the road. Therefore, there was no market fee or charges borne by the sampled grape farmers.

The average category of sampled grape farmer showed Rs.2,62,446 as per hectare cost of cultivation for Thomson variety of grapes, which encompassed 97 per cent expenses towards inputs and 3 per cent towards various marketing activities. A break-up of input cost further showed that the average category of sampled grape farmer was spending 11 per cent of total input cost on irrigation, 20 per cent on manure and fertilizer, 22 per cent on labour, 16 per cent on machine hiring, 22 per cent on pesticides/weedicides, and 11 per cent towards other inputs. It is to be noted that none of the sampled grape farmers could reveal details regarding cost of seed since the grape orchards were in different stages of production, and most of the farmers created grape

garden infrastructure several years ago. Further, the other input cost in case of grape gardens included cost of Gibberellic acid (GA3) for dipping grape bunches to increase berry size, and annual repair and maintenance charges for grape garden infrastructure.

3.2.8 Grapes – Sonaka Variety

Sonaka Seedless is a Bud-sport of Thompson Seedless grapes with elongated berries. These account for the second largest grape variety exports from India. The availability of Sonaka variety of grapes is noticed during the period from mid-January to mid-April. The estimates relating to cost of cultivation for Sonaka variety of grapes grown by various categories of sampled grape farmers are brought out in Table 3.2.8.

The per hectare cost of cultivation for Sonaka variety of grapes was estimated at Rs.2,51,046 for small category and Rs.2,43,363 for medium category with an average of Rs.2,49,840 for the average category of sampled farmer (Table 3.2.8). Thus, per hectare cost of cultivation for Sonaka variety of grapes was 3.15 per cent higher for small as against medium category.

The cost of cultivation estimates for Sonaka variety of grapes further showed that 98 per cent of the total cost of cultivation was spent on input cost and 2 per cent on marketing cost for small category, and 97 per cent on input cost and 3 per cent on marketing cost for medium category, with an average of 98 per cent on input cost and 2 per cent on marketing cost for the average category of farmer.

Table 3.2.8: Cost of Cultivation for Grapes – Sonaka Variety

(Rs. Per Ha)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	-	-	-	-
Irrigation	31556	14048	-	27771
Manure and fertilizer	48719	59897	-	51136
Labour (bullock + human)	49144	39983	-	47164
Machinery hire charges	37646	39211	-	37985
Pesticides/weedicides	56640	57119	-	56743
Any other cost (specify)	22877	26817	-	23862
I) Total input cost	246582	237075	-	244661
II) Storage, transportation and marketing cost				
Storage	-	-	-	-
Transportation cost	4464	6288	-	5179
Marketing & other (market fee, cess, etc.)	-	-	-	-
Other cost (Bags & misc.)	-	-	-	-
II) Total storage, transportation and marketing cost	4464	6288	-	5179
Percent share in total cost (I + II)				
I) Total Input Cost	246582	237075	-	244661
II) Total storage, transportation and marketing cost	4464	6288	-	5179
Productivity (qtls./ha)	153.31	116.09	-	145.26
Total Cost (I + II)	251046	243363	-	249840

Note: As in Table 3.2.7

**Table 3.2.8 (a): Share of Input and Marketing Cost in Cost of Cultivation for Grapes – Sonaka Variety
(Per cent)**

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	-	-	-	-
Irrigation	12.80	5.93	-	11.35
Manure and fertilizer	19.76	25.27	-	20.90
Labour (bullock + human)	19.93	16.87	-	19.28
Machinery hire charges	15.27	16.54	-	15.53
Pesticides/weedicides	22.97	24.09	-	23.19
Any other cost (specify)	9.28	11.31	-	9.75
I) Total input cost	100	100	-	100
II) Storage, transportation and marketing cost				
Storage	-	-	-	-
Transportation cost	100	100	-	100
Marketing & other (market fee, cess, etc.)	-	-	-	-
Other cost (Bags & misc.)	-	-	-	-
II) Total storage, transportation and marketing cost	100	100	-	100
Percent share in total cost (I + II)				
I) Total Input Cost	98.22	97.42	-	97.93
II) Total storage, transportation and marketing cost	1.78	2.58	-	2.07
Productivity (qtls./ha)	153.31	116.09	-	145.26
Total Cost (I + II)	100	100	-	100

Table 3.2.8 (b): Cost of Cultivation for Grapes – Sonaka Variety

(in Rupees)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	-	-	-	-
Irrigation	519102	65464	-	584566
Manure and fertilizer	801421	279122	-	1080543
Labour (bullock + human)	808427	186321	-	994748
Machinery hire charges	619280	182724	-	802004
Pesticides/weedicides	931722	266173	-	1197895
Any other cost (specify)	376325	124968	-	501293
I) Total input cost	4056278	1104774	-	5161052
II) Storage, transportation and marketing cost				
Storage	-	-	-	-
Transportation cost	73433	29303	-	102736
Marketing & other (market fee, cess, etc.)	-	-	-	-
Other cost (Bags & misc.)	-	-	-	-
II) Total storage, transportation and marketing cost	73433	29303	-	102736
Percent share in total cost (I + II)				
I) Total Input Cost	4056278	1104774	-	5161052
II) Total storage, transportation and marketing cost	73433	29303	-	102736
Production (qtls.)	2522	541	-	3063
Total Cost (I + II)	4129711	1134077	-	5263789

Among various inputs, major expenditure of sampled grape farmers was seen to be on manure and fertilizer, labour, machine hiring and pesticides/weedicides. The Sonaka variety of grapes also did not show any storage cost, market fee/charges and other cost in marketing activity.

A further evaluation of Table 3.2.8 showed that the per hectare cost of cultivation for Sonaka variety of grapes for the average category of sampled farmer was Rs.2,49,840, which encompassed 98 per cent share towards input cost and 2 per cent share towards marketing cost. The average category of sampled grape farmers cultivating Sonaka variety of grapes was found to spend 11 per cent of total input cost on irrigation, 21 per cent on manure and fertilizer, 19 per cent on labour, 16 per cent on machine hiring, 23 per cent on pesticides/weedicides, and 10 per cent on other inputs. The other input cost included cost of Gibberellic acid (GA3) for dipping grape bunches to increase berry size, and annual repair and maintenance charges for grape garden infrastructure.

3.2.9 Grapes – Average of All Varieties

The sampled grape farmers cultivated large number of varieties of grapes on their farm like Clone 2, Ganesh, Jumbo, Manik, Nanaheb Purple, Sharad, Sonaka and Thomson. The per hectare cost of cultivation of all the varieties of grapes for various categories of sampled grape farmers was estimated, which differed significantly across various varieties and land holding size of grape farmers. These estimates are brought out in Appendix 8. However, since the focus of the study is on major varieties of grapes cultivated by sampled grape farmers, the discussion relating to cost of cultivation revolves around Thomson variety and Sonaka variety, and the average of all varieties of grapes put together. The estimates relating to per hectare cost of cultivation for various categories grape farmers with all the varieties put together are brought out in Table 3.2.9.

Table 3.2.9: Cost of Cultivation for Grapes – Avg. All Varieties

(Rs. Per Ha)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	-	-	-	-
Irrigation	30226	14856	14357	26825
Manure and fertilizer	48889	58771	49091	50657
Labour (bullock + human)	52948	48565	55884	52290
Machinery hire charges	40084	35815	19143	38447
Pesticides/weedicides	49632	59135	51561	51404
Any other cost (specify)	27653	24409	39520	27840
I) Total input cost	249431	241551	229556	247464
II) Storage, transportation and marketing cost				
Storage	-	-	-	-
Transportation cost	6648	5750	7064	6806
Marketing & other (market fee, cess, etc.)	-	-	-	-
Other cost (Bags & misc.)	-	-	-	-
II) Total storage, transportation and marketing cost	6648	5750	7064	6806
Percent share in total cost (I + II)				
I) Total Input Cost	249431	241551	229556	247464
II) Total storage, transportation and marketing cost	6648	5750	7064	6806
Productivity (qtls./ha)	155.95	140.64	159.94	153.39
Total Cost (I + II)	256079	247301	236620	254270

**Table 3.2.9 (a): Share of Input and Marketing Cost in Cost of Cultivation for Grapes – Avg. All Varieties
(Per cent)**

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	-	-	-	-
Irrigation	12.12	6.15	6.25	10.84
Manure and fertilizer	19.60	24.33	21.39	20.47
Labour (bullock + human)	21.23	20.11	24.34	21.13
Machinery hire charges	16.07	14.83	8.34	15.54
Pesticides/weedicides	19.90	24.48	22.46	20.77
Any other cost (specify)	11.09	10.11	17.22	11.25
I) Total input cost	100	100	100	100
II) Storage, transportation and marketing cost				
Storage	-	-	-	-
Transportation cost	100	100	100	100
Marketing & other (market fee, cess, etc.)	-	-	-	-
Other cost (Bags & misc.)	-	-	-	-
II) Total storage, transportation and marketing cost	100	100	100	100
Percent share in total cost (I + II)				
I) Total Input Cost	97.40	97.68	97.01	97.32
II) Total storage, transportation and marketing cost	2.60	2.32	2.99	2.68
Productivity (qtls./ha)	155.95	140.64	159.94	153.39
Total Cost (I + II)	100	100	100	100

Note: As in Table 3.2.7

Table 3.2.9 (b): Cost of Cultivation for Grapes – Avg. All Varieties

(in Rupees)

Particulars	Farm Category			
	Small	Medium	Large	Average
I) Input Costs				
Seed	-	-	-	-
Irrigation	2711549	490111	264454	3466114
Manure and fertilizer	4385870	1938874	904261	7229005
Labour (bullock + human)	4749922	1602147	1029379	7381448
Machinery hire charges	3595902	1181539	352605	5130046
Pesticides/weedicides	4452494	1950857	949758	7353109
Any other cost (specify)	2480739	805254	727958	4013952
I) Total input cost	22376477	7968783	4228415	34573673
II) Storage, transportation and marketing cost				
Storage	-	-	-	-
Transportation cost	596400	189682	130119	916201
Marketing & other (market fee, cess, etc.)	-	-	-	-
Other cost (Bags & misc.)	-	-	-	-
II) Total storage, transportation and marketing cost	596400	189682	130119	916201
Percent share in total cost (I + II)				
I) Total Input Cost	22376477	7968783	4228415	34573673
II) Total storage, transportation and marketing cost	596400	189682	130119	916201
Productivity (qtls./ha)	13990.27	4639.71	2946.09	21576.09
Total Cost (I + II)	22972877	8158464	4358534	35489874

The average per hectare cost of cultivation with all the varieties of grapes put together was estimated at Rs.2,56,079 for small category, Rs.2,47,301 for medium and Rs.2,36,620 for the large category with an overall average of Rs.2,54,270 for the average category of grape farmers (Table 3.2.9). Thus, there was a decrease in per hectare cost of

cultivation of grapes with the increase in land holding size of sampled grape farmers. The per hectare cost of cultivation for grapes with all the varieties put together was 3.43 per cent lower for medium category and 7.60 per cent lower for large category as against small category of grape farmers.

A further evaluation of cost of cultivation with all the varieties of grapes put together showed that 97 per cent of the total cost of cultivation of grapes was spent on input cost and 3 per cent on marketing cost for small category, 98 per cent on input cost and 2 per cent on marketing cost for medium category and 97 per cent on input cost and 3 per cent on marketing cost for large category with an overall average of 97 per cent on input cost and 3 per cent on marketing cost for the average category of sampled farmer. Thus, expenditure on input as proportion of total cost was as high as 97 per cent for various categories of sampled grape farmers. The lower marketing cost as proportion of total cost was due to the fact that grape farmers did not incur any storage cost, market fee/charges and other cost involved in marketing activity. The grape farmers incurred only transportation cost from farm to road, which also included plucking expenses for grapes. The buyers brought their own vehicle for the collection of produce. Therefore, there was no market fee or charges borne by the sampled grape farmers.

The sampled grape farmers also showed wide variations in terms of proportion of various items of input cost to total input cost with all the varieties of grapes put together. The expenditure on irrigation as proportion of total input cost varied from 6 per cent for medium and large category to 12 per cent small category. The expenditure on manure and fertilizer as proportion of total input cost varied from 20 per cent for small category to 24 per cent for medium category. Similarly, the machine hiring charges as proportion of total input cost varied from 8 per cent for large category to 16 per cent for small category. The labour expenses as proportion of total input cost varied from 20 per cent for medium category to 24 per cent for large category. The expenses towards pesticides/weedicides as proportion of total input cost varied from 20 per cent for small category to 24 per cent for medium category. The expenses towards other input cost as proportion of total input cost varied from 10 per cent for medium category to 17 per cent for large category.

In general, the per hectare cost of cultivation with all the varieties of grapes put together was estimated at Rs.2,54,270 for the average category of sampled grape farmer, which included 97 per cent expenses on inputs and 3 per cent on various marketing activities. The average category of sampled grape farmer was seen to spend 11 per cent of the total input cost on irrigation, 20 per cent on manure and fertilizer, 21 per cent on

labour, 16 per cent on machine hiring, 21 per cent on pesticides/weedicides, and 11 per cent on other inputs. The other input cost included cost of Gibberellic acid (GA3) for dipping grape bunches to increase berry size, and annual repair and maintenance charges for grape garden infrastructure. The seed cost estimates for sampled grape farmers are not presented since they could not reveal seed cost due mainly to the fact that the infrastructure for grape gardens was enacted many years ago, which resulted in non availability of information on seed cost with the grape farmers.

3.3 Profitability Analysis

The profitability of any enterprise depends on rational and judicious utilization of resources, apart from productivity, quality and prices of produce. The profitability for the same crop grown in different region varies due to variation in quality of produce and market infrastructure facility available for the disposal of produce, which greatly influence price of produce. This section, therefore, attempts to evaluate the extent of profit involved in the cultivation of onion and grapes on the sampled farms belonging to various categories of farmers in Maharashtra.

The major varieties of onion cultivated by sampled onion farmers were Nashik Lal and Panchganga varieties in kharif season, and Fursungi and Nashik Lal varieties in rabi season. The major varieties of grapes cultivated by sampled grape farmers were Thomson and Sonaka varieties. The profitability analysis is, therefore, performed for these varieties of onion and gapes along with general scenario encompassing all the varieties put together.

The estimates relating to the extent of profit involved in the cultivation of Nasik Lal variety of onion grown during kharif season by various categories of sampled onion farmers are brought out in Table 3.3.1. Similar estimates for Panchganga variety of onion grown during kharif season are brought out in Table 3.3.2. The average scenario in this respect with all the varieties of onion cultivated during kharif season put together is provided in Table 3.3.3. Similarly, the estimates relating to the extent of profit involved in the cultivation of Fursungi variety of onion grown during rabi season by various categories of sampled onion farmers are brought out in Table 3.3.4. Similar estimates for Nasik Lal variety of onion grown during rabi season are brought out in Table 3.3.5. The average scenario in this respect with all the varieties of onion cultivated during rabi season put together is provided in Table 3.3.6. In case of grapes, the estimates relating to the extent of profit involved in the cultivation of Thomson variety of grapes grown by various categories of sampled grape farmers are brought out in Table 3.3.7. Similar

estimates for Sonaka variety of grapes grown are brought out in Table 3.3.8. The average scenario in this respect with all the varieties of grapes is provided in Table 3.3.9. A detailed scenario with respect to the extent of profit involved in the cultivation of all the varieties of onion grown during kharif and rabi seasons by various categories of sampled onion farmers is provided in Appendix 9 and Appendix 10, respectively, whereas Appendix 11 provides a detailed scenario in this respect for all the varieties of grapes cultivated on the farms belonging to sampled grape farmers.

3.3.1 Kharif Onion – Nashik Lal Variety

The estimates relating to gross as well as net returns over variable cost (ROVC) for Nasik Lal variety of onion cultivated during kharif season by various categories of sampled onion farmers are brought out in Table 3.3.1, which also shows estimates relating to total area, production, and value of marketed surplus on total sample farms.

Table 3.3.1: Profitability of Kharif Onion – Nasik Lal Variety

(Rs. On Total Sample Farms)

Particulars	Farm Category			
	Small	Medium	Large	Total/Overall
Area ha	17.57	3.85	-	21.42
Production (qtl)	1934	460	-	2395
Price Received on Sale (Rs./qtl)	953	971	-	955
Returns (Rs.)				
Gross Return	1842723	446912	-	2287834
Cost (Rs.)				
Input Cost	674787	225185	-	899972
Marketing cost	239402	55691	-	295094
Total variable costs	914190	280876	-	1195066
ROVC	928534	166036	-	1092768
Total variable cost (Rs./ha)	52029	72955	-	55790
Gross returns (Rs./ha)	104874	116081	-	106804
ROVC (Rs./ha)	52845	43126	-	51014
Total variable cost (Rs./ qtl)	473	610	-	499
Gross returns (Rs./qtl)	953	971	-	955
ROVC (Rs./qtl)	480	361	-	456
Quantity sold (Qtls)	1843	441	-	2284
Value of marketed surplus	1755661	428452	-	2184113

The per hectare gross return for Nasik Lal variety of onion grown during kharif season was estimated at Rs.1,04,874 for small category and Rs.1,16,081 for medium category with an average of Rs.1,06,804 for the average category of sampled farmer (Table 3.3.1). This showed 10.69 per cent higher per hectare gross return for medium category as against small category of farmers cultivating Nasik Lal variety of onion during kharif season. However, since the medium category of sampled farmer showed higher per hectare cost of cultivation, per hectare net return over variable cost (ROVC)

was lower for medium category as against small category. The per hectare ROVC for Nasik Lal variety of onion was estimated at Rs.52,845 for small category and Rs.43,126 for medium category with an average of Rs.51,014 for the average category of farmer. The per quintal ROVC for Nasik Lal variety of onion was estimated at Rs.480 for small category and Rs.361 for medium category with an average of Rs.456 for the average category of farmer. In general, the average category of sampled onion farmer generated 91.38 per cent per quintal net returns over variable cost in the cultivation of Nasik Lal variety of onion during kharif season.

3.3.2 Kharif Onion – Panchganga Variety

The Panchganga variety of onion cultivated during kharif season showed higher per hectare gross return as compared to Nasik Lal variety of onion. However, per hectare cost of cultivation was proportionately higher for Panchganga variety of onion. As a result, per hectare ROVC for Panchganga variety of onion was lower as against Nasik Lal variety of onion. The per hectare gross return for Panchganga variety of onion cultivated during kharif season was estimated at Rs.1,10,630 for small category, Rs.1,18,815 for medium category and Rs.1,07,414 for the large category with an average of Rs.1,12,452 for the average category of sampled farmer (Table 3.3.2).

Table 3.3.2: Profitability of Kharif Onion – Panchganga Variety

(Rs. On Total Sample Farms)

Particulars	Farm Category			
	Small	Medium	Large	Total/Overall
Area ha	8.73	4.64	4.26	17.63
Production (qtl)	1064	579	544	2187
Price Received on Sale (Rs./qtl)	908	953	842	907
Returns (Rs.)				
Gross Return	966356	551279	457571	1983063
Cost (Rs.)				
Input Cost	384934	285565	226578	897077
Marketing cost	157792	69452	57083	284328
Total variable costs	542726	355017	283661	1181405
ROVC	423630	196261	173910	801659
Total variable cost (Rs./ha)	62134	76512	66587	66993
Gross returns (Rs./ha)	110630	118815	107414	112452
ROVC (Rs./ha)	48499	42298	40824	45459
Total variable cost (Rs./ qtl)	510	613	522	540
Gross returns (Rs./qtl)	908	953	842	907
ROVC (Rs./qtl)	398	339	320	367
Quantity sold (Qtls)	1016	556	515.59	2087
Value of marketed surplus	922316	529468	433955	1885738

The per hectare ROVC for Panchganga variety of onion was estimated at Rs.48,499 for small category, Rs.42,298 for medium category and Rs.40,824 for the large category with an average of Rs.45,459 for the average category of farmer. Thus, the per

hectare ROVC for Panchganga variety of onion cultivated during kharif season declined with the increase in land holding size of sampled onion farmers. The per quintal ROVC for Panchganga variety of onion was estimated at Rs.398 for small category, Rs.339 for medium category and Rs.320 for large category with an average of Rs.367 for the average category of farmer. The average category of sampled onion farmer generated 67.96 per cent per quintal net returns over per quintal variable cost in the cultivation of Panchganga variety of onion during kharif season. The higher per quintal cost of cultivation and relatively lower prices led to lower per quintal ROVC in case of Panchganga variety of onion as against Nasik Lal variety of onion.

3.3.3 Kharif Onion – Average of All Varieties

The average per hectare gross return with all the varieties of onion grown during kharif season put together was estimated at Rs.1,08,009 for small category, Rs.1,16,865 for medium category and Rs.1,01,001 for the large category with an average of Rs.1,09,006 for the average category of sampled farmer (Table 3.3.3). Thus, medium category showed higher per hectare gross return as against small and large category. However, since the per hectare cost of cultivation was proportionately higher for medium category, per hectare ROVC for medium category with all the varieties of onion grown during kharif season put together turned out to lower.

Table 3.3.3: Profitability of Kharif Onion – Avg. All Varieties

(Rs. On Total Sample Farms)

Particulars	Farm Category			
	Small	Medium	Large	Total/Overall
Area ha	33.10	10.32	5.87	49.29
Production (qtl)	3834.94	1267.97	719.71	5822.62
Price Received on Sale (Rs./qtl)	925	945	850	924
Returns (Rs.)				
Gross Return	3545666	1198768	611625	5372656
Cost (Rs.)				
Input Cost	1392900	601900	303605	2298405
Marketing cost	513671	154760	76450	744880
Total variable costs	1906571	756660	380055	3043285
ROVC	1639096	442108	231571	2329370
Total variable cost (Rs./ha)	57605	73320	64745	61746
Gross returns (Rs./ha)	108009	116865	101001	109006
ROVC (Rs./ha)	49130	43669	39450	46834
Total variable cost (Rs./ qtl)	497	597	528	523
Gross returns (Rs./qtl)	925	945	850	924
ROVC (Rs./qtl)	428	348	322	401
Quantity sold (Qtls)	3652	1221	685	5558
Value of marketed surplus	3370033	1155613	581006	5106653

The per hectare ROVC with all the varieties of kharif onion grown during kharif season put together was estimated at Rs.49,130 for small category, Rs.43,669 for medium category and Rs.39,450 for the large category with an average of Rs.46,834 for the

average category of farmer. Thus, per hectare ROVC of kharif onion with all the varieties put together declined with the increase in land holding size of sampled onion farmers. The per quintal ROVC of kharif onion with all the varieties put together was estimated at Rs.428 for small category, Rs.348 for medium category and Rs.322 for large category with an average of Rs.401 for the average category of farmer. The average category of sampled onion farmer generated 76.67 per cent per quintal net returns over per quintal variable cost in the cultivation of kharif onion with all the varieties put together. The higher per quintal ROVC for small category during kharif season with all the varieties of onion put together was due to lower per quintal variable cost of cultivation as against medium and large category.

3.3.4 Rabi Onion – Fursungi Variety

The Fursungi variety of onion was cultivated by all the categories of sampled onion farmers during rabi season. The per hectare gross return for Fursungi variety of onion cultivated during rabi season was estimated at Rs.1,91,756 for small category, Rs.2,01,018 for medium category and Rs.2,07,311 for the large category with an average of Rs.1,96,628 for the average category of sampled farmer (Table 3.3.4). This showed 4.83 per cent higher per hectare gross return for medium category and 8.11 per cent higher per hectare gross return for large category as against small category in the case of Fursungi variety of onion grown during kharif season. However, since the large category of sampled farmer showed higher per hectare cost of cultivation, per hectare ROVC was lower for large category as against small and medium category.

Table 3.3.4: Profitability of Rabi Onion – Fursungi Variety

(Rs. On Total Sample Farms)

Particulars	Farm Category			
	Small	Medium	Large	Total/Overall
Area ha	44.67	14.57	14.37	73.61
Production (qtl)	8364	2755	2844	13963
Price Received on Sale (Rs./qtl)	1024	1063	1048	1034
Returns (Rs.)				
Gross Return	8565903	2928826	2979036	14439586
Cost (Rs.)				
Input Cost	4125945	1334026	1516033	6976004
Marketing cost	1115308	458319	475295	2048922
Total variable costs	5241253	1792345	1991328	9024926
ROVC	3324650	1136481	987708	54144658
Total variable cost (Rs./ha)	117333	123016	138575	122605
Gross returns (Rs./ha)	191756	201018	207311	196628
ROVC (Rs./ha)	74427	78001	68734	74023
Total variable cost (Rs./ qtl)	627	651	700	646
Gross returns (Rs./qtl)	1024	1063	1048	1034
ROVC (Rs./qtl)	397	412	347	388
Quantity sold (Qtls)	7789	2591	2666	13047
Value of marketed surplus	7976981	2754292	2793156	13524429

The per hectare ROVC for Fursungi variety of onion was estimated at Rs.74,427 for small category, Rs.78,001 for medium category and Rs.68,734 for the large category with an average of Rs.74,023 for the average category of farmer. The per quintal ROVC followed a trend similar to per hectare ROVC. The per quintal ROVC for Fursungi variety of onion was estimated at Rs.397 for small category, Rs.412 for medium category and Rs.347 for the large category with an average of Rs.388 for the average category of farmer. In general, the average category of sampled onion farmer generated 60.06 per cent of per quintal net returns over per quintal variable cost in the cultivation of Fursungi variety of onion during rabi season.

3.3.5 Rabi Onion – Nasik Lal Variety

The Nasik Lal variety of onion was also cultivated by sampled farmers during rabi season. However, the extent of profit involved in the cultivation of Nasik Lal variety of onion during rabi season was much higher as against kharif season. The extent of profit involved in the cultivation of Nasik Lal variety of onion on per hectare basis was even higher than Fursungi variety of onion grown during rabi season. The per hectare gross return for Nasik Lal variety of onion cultivated during rabi season was estimated at Rs.1,74,639 for small category, Rs.2,05,280 for medium category and Rs.2,19,151 for the large category with an average of Rs.1,80,426 for the average category of sampled farmer (Table 3.3.5). This showed a rise in per hectare gross return with the increase in land holding size of onion farmers cultivating Nasik Lal variety of onion during rabi season.

Table 3.3.5: Profitability of Rabi Onion – Nasik Lal Variety

(Rs. On Total Sample Farms)

Particulars	Farm Category			
	Small	Medium	Large	Total/Overall
Area ha	17.56	2.83	0.81	21.20
Production (qtl)	2944	513	140	3597
Price Received on Sale (Rs./qtl)	1042	1133	1268	1058
Returns (Rs.)				
Gross Return	3066564	580953	177512	3825029
Cost (Rs.)				
Input Cost	1318295	213664	71025	1602984
Marketing cost	411363	74328	18767	504458
Total variable costs	1729658	287992	89791	2107441
ROVC	1336906	292961	87721	1717588
Total variable cost (Rs./ha)	98500	101764	110854	99408
Gross returns (Rs./ha)	174639	205280	219151	180426
ROVC (Rs./ha)	76134	103520	108297	81018
Total variable cost (Rs./ qtl)	587	562	641	586
Gross returns (Rs./qtl)	1042	1133	1267	1063
ROVC (Rs./qtl)	454	572	626	472
Quantity sold (Qts)	2784	485	130	3399
Value of marketed surplus	2899863	549254	164833	3596138

The per hectare ROVC for Nasik Lal variety of onion during rabi season was estimated at Rs.76,134 for small category, Rs.1,03,520 for medium category and Rs. 1,08,297 for the large category with an average of Rs. 81,018 for the average category of farmer. Thus, the per hectare ROVC for Nasik Lal variety of onion cultivated during rabi season was 35.97 per cent higher for medium as against small category. The per quintal ROVC for Nasik Lal variety of onion grown during rabi season was estimated at Rs.454 for small category, Rs.572 for medium category and Rs.626 for large category with an average of Rs.472 for the average category of farmer. The average category of sampled onion farmer generated 81.56 per cent per quintal net returns over per quintal variable cost in the cultivation of Nasik Lal variety of onion during rabi season. The lower per quintal cost of cultivation and relatively higher prices resulted in higher per quintal ROVC in case of Nasik Lal variety of onion as against Fursungi variety of onion.

3.3.6 Rabi Onion – Average of All Varieties

Various varieties of onion cultivated during rabi season generated much higher net returns as against various varieties of onion cultivated during kharif season. The higher productivity of rabi onion coupled with relatively higher prices led to higher net returns in the cultivation of rabi onion. The average per hectare gross return with all the varieties of onion grown during rabi season put together was estimated at Rs.2,04,074 for small category, Rs.2,03,442 for medium category and Rs.2,17,858 for the large category with an average of Rs.2,09,009 for the average category of sampled farmer (Table 3.3.6). Thus, per hectare gross return with all the varieties of rabi onion put together turned out to be higher for large as against small and medium category. However, since per hectare cost of cultivation was proportionately higher for large category, per hectare ROVC for large category with all the varieties of rabi onion put together turned out to lower.

In rabi season, the average per hectare ROVC with all the varieties put together was estimated at Rs.76,005 for small category, Rs.80,085 for medium category and Rs.74,735 for the large category with an overall average of Rs.76,769 for the average category of farmer. Thus, the medium category showed 8.00 per higher per hectare ROVC as against small category and 9.83 per cent higher per hectare ROVC as compared to large category. The per quintal ROVC of rabi onion with all the varieties put together was estimated at Rs.419 for small category, Rs.438 for medium category and Rs.391 for large category with an average of Rs.412 for the average category of farmer. The average category of sampled onion farmer generated 64.48 per cent per quintal net returns over per quintal variable cost in the cultivation of rabi onion with all the varieties put together.

Table 3.3.6: Profitability of Rabi Onion – Avg. All Varieties

(Rs. On Total Sample Farms)

Particulars	Farm Category			
	Small	Medium	Large	Total/Overall
Area ha	74.23	18.02	19.23	111.48
Production (qtl)	13532.78	3380.93	3764.27	20677.98
Price Received on Sale (Rs./qtl)	1043	1075	1080	1051
Returns (Rs.)				
Gross Return	14117126	3634082	4064471	21734009
Cost (Rs.)				
Input Cost	6618358	1604192	1957187	10179738
Marketing cost	1826540	550727	634511	3011777
Total variable costs	8444898	2154919	2591698	13191515
ROVC	5672228	1479164	1472773	8625870
Total variable cost (Rs./ha)	113767	119585	134774	118331
Gross returns (Rs./ha)	204074	203442	211361	194959
ROVC (Rs./ha)	76005	82085	76587	77376
Total variable cost (Rs./ qtl)	624	637	688	638
Gross returns (Rs./qtl)	1043	1075	1080	1051
ROVC (Rs./qtl)	419	438	391	417
Quantity sold (Qtls)	12650	3183	3527	19360
Value of marketed surplus	13167608	3421220	3808060	20348635

In general, as against kharif season, per hectare ROVC in rabi season with all the varieties put together was 54.70 per cent higher for small farmer, 87.97 per cent for medium category, 94.14 per cent for large category with an overall average of 65.21 per cent for the average category of farmer cultivating onion crop. Thus, the proportion of per hectare net returns in rabi season over kharif season with all the varieties of onion put together increased with the increase in land holding size of sampled onion farmers. Generation of substantial net returns in the cultivation of rabi onion obviously led the sampled farmers to allocate much larger area under rabi onion as against kharif onion. The sampled onion farmers allocated 126.17 per cent higher area under rabi onion as against kharif onion with all the varieties put together.

3.3.7 Grapes – Thomson Variety

The extent of profit involved in the cultivation of grapes was noticed to be significantly high on the sampled grape farms. The per hectare gross return in the cultivation of Thomson variety of grapes was estimated at Rs.5,18,802 for small category, Rs.5,59,039 for medium category and Rs.5,77,685 for the large category with an average of Rs. 5,35,475 for the average category of sampled farmer (Table 3.3.7). Thus, there was an increase in per hectare gross returns for Thomson variety of grapes with the increase in land holding size of sampled grape farmers. This also showed 7.76 per cent higher per hectare gross return for medium category and 11.35 per cent higher per hectare gross return for large category as against small category in the cultivation of

Thomson variety of grapes. The trend in per hectare ROVC for Thomson variety of grapes was noticed to be similar to per hectare gross return. The per hectare ROVC in the cultivation of Thomson variety of grapes increased with the increase in land holding size of sampled grape farmers.

Table 3.3.7: Profitability of Grapes – Thomson Variety

(Rs. On Total Sample Farms)

Particulars	Farm Category			
	Small	Medium	Large	Total/Overall
Area ha	62.08	22.16	12.15	96.38
Production (qtl)	9924.73	3349.04	2082.75	15356.52
Price Received on Sale (Rs./qtl)	3245	3699	3370	3312.56
Returns (Rs.)				
Gross Return	32207236	12388303	7018878	51614417
Cost (Rs.)				
Input Cost	15624850	5941278	3328164	24894293
Marketing cost	463851	185872	86781	736504
Total variable costs	16088701	6127150	3414946	25630797
ROVC	16118535	6261153	3603932	25983620
Total variable cost (Rs./ha)	259161	276496	281066	265907
Gross returns (Rs./ha)	518802	559039	577685	535475
ROVC (Rs./ha)	259641	282543	296620	269568
Total variable cost (Rs./ qtl)	1621	1830	1640	1669
Gross returns (Rs./qtl)	3245	3699	3370	3361
ROVC (Rs./qtl)	1624	1870	1730	1695
Quantity sold (Qtls)	9650.96	3242.01	2021.15	14914.12
Value of marketed surplus	31318802	11992382	6811284	49403917

The per hectare ROVC for Thomson variety of grapes was estimated at Rs.2,59,641 for small category, Rs.2,82,543 for medium category and Rs.2,96,620 for the large category with an average of Rs.2,69,568 for the average category of grape farmer. The per hectare ROVC in the cultivation of Thomson variety of grapes was 8.82 per cent higher for medium category and 14.24 per cent higher for large category as against small category. However, per quintal ROVC for Thomson variety of grapes was higher for medium category, followed by large and small category. The per quintal ROVC for Thomson variety of grapes was estimated at Rs.1624 for small category, Rs.1870 for medium category and Rs.1730 for the large category with an average of Rs.1695 for the average category of farmer. In general, the average category of sampled grape farmer cultivating Thomson variety of grapes generated 101.37 per cent per quintal net returns over per quintal variable cost in the cultivation of Thomson variety of grapes.

3.3.8 Grapes – Sonaka Variety

Although there has been significant amount of profit involved in the cultivation of Sonaka variety of grapes, it was found to be cultivated only by small and medium category of grape farmers. The per hectare gross return in the cultivation of Sonaka

variety of grapes was estimated at Rs.5,25,430 for small category and Rs.4,88,158 for medium category with an average of Rs.5,17,202 for the average category of sampled farmer (Table 3.3.8). This showed 7.64 per cent higher per hectare gross return for small category as against medium category in the cultivation of Sonaka variety of grapes.

Table 3.3.8: Profitability of Grapes – Sonaka Variety

Particulars	Farm Category				(Rs. On Total Sample Farms)
	Small	Medium	Large	Total/Overall	
Area ha	16.45	4.66	-	21.11	
Production (qtl)	2522	541	-	3063	
Price Received on Sale (Rs./qtl)	3427	4205	-	3595	
Returns (Rs.)					
Gross Return	8643326	2274818	-	10918145	
Cost (Rs.)					
Input Cost	4056278	1104774	-	5161052	
Marketing cost	73433	29303	-	102736	
Total variable costs	4129711	1134077	-	5263788	
ROVC	4513615	1140742	-	5654357	
Total variable cost (Rs./ha)	251046	243364	-	249350	
Gross returns (Rs./ha)	525430	488158	-	517202	
ROVC (Rs./ha)	274384	244794	-	267852	
Total variable cost (Rs./ qtl)	1638	2096	-	1719	
Gross returns (Rs./qtl)	3427	4205	-	3565	
ROVC (Rs./qtl)	1790	2109	-	1844	
Quantity sold (Qtls)	2440.69	523.92	-	2965	
Value of marketed surplus	8364818	2203100	-	10658960	

The per hectare ROVC in the cultivation of Sonaka variety of grapes followed a trend similar to per hectare gross return. The per hectare ROVC for Sonaka variety of grapes was estimated at Rs.2,74,384 for small category and Rs.2,44,794 for medium category with an average of Rs.2,67,852 for the average category of farmer. Thus, the small category of grape farmers cultivating Sonaka variety of grapes showed 12.09 per cent higher per hectare ROVC as against medium category. The per quintal ROVC for Sonaka variety of grapes was estimated at Rs.1790 for small category and Rs.2109 for medium category with an average of Rs.1844 for the average category of farmer. The per quintal ROVC was higher for medium category as against small category due to higher prices received by medium category in the cultivation of Sonaka variety of grapes. The average category of sampled grape farmer cultivating Sonaka variety of grapes generated 107.38 per cent per quintal net returns over per quintal variable cost in the cultivation of Sonaka variety of grapes. Thus, the average category of sampled grape farmer generated higher per quintal net returns over per quintal variable cost in the case of Sonaka variety of grapes as against Thomson variety of grapes.

3.3.9 Grapes – Average of All Varieties

The sampled grape farmers cultivated large number of varieties of grapes on their farm. The extent of profit involved in the cultivation of all the varieties of grapes was estimated, and these estimates are brought out in Appendix 11. However, since the focus of the study is on major varieties of grapes cultivated by sampled grape farmers, the discussion relating to the extent of profitability revolves around Thomson variety and Sonaka variety, and the average of all varieties of grapes put together. The estimates relating to per hectare gross and net returns in the cultivation of grapes with all the varieties put together are brought out in Table 3.3.9.

The average per hectare gross return with all the varieties of grapes put together moved very closely across various categories of sampled farmers. The average per hectare gross return with all the varieties of grapes put together turned out to be Rs.5,20,391 for small category, Rs.5,32,840 for medium category and Rs.5,26,203 for the large category with an overall average of Rs.5,23,882 for the average category of sampled farmer (Table 3.3.9). Thus, per hectare gross return with all the varieties of grapes put together was 2.39 per cent higher for medium category and 1.12 per cent higher for large category as against small category. However, per hectare ROVC with all the varieties of grapes put together increased with the increase in land holding size of sampled grape farmers.

Table 3.3.9: Profitability of Grapes – Avg. All Varieties

(Rs. On Total Sample Farms)

Particulars	Farm Category			
	Small	Medium	Large	Total/Overall
Area ha	89.70	32.99	18.42	141.12
Production (qtl)	13990.27	4639.71	2946.09	21576
Price Received on Sale (Rs./qtl)	3337	3789	3290	3415
Returns (Rs.)				
Gross Return	46684287	17578390	9692652	73955329
Cost (Rs.)				
Input Cost	22376477	7968783	4228415	34573675
Marketing cost	596400	189682	130119	916201
Total variable costs	22972877	8158465	4358534	35489876
ROVC	23711410	9419925	5334118	38465453
Total variable cost (Rs./ha)	256079	247301	236620	251487
Gross returns (Rs./ha)	520391	532840	526203	524060
ROVC (Rs./ha)	264312	285539	289583	272573
Total variable cost (Rs./ qtl)	1642	1758	1479	1645
Gross returns (Rs./qtl)	3337	3789	3290	3428
ROVC (Rs./qtl)	1695	2030	1811	1783
Quantity sold (Qtls)	13583.12	4493.57	2855.28	20932
Value of marketed surplus	45325649	17024691	9393885	71490220

The average per hectare ROVC with all the varieties of grapes put together was estimated at Rs.2,64,312 for small category, Rs.2,85,539 for medium category and Rs.2,89,583 for the large category with an overall average of Rs.2,72,573 for the average category of grape farmer. These estimates clearly revealed 8.03 per cent higher per hectare ROVC for medium category and 9.56 per cent higher per hectare ROVC for large category as against small category of sampled grape farmers. The per quintal ROVC of grapes with all the varieties put together was worked out at Rs.1695 for small category, Rs.2030 for medium category and Rs.1811 for large category with an average of Rs.1783 for the average category of grape farmer. The higher per quintal ROVC for medium category with all the varieties put together was mainly due to relatively higher prices of grapes received by medium category of farmers as against small and large category. The average category of sampled grape farmer showed 108.38 per cent per quintal net returns over per quintal variable cost in the cultivation of grapes with all the varieties of grapes put together. The per hectare as well as per quintal ROVC in the cultivation of grapes was, therefore, significantly high on the sampled grape farms.

The foregoing estimates clearly showed cultivation of grapes as a lucrative proposition since all the categories of sampled grape farmers generated more than 100 per cent per quintal net returns over per quintal variable cost. Although onion cultivation was also found to be profitable, the generation of per quintal net return over per quintal variable cost for the average category of farmer with all the varieties put together was 65.21 per cent in kharif season and 65.36 peer cent in rabi season. Therefore, the extent of profit involved in the cultivation of grapes was much higher as against onion.

CHAPTER – IV

MARKETING OF ONION AND GRAPES

Marketing assumes considerable importance in determining the success of any fruit and vegetable farming enterprise. Marketing encompasses all the off-farm operations and decisions made by the producers, which not only includes decisions relating quality and quantity of marketable surplus but also profitability of crop production. The decision regarding marketing alternatives and possible price realization begins even before initiation of production process. The fruits and vegetable cultivators generally have exposure to numerous alternative marketing channels. A market or combination of markets to use depends on a few factors like volume of produce grown, location of the grower, time available for marketing activities and quality of the produce (Charles R. et. al., 2011). However, the efficiency of marketing of fruits and vegetables in India is always a matter of concern since inadequate market infrastructure coupled with lack of marketing efficiency not only lead to high and fluctuating consumer prices but also lower share of producer in consumer prices (Gandhi and Namboodiri, 2002). Fruits and vegetables also show high proportion of wastage, quality deterioration due to high perishability and frequent miss-match between demand and supply not only spatially but also over time (Subbanarasiah, 1991, Singh et. al. 1985). Although perishability, seasonality and bulkiness make marketing of horticultural crops quite complex and risky, farmers still prefer to cultivate these high value crops due to significantly high element of profit and employment generation in their cultivation. Most of the horticultural crops produced in India are labour intensive and provide substantial employment not only in production process but also in transportation, processing and other marketing activities (Sharma, 1991). In the light of this backdrop, this chapter examines marketing of onion and grapes in Maharashtra with major focus on disposal pattern of selected crops, quantity of disposal and prices realized, and source of supply for intermediaries.

4.1 Farmer's Disposal pattern

The estimates relating to the disposal pattern of marketed surplus of Nasik Lal variety of onion grown during kharif season by various categories of sampled onion farmers are brought out in Table 4.1.1. Similar estimates for Panchganga variety of onion grown during kharif season are brought out in Table 4.1.2. The total scenario in this respect with all the varieties of onion cultivated during kharif season put together is

provided in Table 4.1.3. Similarly, the estimates relating to the disposal pattern of marketed surplus of Fursungi variety of onion grown during rabi season by various categories of sampled onion farmers are brought out in Table 4.1.4. Similar estimates for Nasik Lal variety of onion grown during rabi season are brought out in Table 4.1.5. The total scenario in this respect with all the varieties of onion cultivated during rabi season put together is provided in Table 4.1.6. In case of grapes, the estimates relating to the disposal pattern of marketed surplus of Thomson variety of grapes grown by various categories of sampled grape farmers are brought out in Table 4.1.7. Similar estimates for Sonaka variety of grapes grown are brought out in Table 4.1.8. The total scenario in this respect with all the varieties of grapes is provided in Table 4.1.9. A detailed scenario with respect to the disposal pattern of marketed surplus of all the varieties of onion grown during kharif and rabi season by various categories of sampled onion farmers is provided in Appendix 12 and Appendix 13, respectively, whereas Appendix 14 provides a detailed scenario in this respect for all the varieties of grapes cultivated on the farms belonging to sampled grape farmers.

4.1.1 Kharif Onion – Nashik Lal Variety

The estimates relating to the disposal pattern of marketed surplus of Nasik Lal variety of onion cultivated during kharif season by various categories of sampled onion farmers are brought out in Table 4.1.1.

Table: 4.1.1 Disposal pattern of Marketed Surplus of Kharif Onion – Nasik Lal Variety

Farm Category	Village market	Commission agent	Regulated market	Govt. agencies	Others	Total
Number of households marketing through various channels						
Small	-	-	28	-	-	28
Medium	-	-	5	-	-	5
Large	-	-	-	-	-	-
Total	-	-	33	-	-	33
% of total households in the size group marketing through various channels						
Small	-	-	100.00	-	-	100.00
Medium	-	-	100.00	-	-	100.00
Large	-	-	-	-	-	-
Total	-	-	100.00	-	-	100.00

The sampled farmers were found to dispose of their marketed surplus of Nasik Lal variety of onion grown during kharif season only through regulated market and they did not use any other channel for the marketing of their onion produce. The numerical strength of farmers disposing of their marketed surplus of Nasik Lal variety of onion through regulated market was estimated at 28 in small category and 5 in medium category with a sum of 33 with all the categories put together.

4.1.2 Kharif Onion – Panchganga Variety

The estimates relating to the disposal pattern of marketed surplus of Panchganga variety of onion cultivated during kharif season by various categories of sampled onion farmers are brought out in Table 4.1.2.

Table: 4.1.2 Disposal pattern of Marketed Surplus of Kharif Onion – Panchganga Variety

Farm Category	Village market	Commission agent	Regulated market	Govt. agencies	Others	Total
Number of households marketing through various channels						
Small	-	-	12	-	-	12
Medium	-	-	4	-	-	4
Large	-	-	3	-	-	3
Total	-	-	19	-	-	19
% of total households in the size group marketing through various channels						
Small	-	-	100.00	-	-	100.00
Medium	-	-	100.00	-	-	100.00
Large	-	-	100.00	-	-	100.00
Total	-	-	100.00	-	-	100.00

The sampled farmers were also disposing of their marketed surplus of Panchganga variety of onion grown during kharif season only through regulated market and they did not use any other channel for the marketing of their onion produce. The numerical strength of farmers disposing of their marketed surplus of Panchganga variety of onion through regulated market was estimated at 12 in small category, 4 in medium category and 3 in large category with a sum of 19 with all the categories put together.

4.1.3 Kharif Onion – Average of All Varieties

The estimates relating to the disposal pattern of marketed surplus of all the varieties of onion put together cultivated during kharif season by various categories of sampled onion farmers are brought out in Table 4.1.3.

Table: 4.1.3 Disposal pattern of Marketed Surplus of Kharif Onion – Avg. All Varieties

Farm Category	Village market	Commission agent	Regulated market	Govt. agencies	Others	Total
Number of households marketing through various channels						
Small	-	-	51	-	-	51
Medium	-	-	12	-	-	12
Large	-	-	4	-	-	4
Total	-	-	67	-	-	67
% of total households in the size group marketing through various channels						
Small	-	-	100.00	-	-	100.00
Medium	-	-	100.00	-	-	100.00
Large	-	-	100.00	-	-	100.00
Total	-	-	100.00	-	-	100.00

The sampled onion farmers were seen to dispose of their marketed surplus of onion of all the varieties grown during kharif season only through regulated market and

they did not use any other channel for the marketing of their onion produce. The numerical strength of farmers disposing of their marketed surplus onion through regulated market with all the varieties put together was estimated at 51 in small category, 12 in medium category and 4 in large category with a sum of 67 with all the categories of farmers put together. The onion farmers preferred to sell their produce through regulated market since this channel fetched them relatively better prices as against other channels available to them for marketing of their produce.

4.1.4 Rabi Onion – Fursungi Variety

The estimates relating to the disposal pattern of marketed surplus of Fursungi variety of onion cultivated during rabi season by various categories of sampled onion farmers are shown in Table 4.1.4.

Table: 4.1.4 Disposal pattern of Marketed Surplus of Rabi Onion – Fursungi Variety

Farm Category	Village market	Commission agent	Regulated market	Govt. agencies	Others	Total
Number of households marketing through various channels						
Small	-	-	57	-	-	57
Medium	-	-	16	-	-	16
Large	-	-	8	-	-	8
Total	-	-	81	-	-	81
% of total households in the size group marketing through various channels						
Small	-	-	100.00	-	-	100.00
Medium	-	-	100.00	-	-	100.00
Large	-	-	100.00	-	-	100.00
Total	-	-	100.00	-	-	100.00

Although there were several options/ channels available with the sampled onion farmers to dispose of their onion produce like village market, commission agent, government agency, etc., the sampled farmers disposed of their marketed surplus of Fursungi variety of onion grown during rabi season only through regulated market and they did not use any other channel for the marketing of their onion produce. The numerical strength of farmers disposing of their marketed surplus of Fursungi variety of onion through regulated market was estimated at 57 in small category, 16 in medium category and 8 in large category with a sum of 81 with all the categories of farmers put together. Marketing of produce through regulated market fetched the sampled onion farmers relatively better prices as against other channel.

4.1.5 Rabi Onion – Nasik Lal Variety

The estimates relating to the disposal pattern of marketed surplus of Nasik Lal variety of onion cultivated during rabi season by various categories of sampled onion farmers are brought out in Table 4.1.5.

Table: 4.1.5 Disposal pattern of marketed Surplus of Rabi Onion – Nasik Lal Variety

Farm Category	Village market	Commission agent	Regulated market	Govt. agencies	Others	Total
Number of households marketing through various channels						
Small	-	-	26	-	-	26
Medium	-	-	3	-	-	3
Large	-	-	1	-	-	1
Total	-	-	30	-	-	30
% of total households in the size group marketing through various channels						
Small	-	-	100.00	-	-	100.00
Medium	-	-	100.00	-	-	100.00
Large	-	-	100.00	-	-	100.00
Total	-	-	100.00	-	-	100.00

The sampled farmers were also disposing of their marketed surplus of Nasik Lal variety of onion cultivated during rabi season only through regulated market. The numerical strength of farmers disposing of their marketed surplus of Nasik Lal variety of onion through regulated market was estimated at 26 in small category, 3 in medium category and 1 in large category with a sum of 30 with all the categories put together.

4.1.6 Rabi Onion – Average of All Varieties

The estimates relating to the disposal pattern of marketed surplus of all the varieties of onion put together cultivated during rabi season by various categories of sampled onion farmers are brought out in Table 4.1.6.

Table: 4.1.6 Disposal pattern of marketed Surplus of Rabi Onion – Avg. All Varieties

Farm Category	Village market	Commission agent	Regulated market	Govt. agencies	Others	Total
Number of households marketing through various channels						
Small	-	-	98	-	-	98
Medium	-	-	20	-	-	20
Large	-	-	10	-	-	10
Total	-	-	128	-	-	128
% of total households in the size group marketing through various channels						
Small	-	-	100.00	-	-	100.00
Medium	-	-	100.00	-	-	100.00
Large	-	-	100.00	-	-	100.00
Total	-	-	100.00	-	-	100.00

Despite availability of various marketing channels like village market, commission agent, government agency, etc., the sampled onion farmers were disposing of their marketed surplus of onion of all the varieties grown during rabi season only through regulated market and they did not use any other channel for the marketing of their onion produce. The numerical strength of farmers disposing of their marketed surplus onion through regulated market with all the varieties put together was estimated at 98 in small category, 20 in medium category and 10 in large category with a sum of

128 with all the categories of farmers put together. Marketing of produce through regulated market fetched the sampled onion farmers relatively better prices as against other channel. Thus, all the sampled onion farmers used regulated market as the most preferred channel for the marketing of various varieties of onion grown by them during kharif as well as rabi season.

4.1.7 Grapes – Thomson Variety

Thomson was noticed to be one of the major varieties of grapes cultivated by sampled grape farmers. The estimates relating to the disposal pattern of marketed surplus of Thomson variety of grapes cultivated by various categories of sampled grape farmers are shown in Table 4.1.7.

Table: 4.1.7 Disposal pattern of Marketed Surplus of Grapes – Thomson Variety

Farm Category	Village market	Commission agent	Regulated market	Govt. agencies	On farm sale	Total
Number of households marketing through various channels						
Small	-	-	-	-	96	96
Medium	-	-	-	-	16	16
Large	-	-	-	-	5	5
Total	-	-	-	-	117	117
% of total households in the size group marketing through various channels						
Small	-	-	-	-	100.00	100.00
Medium	-	-	-	-	100.00	100.00
Large	-	-	-	-	100.00	100.00
Total	-	-	-	-	100.00	100.00

There were several channels available with the sampled grape farmers to dispose of their grape produce like local village market, commission agent, etc. However, the sampled farmers disposed of their marketed surplus of Thomson variety of grapes only through on-farm sale and did not use other options available to them for the marketing of their grape produce. The numerical strength of farmers disposing of their marketed surplus of Thomson variety of grapes through on-farm sale was estimated at 96 in small category, 16 in medium category and 5 in large category with a sum of 117 with all the categories of farmers put together. Marketing of produce through on-farm sale provided quick market clearance as against other channel and fetched the sampled grape farmers reasonable prices for their grape produce.

4.1.8 Grapes – Sonaka Variety

Another major variety of grape cultivated by various categories of sampled grape farmers was Sonaka. The estimates relating to the disposal pattern of marketed surplus of Sonaka variety of grapes cultivated by various categories of sampled grape farmers are brought out in Table 4.1.8.

Table: 4.1.8 Disposal pattern of Marketed Surplus of Grapes – Sonaka Variety

Farm Category	Village market	Commission agent	Regulated market	Govt. agencies	On farm sale	Total
Number of households marketing through various channels						
Small	-	-	-	-	29	29
Medium	-	-	-	-	8	8
Large	-	-	-	-	-	-
Total	-	-	-	-	37	37
% of total households in the size group marketing through various channels						
Small	-	-	-	-	100.00	100.00
Medium	-	-	-	-	100.00	100.00
Large	-	-	-	-	-	-
Total	-	-	-	-	100.00	100.00

The sampled farmers were noticed to dispose of their marketed surplus of Sonaka variety of grapes only through on-farm sale to the agency which lifted the produce from the farmer's field. The numerical strength of farmers disposing of their marketed surplus of Sonaka variety of grapes through on-farm sale was estimated at 29 in small category and 8 in medium category with a sum of 37 with all the categories put together.

4.1.9 Grapes – Average of All Varieties

The estimates relating to the disposal pattern of marketed surplus of all the varieties of grapes put together cultivated by various categories of sampled grape farmers are provided in Table 4.1.9.

Table: 4.1.9 Disposal pattern of marketed Surplus of Rabi Onion – Avg. All Varieties

Farm Category	Village market	Commission agent	Regulated market	Govt. agencies	Wholesaler	Total
Number of households marketing through various channels						
Small	-	-	-	-	149	149
Medium	-	-	-	-	34	34
Large	-	-	-	-	8	8
Total	-	-	-	-	191	191
% of total households in the size group marketing through various channels						
Small	-	-	-	-	100.00	100.00
Medium	-	-	-	-	100.00	100.00
Large	-	-	-	-	100.00	100.00
Total	-	-	-	-	100.00	100.00

The sampled grape farmers had access to various marketing channels for the disposal of marketed surplus of grapes like village market, commission agent, etc. However, they preferred to dispose of their marketed surplus of various varieties of grapes only through on-farm sale. The agencies engaged in on-farm sale were found to bring their own vehicle for lifting grape produce from farmer's field. The transportation cost incurred in transportation of grapes from farmer's field to the nearby road was borne

by the sampled grape farmer. The agents usually park their vehicle on the road near the grape garden and collect the produce using human labour or tractor for which grape farmers bear the cost. The grape farmers prefer on-farm sale since there is quick market clearance. The numerical strength of farmers disposing of their marketed surplus of grapes through on-farm sale with all the varieties put together was estimated at 149 in small category, 34 in medium category and 8 in large category with a sum of 191 with all the categories of grape farmers put together. The marketing of grapes through on-farm sale was practiced by all the categories of sampled grape farmers. The marketing of grapes through on-farm sale not only provided quick market clearance but also reasonably good prices to farmers.

4.2 Market-wise Disposal Pattern of Marketed Surplus

The estimates relating to the disposal of quantity of marketed surplus diverted to various marketing agencies along with prices for Nasik Lal variety of onion grown during kharif season by various categories of sampled onion farmers are brought out in Table 4.2.1. Similar estimates for Panchganga variety of onion grown during kharif season are brought out in Table 4.2.2. The total scenario in this respect with all the varieties of onion cultivated during kharif season put together is provided in Table 4.3.3. Similarly, the estimates relating to the disposal of quantity of marketed surplus diverted to various marketing agencies along with prices for Fursungi variety of onion grown during rabi season by various categories of sampled onion farmers are brought out in Table 4.2.4. Similar estimates for Nasik Lal variety of onion grown during rabi season are brought out in Table 4.2.5. The total scenario in this respect with all the varieties of onion cultivated during rabi season put together is provided in Table 4.2.6. In case of grapes, the estimates relating to the disposal of quantity of marketed surplus diverted to various marketing agencies along with prices for Thomson variety of grapes grown by various categories of sampled grape farmers are brought out in Table 4.2.7. Similar estimates for Sonaka variety of grapes grown are brought out in Table 4.2.8. The total scenario in this respect with all the varieties of grapes is provided in Table 4.2.9. A detailed scenario with respect to the disposal of quantity of marketed surplus diverted to various marketing agencies along with prices received from these agencies for all the varieties of onion grown during kharif and rabi season by various categories of sampled onion farmers is provided in Appendix 15 and Appendix 16, respectively, whereas Appendix 17 provides a detailed scenario in this respect for all the varieties of grapes cultivated on the farms belonging to sampled grape farmers.

4.2.1 Kharif Onion – Nasik Lal Variety

The estimates relating to the disposal of quantity of marketed surplus diverted to different marketing agencies as well as proportion of diversion along with prices for Nasik Lal variety of onion grown during kharif season by various categories of sampled onion farmers are brought out in Table 4.2.1.

Table 4.2.1a: Quantity Sold through Various Channels and Prices Received for Kharif Onion – Nasik Lal Variety
(Quantity in Qtls.; Price in Rs./Qtls.)

Farm Category	Village market		Commission agent		Regulated market		Govt. agencies		Other		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Small	-	-	-	-	1842.86	953	-	-	-	-	1842.86	953
Medium	-	-	-	-	441.24	971	-	-	-	-	441.24	971
Large	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	2284.1	955	-	-	-	-	2284.1	955

Note: Prices are weighted average

Table 4.2.1b: Percentage of Quantity Sold through Various Channels for Kharif Onion – Nasik Lal Varieties

Farm Category	Village market	Commission agent	Regulated market	Govt. agencies	Other	Total
Small	-	-	100.00	-	-	100.00
Medium	-	-	100.00	-	-	100.00
Large	-	-	-	-	-	-
Total	-	-	100.00	-	-	100.00

Table 4.2.1c: Per Farm Quantity Sold through Various Channels and Prices Received for Kharif Onion – Nasik Lal Variety
(Quantity in Qtls.; Price in Rs./Qtls.)

Farm Category	Village market		Commission agent		Regulated market		Govt. agencies		Other		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Small	-	-	-	-	66.08	953	-	-	-	-	66.08	953
Medium	-	-	-	-	88.25	971	-	-	-	-	88.25	971
Large	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	69.44	955	-	-	-	-	69.44	955

Note: Prices are weighted average

The sampled onion farmers marketed their produce only through regulated market and did not use any other channel. The total quantity of Nasik Lal variety of onion sold through regulated market during kharif season was estimated at 1,843 quintals for small category and 441 quintals for medium category with a sum of 2,284 quintals for all the categories put together. The per farm quantity of Nasik Lal variety of onion sold through regulated market varied from 66 quintals for small category to 88 quintals for medium category. In general, the average per farm quantity of Nasik Lal variety of onion sold through regulated market during kharif season was worked out at 69 quintals, which fetched an average price of Rs.955 per quintal. The average price of Nasik Lal variety of onion varied from Rs.953/qt for small category to Rs.971/qt for medium category.

4.2.2 Kharif Onion – Panchganga Variety

The estimates relating to the disposal of quantity of marketed surplus diverted to different marketing agencies as well as proportion of diversion along with prices for Panchganga variety of onion grown during kharif season by various categories of sampled onion farmers are brought out in Table 4.2.2.

Table 4.2.2a: Quantity Sold through Various Channels and Prices Received for Kharif Onion – Panchganga Variety
(Quantity in Qtls.; Price in Rs./Qtls.)

Farm Category	Village market		Commission agent		Regulated market		Govt. agencies		Other		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Small	-	-	-	-	1016.43	908	-	-	-	-	1016.43	908
Medium	-	-	-	-	558.24	953	-	-	-	-	558.24	953
Large	-	-	-	-	514.38	842	-	-	-	-	514.38	842
Total	-	-	-	-	2089.05	907	-	-	-	-	2089.05	907

Note: Prices are weighted average

Table 4.2.2b: Percentage of Quantity Sold through Various Channels for Kharif Onion – Panchganga Varieties

Farm Category	Village market	Commission agent	Regulated market	Govt. agencies	Other	Total
Small	-	-	100.00	-	-	100.00
Medium	-	-	100.00	-	-	100.00
Large	-	-	100.00	-	-	100.00
Total	-	-	100.00	-	-	100.00

Table 4.2.2c: Per Farm Quantity Sold through Various Channels and Prices Received for Kharif Onion – Panchganga Variety
(Quantity in Qtls.; Price in Rs./Qtls.)

Farm Category	Village market		Commission agent		Regulated market		Govt. agencies		Other		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Small	-	-	-	-	84.90	908	-	-	-	-	84.90	908
Medium	-	-	-	-	138.95	953	-	-	-	-	138.95	953
Large	-	-	-	-	171.87	842	-	-	-	-	171.87	842
Total	-	-	-	-	110.02	907	-	-	-	-	110.02	907

Note: Prices are weighted average

Regulated market was preferred over other channels in the marketing of Panchganga variety of onion during kharif season. The total quantity of Panchganga variety of onion sold through regulated market during kharif season was estimated at 1,016 quintals for small category, 558 quintals for medium category and 514 quintals for large category with a sum of 2,089 quintals for all the categories put together. The per farm quantity of Panchganga variety of onion sold through regulated market increased with the increase in land holding size of farmers, and it varied from 85 quintals for small category to 172 quintals for large category. The average per farm quantity of Panchganga variety of onion sold through regulated market during kharif season was worked out at

110 quintals, which fetched an average price of Rs.907 per quintal. The average price of Panchganga variety of onion varied from Rs.842/qt for large category to Rs.953/qt for medium category.

4.2.3 Kharif Onion – Average of All Varieties

The estimates relating to the disposal of quantity of marketed surplus diverted to different marketing agencies as well as proportion of diversion along with prices for all the varieties of onion put together grown during kharif season by various categories of sampled onion farmers are provided in Table 4.2.3. All the categories of sampled farmers cultivating various varieties of onion during kharif season preferred regulated market over other marketing channels in the marketing of their onion produce.

Table 4.2.3a: Quantity Sold through Various Channels and Prices Received for Kharif Onion – Avg. All Varieties
(Quantity in Qtls.; Price in Rs./Qtls.)

Farm Category	Village market		Commission agent		Regulated market		Govt. agencies		Other		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Small	-	-	-	-	3651.61	925	-	-	-	-	3651.61	925
Medium	-	-	-	-	1221.48	945	-	-	-	-	1221.48	945
Large	-	-	-	-	685.09	850	-	-	-	-	685.09	850
Total	-	-	-	-	5556.02	924	-	-	-	-	5556.02	924

Note: Prices are weighted average

Table 4.2.3b: Percentage of Quantity Sold through Various Channels for Kharif Onion – Avg. All Varieties

Farm Category	Village market	Commission agent	Regulated market	Govt. agencies	Other	Total
Small	-	-	100.00	-	-	100.00
Medium	-	-	100.00	-	-	100.00
Large	-	-	100.00	-	-	100.00
Total	-	-	100.00	-	-	100.00

Table 4.2.3c: Per Farm Quantity Sold through Various Channels and Prices Received for Kharif Onion – Avg. All Varieties
(Quantity in Qtls.; Price in Rs./Qtls.)

Farm Category	Village market		Commission agent		Regulated market		Govt. agencies		Other		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Small	-	-	-	-	71.97	925	-	-	-	-	71.97	925
Medium	-	-	-	-	101.13	945	-	-	-	-	101.13	945
Large	-	-	-	-	170.92	850	-	-	-	-	170.92	850
Total	-	-	-	-	83.10	924	-	-	-	-	83.10	924

Note: Prices are weighted average

The total quantity of onion sold through regulated market during kharif season with all the varieties put together was estimated at 3,652 quintals for small category, 1,221 quintals for medium category and 685 quintals for large category with a sum of 5,556 quintals for all the categories put together. The per farm quantity of onion sold through regulated market with all the varieties put together increased with the increase in land holding size of farmers, and it varied from varied from 72 quintals for small

category to 171 quintals for large category. The average per farm quantity of onion sold through regulated market during kharif season with all the varieties put together was worked out at 83 quintals, which fetched an average price of Rs.924 per quintal. The average price of onion with all the varieties put together varied from Rs.850/qtl for large category to Rs.945/qtl for medium category.

4.2.4 Rabi Onion – Fursungi Variety

The disposal pattern of quantity of marketed surplus diverted to different marketing agencies as well as proportion of diversion along with prices for Fursungi variety of onion cultivated during rabi season by various categories of sampled onion farmers is shown Table 4.2.4. Regulated market was found to be the only marketing channel through which various categories of sampled farmers diverted their marketed surplus of Fursungi variety of onion grown during rabi season. This channel was preferred by all the farmers cultivating Fursungi variety of onion during rabi season.

Table 4.2.4a: Quantity Sold through Various Channels and Prices Received for Rabi Onion – Fursungi Variety
(Quantity in Qtls.; Price in Rs./Qtls.)

Farm Category	Village market		Commission agent		Regulated market		Govt. agencies		Other		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Small	-	-	-	-	7789.26	1024	-	-	-	-	7789.26	1024
Medium	-	-	-	-	2591.13	1063	-	-	-	-	2591.13	1063
Large	-	-	-	-	2666.48	1048	-	-	-	-	2666.48	1048
Total	-	-	-	-	13046.86	1034	-	-	-	-	13046.86	1034

Note: Prices are weighted average

Table 4.2.4b: Percentage of Quantity Sold through Various Channels for Rabi Onion – Fursungi Variety

Farm Category	Village market	Commission agent	Regulated market	Govt. agencies	Other	Total
Small	-	-	100.00	-	-	100.00
Medium	-	-	100.00	-	-	100.00
Large	-	-	100.00	-	-	100.00
Total	-	-	100.00	-	-	100.00

Table 4.2.4c: Per Farm Quantity Sold through Various Channels and Prices Received for Rabi Onion – Fursungi Variety
(Quantity in Qtls.; Price in Rs./Qtls.)

Farm Category	Village market		Commission agent		Regulated market		Govt. agencies		Other		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Small	-	-	-	-	137.75	1024	-	-	-	-	137.75	1024
Medium	-	-	-	-	161.84	1063	-	-	-	-	161.84	1063
Large	-	-	-	-	334.02	1048	-	-	-	-	334.02	1048
Total	-	-	-	-	161.89	1034	-	-	-	-	161.89	1034

Note: Prices are weighted average

The total quantity of Fursungi variety of onion sold through regulated market during rabi season was worked out at 7,789 quintals for small category and 2,591 quintals for medium category and 2,666 quintals for large category with a sum of 13,047 quintals

for all the categories put together. The per farm quantity of Fursungi variety of onion sold through regulated market increased with the increase in land holding size of sampled farmers. It increased from 138 quintals per farm in case of small category to 334 quintals per farm for large category. The average per farm quantity of Fursungi variety of onion sold through regulated market during rabi season was worked out at 162 quintals, which fetched an average price of Rs.1,034 per quintal. The average price of Fursungi variety of onion marketed during rabi season varied from Rs.1,024/qt for small category to Rs.1,063/qt for medium category.

4.2.5 Rabi Onion – Nasik Lal Variety

The disposal pattern of quantity of marketed surplus diverted to different marketing agencies as well as proportion of diversion along with prices for Nasik Lal variety of onion cultivated during rabi season by various categories of sampled onion farmers is shown Table 4.2.5. All the categories of sampled farmers diverted their marketed surplus of Nasik Lal variety of onion grown during rabi season though regulated market and they did not use any other alternate channel available to them since this channel provided them reasonable price.

Table 4.2.5a: Quantity Sold through Various Channels and Prices Received for Rabi Onion – Nasik Lal Variety
(Quantity in Qtls.; Price in Rs./Qtls.)

Farm Category	Village market		Commission agent		Regulated market		Govt. agencies		Other		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Small	-	-	-	-	2784.23	1042	-	-	-	-	2784.23	1042
Medium	-	-	-	-	484.65	1133	-	-	-	-	484.65	1133
Large	-	-	-	-	130.05	1268	-	-	-	-	130.05	1268
Total	-	-	-	-	3398.92	1058	-	-	-	-	3398.92	1058

Note: Prices are weighted average

Table 4.2.5b: Percentage of Quantity Sold through Various Channels for Rabi Onion – Nasik Lal Variety

Farm Category	Village market	Commission agent	Regulated market	Govt. agencies	Other	Total
Small	-	-	100.00	-	-	100.00
Medium	-	-	100.00	-	-	100.00
Large	-	-	100.00	-	-	100.00
Total	-	-	100.00	-	-	100.00

Table 4.2.5c: Per Farm Quantity Sold through Various Channels and Prices Received for Rabi Onion – Nasik Lal Variety
(Quantity in Qtls.; Price in Rs./Qtls.)

Farm Category	Village market		Commission agent		Regulated market		Govt. agencies		Other		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Small	-	-	-	-	107.81	1042	-	-	-	-	107.82	1042
Medium	-	-	-	-	160.97	1133	-	-	-	-	160.98	1133
Large	-	-	-	-	130.05	1268	-	-	-	-	130.05	1268
Total	-	-	-	-	113.87	1058	-	-	-	-	398.85	1058

Note: Prices are weighted average

The total quantity of Nasik Lal variety of onion sold through regulated market during rabi season was worked out at 2,784 quintals for small category, 484 quintals for medium category and 130 quintals for large category with a sum of 3,399 quintals for all the categories put together. The per farm quantity of Nasik Lal variety of onion sold through regulated market varied from 108 quintals for small category to 161 quintals for medium category. The average per farm quantity of Nasik Lal variety of onion sold through regulated market during rabi season was estimated at 114 quintals, which fetched an average price of Rs.1,058 per quintal. The average price of Nasik Lal variety of onion increased with the increase in land holding size of farmers, and it varied from Rs.1,042/qtl for small category to Rs.1,268/qtl for large category.

4.2.6 Rabi Onion – Average of All Varieties

The estimates relating to the disposal of quantity of marketed surplus diverted to different marketing agencies along with prices and proportion of diversion for all the varieties of onion put together grown during rabi season by various categories of sampled onion farmers are shown in Table 4.2.6.

Table 4.2.6a: Quantity Sold through Various Channels and Prices Received for Rabi Onion – Avg. All Varieties
(Quantity in Qtls.; Price in Rs./Qtls.)

Farm Category	Village market		Commission agent		Regulated market		Govt. agencies		Other		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Small	-	-	-	-	12650.38	1043	-	-	-	-	12650.38	1043
Medium	-	-	-	-	3182.74	1075	-	-	-	-	3182.74	1075
Large	-	-	-	-	3526.8	1080	-	-	-	-	3526.8	1080
Total	-	-	-	-	19359.92	1051	-	-	-	-	19359.92	1051

Note: Prices are weighted average

Table 4.2.6b: Percentage of Quantity Sold through Various Channels for Rabi Onion – Avg. All Varieties

Farm Category	Village market	Commission agent	Regulated market	Govt. agencies	Other	Total
Small	-	-	100.00	-	-	100.00
Medium	-	-	100.00	-	-	100.00
Large	-	-	100.00	-	-	100.00
Total	-	-	100.00	-	-	100.00

Table 4.2.6c: Per Farm Quantity Sold through Various Channels and Prices Received for Rabi Onion – Avg. All Varieties
(Quantity in Qtls.; Price in Rs./Qtls.)

Farm Category	Village market		Commission agent		Regulated market		Govt. agencies		Other		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Small	-	-	-	-	128.89	1043	-	-	-	-	128.89	1043
Medium	-	-	-	-	158.96	1075	-	-	-	-	158.96	1075
Large	-	-	-	-	353.23	1080	-	-	-	-	353.24	1080
Total	-	-	-	-	151.12	1051	-	-	-	-	151.11	1051

Note: Prices are weighted average

Regulated market was preferred over other channels in the marketing of various varieties of onion grown during rabi season. All the categories of sampled onion farmers cultivating various varieties of onion during rabi season preferred this channel since it provided them reasonable prices for their onion produce.

There was significant difference across various categories of sampled farmers in terms of total quantity as well as per farm quantity of marketed surplus of onion diverted through regulated market during rabi season. The total quantity of onion diverted through regulated market during rabi season with all the varieties put together was worked out at 12,650 quintals for small category, 3,183 quintals for medium category and 3,537 quintals for large category with a sum of 19,360 quintals for all the categories put together. The per farm quantity of onion diverted through regulated market with all the varieties put together increased with the increase in land holding size of farmers, and it increased from 129 quintals for small category to 159 quintals for medium category, and further to 353 quintals for large category. The average per farm quantity of onion diverted through regulated market during rabi season with all the varieties put together was estimated at 151 quintals, which got an average price of Rs.1,051 per quintal. The average price of onion grown during rabi season with all the varieties put together increased from Rs.1,043/qt1 for small category to Rs.1,075/qt1 for medium category and further to Rs.1,080/qt1 for large category, showing thereby rise in price per quintal with an increase in land holding size of sampled onion farmers.

Thus, the estimates clearly showed nearly four times higher quantity of onion sold through regulated market during rabi season as against kharif season with all the categories of farmers and varieties put together. The rabi season also showed relatively higher prices of onion as against kharif season

4.2.7 Grapes – Thomson Variety

The disposal pattern of quantity of marketed surplus diverted to different marketing agencies along with prices and proportion of diversion for Thomson variety of grapes cultivated by various categories of sampled grape farmers is shown Table 4.2.7.

The sampled grape farmers used on-farm sale as one of the marketing channels for diversion of their marketed surplus of Thomson variety of grapes. In case of on-farm sale, there was quick market clearance and reasonable prices on offer. The buyers of grapes in case of on-farm sale not only included agents but also wholesalers and exporters of grapes. The buyers usually brought their own vehicle for the transportation of grapes from the farmers' field.

Table 4.2.7a: Quantity Sold through Various Channels and Prices Received for Grapes – Thomson Variety
 (Quantity in Qtls.; Price in Rs./Qtls.)

Farm Category	Village market		Commission agent		Regulated market		Govt. agencies		On farm sale		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Small	-	-	-	-			-	-	9650.96	3245	9650.96	3245
Medium	-	-	-	-			-	-	3242.01	3699	3242.01	3699
Large	-	-	-	-			-	-	2021.15	3370	2021.15	3370
Total	-	-	-	-			-	-	14914.12	3313	14914.12	3313

Note: Prices are weighted average

Table 4.2.7b: Percentage of Quantity Sold through Various Channels for Grapes – Thomson Variety

Farm Category	Village market	Commission agent	Regulated market	Govt. agencies	On farm sale	Total
Small	-	-	-	-	100.00	100.00
Medium	-	-	-	-	100.00	100.00
Large	-	-	-	-	100.00	100.00
Total	-	-	-	-	100.00	100.00

Table 4.2.7c: Per Farm Quantity Sold through Various Channels and Prices Received for Grapes – Thomson Variety

(Quantity in Qtls.; Price in Rs./Qtls.)

Farm Category	Village market		Commission agent		Regulated market		Govt. agencies		On farm sale		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Small	-	-	-	-			-	-	99.51	3245	99.51	3245
Medium	-	-	-	-			-	-	201.93	3699	201.93	3699
Large	-	-	-	-			-	-	350.99	3370	350.99	3370
Total	-	-	-	-			-	-	127.47	3313	127.47	3313

Note: Prices are weighted average

The sampled grape farmers used on-farm sale as one of the marketing channels for diversion of their marketed surplus of Thomson variety of grapes. In case of on-farm sale, there was quick market clearance and reasonable prices on offer. The buyers of grapes in case of on-farm sale not only included agents but also wholesalers and exporters of grapes. The buyers usually brought their own vehicle for the transportation of grapes. The total quantity of on-farm sale for Thomson variety of grapes was estimated at 9,651 quintals for small category, 3,242 quintals for medium category and 2,021 quintals for large category with a sum of 14,914 quintals for all the categories put together. The per farm quantity of Thomson variety of grapes sold through on-farm sale increased with the increase in land holding size of sampled farmers, which increased from 100 quintals per farm for small category to 351 quintals per farm for large category. The average per farm quantity of Thomson variety of grapes sold through on-farm sale was worked out at 127 quintals, which fetched an average price of Rs.3,313 per quintal. The average price of Thomson variety of grapes marketed through on-farm sale varied from Rs.3,242/qt for small category to Rs.3,699/qt for medium category.

4.2.8 Grapes – Sonaka Variety

The disposal pattern of quantity of marketed surplus diverted to different marketing agencies along with prices and proportion of diversion for Sonaka variety of grapes cultivated by various categories of sampled grape farmers is shown Table 4.2.8.

Table 4.2.8a: Quantity Sold through Various Channels and Prices Received for Grapes – Sonaka Variety
(Quantity in Qtls.; Price in Rs./Qtls.)

Farm Category	Village market		Commission agent		Regulated market		Govt. agencies		On farm sale		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Small	-	-	-	-	-	-	-	-	2440.69	3427	2440.69	3427
Medium	-	-	-	-	-	-	-	-	523.92	4205	523.92	4205
Large	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	2964.61	3595	2964.61	3595

Note: Prices are weighted average

Table 4.2.8b: Percentage of Quantity Sold through Various Channels for Grapes – Sonaka Variety

Farm Category	Village market	Commission agent	Regulated market	Govt. agencies	On farm sale	Total
Small	-	-	-	-	100.00	100.00
Medium	-	-	-	-	100.00	100.00
Large	-	-	-	-	-	-
Total	-	-	-	-	100.00	100.00

Table 4.2.8c: Per Farm Quantity Sold through Various Channels and Prices Received for Grapes – Sonaka Variety
(Quantity in Qtls.; Price in Rs./Qtls.)

Farm Category	Village market		Commission agent		Regulated market		Govt. agencies		On farm sale		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Small	-	-	-	-	-	-	-	-	84.56	3427	84.56	3427
Medium	-	-	-	-	-	-	-	-	62.95	4205	62.95	4205
Large	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	80.12	3595	80.12	3595

Note: Prices are weighted average

The sampled grape farmers used on-farm sale as the only marketing channel for diversion of their marketed surplus of Sonaka variety of grapes. The on-farm sale resulted in quick market clearance and reasonable prices on offer for grapes. This practice was adopted by all the sampled grape farmers. The buyers of grapes included agents, wholesalers, exporters, etc. The buyers generally bring their own vehicle for the transportation of grapes. The total quantity of on-farm sale for Sonaka variety of grapes was estimated at 2,441 quintals for small category and 524 quintals for medium with a sum of 2,965 quintals for all the categories put together. The per farm quantity of Sonaka variety of grapes sold through on-farm sale was higher for small category as against medium category of farmers. The per farm quantity of on-farm sale of Sonaka variety of

grapes was estimated at 85 quintals for small category and 63 quintals for medium category. The average per farm quantity of Sonaka variety of grapes sold through on-farm sale was worked out at 80 quintals, which fetched an average price of Rs.3,595 per quintal. The average price of Sonaka variety of grapes marketed through on-farm sale varied from Rs.3,427/qt for small category to Rs.4,205/qt for medium category.

4.2.9 Grapes – Average of All Varieties

The disposal pattern of quantity of marketed surplus diverted to different marketing agencies along with prices and proportion of diversion of grapes with all the varieties put together for various categories of sampled grape farmers is brought out in Table 4.2.7. The sampled grape farmers cultivating various varieties of grapes used on-farm sale as the most preferred channel rather than any other channel for the marketing of their grape produce. In case of on-farm sale, there was quick market clearance and reasonable prices on offer. The buyers of grapes in case of on-farm sale included agents, wholesalers, processors, exporters, etc. The buyers brought their own vehicle for the transportation of grape produce.

Table 4.2.9a: Quantity Sold through Various Channels and Prices Received for Grapes – Avg. All Varieties
(Quantity in Qtls.; Price in Rs./Qtls.)

Farm Category	Village market		Commission agent		Regulated market		Govt. agencies		On farm sale		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Small	-	-	-	-			-	-	13583.12	3337	13583.12	3337
Medium	-	-	-	-			-	-	4493.57	3789	4493.57	3789
Large	-	-	-	-			-	-	2855.28	3290	2855.28	3290
Total	-	-	-	-			-	-	20931.97	3415	20931.97	3415

Note: Prices are weighted average

Table 4.2.9b: Percentage of Quantity Sold through Various Channels for Grapes – Avg. All Varieties

Farm Category	Village market	Commission agent	Regulated market	Govt. agencies	On farm sale	Total
Small	-	-	-	-	100.00	100.00
Medium	-	-	-	-	100.00	100.00
Large	-	-	-	-	100.00	100.00
Total	-	-	-	-	100.00	100.00

Table 4.2.9c: Per Farm Quantity Sold through Various Channels and Prices Received for Grapes – Avg. All Varieties
(Quantity in Qtls.; Price in Rs./Qtls.)

Farm Category	Village market		Commission agent		Regulated market		Govt. agencies		On farm sale		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Small	-	-	-	-			-	-	91.17	3337	91.17	3337
Medium	-	-	-	-			-	-	134.98	3789	134.98	3789
Large	-	-	-	-			-	-	321.54	3290	321.54	3290
Total	-	-	-	-			-	-	109.59	3415	109.59	3415

Note: Prices are weighted average

The total quantity of on-farm sale of grapes with all the varieties put together was estimated at 13,583 quintals for small category, 4,494 quintals for medium category and 2,855 quintals for large category with a sum of 20,932 quintals for all the categories put together. The per farm quantity of grapes sold through on-farm sale with all the varieties put together increased with the increase in land holding size, which increased from 91 quintals per farm for small category to 135 quintals per farm for medium category, and further to 322 quintals per farm for large category. The average per farm quantity of grapes sold through on-farm sale with all the varieties put together was worked out at 109 quintals, which fetched an average price of Rs.3,415 per quintal. Average price of grapes marketed through on-farm sale with all the varieties put together varied from Rs.3,290/qtl for large category to Rs.3,789/qtl for medium category, showing thereby higher prices received by medium category as against large and small category of farmers.

4.3 Month-wise Disposal of Onion and Grapes and Prices Received

This section attempts to estimate the quantity of marketed surplus of onion and grapes during different months and the average prices realized with respect to sale of produce for various categories of sampled farmers. It is to be noted that all the sampled onion farmers used regulated market as the only marketing channel for the disposal of produce, whereas on-farm sale was practiced for the disposal of produce by sampled grape farmers and they did not use any other marketing channel.

4.3.1 Month-wise Disposal of Kharif Onion and prices Realized

The estimates relating month-wise disposal pattern of marketed surplus along with average prices realized for Nasik Lal, Panchganga and all varieties of onion put together grown during kharif season by various categories of sampled farmers are brought out in Table 4.3.1. A detailed scenario with respect to month-wise disposal pattern of marketed surplus along with average prices realized for all the varieties of onion grown during kharif season put together is provided in Appendix 18.

The estimates showed that the average category of sampled onion farmer sold the entire quantity of Nasik Lal variety of kharif onion through regulated market during the months of October, November, December and January with November month alone showing as much as 43 per cent share in total marketed surplus. The average price realized for Nasik Lal variety of kharif onion in the month of November was 9.02 per cent higher than the average annual prices realized by the farmers. Similarly, the average price realized for Nasik Lal variety of kharif onion in the month of October by average category of farmer was 8.71 per cent higher than the average annual prices realized by the

farmers. However, the average price realized for Nasik Lal variety of kharif onion was 25.55 per cent lower in December and 3.91 per cent lower in January than the average annual prices realized by the farmers. In general, out of the total quantity of 2284 quintals of Nasik Lal variety of kharif onion sold in the market, 429 quintals was sold in October at an average price of Rs.1039/qtl, 972 quintals in November at an average price of Rs.1042/qtl, 452 quintals in December at an average price of Rs.711/qtl, and 422 quintals in January at an average price of Rs.918/qtl. The average annual price for Nasik Lal variety of onion grown during kharif season was estimated at Rs.955/qtl.

In case of Panchganga variety of onion grown during kharif season, the average category of sampled onion farmer sold 90 per cent of the total marketed surplus of onion through regulated market during the months of April, October, November, and February with November month alone showing as much as 50 per cent share in total marketed surplus. The average price realized for Panchganga variety of kharif onion in the month of November was 4.19 per cent higher than the average annual prices realized by the farmers. However, the average price realized for Panchganga variety of kharif onion was 17.31 per cent lower in April, 2.09 per cent lower in October and 4.41 per cent lower in February than the average annual prices realized by the farmers. In general, out of the total quantity of 2087 quintals of Panchganga variety of kharif onion sold in the market, 210 quintals was sold in April at an average price of Rs.750/qtl, 208 quintals in October at an average price of Rs.888/qtl, 1039 quintals in November at an average price of Rs.945/qtl, and 402 quintals in February at an average price of Rs.867/qtl. The average annual price for Panchganga variety of kharif onion was estimated at Rs.907/qtl.

The estimates showed that the average category of sampled onion farmer sold 93 per cent of the total marketed surplus of kharif onion with all the varieties put together through regulated market during the months of October, November, December, January and February with November month alone showing as much as 46 per cent share in total marketed surplus. The average price realized for kharif onion with all the varieties put together was 5.60 per cent higher in the month of November than the average annual prices realized by the farmers. Similarly, the average price realized for kharif onion with all the varieties put together was 3.62 per cent higher in the month of October than the average annual prices realized by the farmers. However, the average price realized for kharif onion with all the varieties put together was 16.06 per cent lower in the month of December, 8.09 per cent lower in January, and 5.29 per cent lower in February than the average annual prices realized by the farmers.

Table 4.3.1: Month-wise and Market-wise Sales of Kharif Onion – (Through Regulated Market Only) – 2013-14

(Quantity in qtl; Price in Rs./qtl)

Farm Category	April		July		October		November		December		January		February		March		Total	
	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price
Nasik Lal Variety																		
Small	-	-	10	480	428.5	1039	584	1065	452	711	369	922	-	-	-	-	1843	953
Medium	-	-	-	-	-	-	388	989	-	-	53	900	-	-	-	-	441	971
Large	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	10	480	428.5	1039	972	1042	452	711	422	918	-	-	-	-	2284	955
Panchganga Variety																		
Small	-	-	-	-	208	888	579	926	48	895	25	865	-	-	156	875	1016	908
Medium	-	-	-	-	-	-	277	1030	-	-	-	-	279	875	-	-	556	952
Large	210	750	-	-	-	-	183	925	-	-	-	-	122.5	850	-	-	516	842
Total	210	750	-	-	208	888	1039	945	48	895	25	865	401.5	867	156	875	2087	907
Avg. (Total) All Variety																		
Small	-	-	10	480	832	964	1515	981	576	775	474	842	96	900	156	875	3652	924
Medium	-	-	-	-	-	-	878	966	-	-	57	900	279	875	-	-	1221	945
Large	210	750	-	-	168	875	183	925	-	-	-	-	122.5	850	-	-	685	850
Total	210	750	10	480	1000	957	2576	976	576	775	531	849	497.5	875	156	875	5558	924

Table 4.3.1 (a): Percentages to the total quantity sold and percent change (increase or decrease) over average annual price (weighted average price) – Kharif Onion

Farm Category	April		July		October		November		December		January		February		March		Total	
	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price
Nasik Lal Variety																		
Small	-	-	0.54	-49.61	23.25	9.02	31.69	11.8	24.5	-25.34	20.02	-3.25	-	-	-	-	100	100
Medium	-	-	-	-	-	-	87.93	1.83	-	-	12.07	-7.31	-	-	-	-	100	100
Large	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	0.44	-49.76	18.76	8.71	42.55	9.02	19.77	-25.55	18.48	-3.91	-	-	-	-	100	100
Panchganga Variety																		
Small	-	-	-	-	20.48	-2.2	57.04	1.98	4.73	-1.43	2.44	-4.74	-	-	15.32	-3.63	100	100
Medium	-	-	-	-	-	-	49.81	8.19	-	-	-	-	50.19	-8.09	-	-	100	100
Large	40.73	-10.93	-	-	-	-	35.51	9.86	-	-	-	-	23.76	0.95	-	-	100	100
Total	10.06	-17.31	-	-	9.96	-2.09	49.8	4.19	2.3	-1.32	1.19	-4.63	19.24	-4.41	7.46	-3.53	100	100
Avg. (Total) All Variety																		
Small	-	-	0.27	-48.08	22.78	4.28	41.49	6.16	15.77	-16.13	12.98	-8.95	2.63	-2.66	4.26	-5.36	100	100
Medium	-	-	-	-	-	-	71.85	2.19	-	-	4.67	-4.8	22.84	-7.45	-	-	100	100
Large	30.65	-11.76	-	-	24.52	2.94	26.72	8.82	-	-	-	-	17.88	0	-	-	100	100
Total	3.78	-18.82	0.18	-48.04	17.99	3.62	46.34	5.6	10.36	-16.06	9.56	-8.09	8.95	-5.29	2.8	-5.29	100	100

In general, out of the total quantity of 5558 quintals of kharif onion sold in the market with all the varieties put together, 1000 quintals was sold in October at an average price of Rs.957/qtl, 2578 quintals in November at an average price of Rs.976/qtl, 574 quintals in December at an average price of Rs.775/qtl, 531 quintals in January at an average price of Rs.849/qtl and 498 quintals in February at an average price of Rs.875/qtl. The average annual price for kharif onion with all the varieties put together was estimated at Rs.924/qtl. Among various categories of farmers, medium category sold as high as 72 per cent of total marketed surplus of kharif onion with all the varieties put together in the month of November at an average price of Rs.966/qtl. The higher quantum of kharif onion sold during the months of October, November, December and January was due to the reason that these were the harvesting months for kharif and late kharif onion.

4.3.2 Month-wise Disposal of Rabi Onion and prices Realized

The estimates relating month-wise disposal pattern of marketed surplus along with average prices realized for Fursungi, Nasik Lal and all varieties of onion put together grown during rabi season by various categories of sampled farmers are brought out in Table 4.3.2. A detailed scenario with respect to month-wise disposal pattern of marketed surplus along with average prices realized for all the varieties of onion grown during kharif season put together is provided in Appendix 19.

The estimates showed that about 97 per cent of the total marketed surplus of Fursungi variety of onion grown during rabi season was sold through regulated market during the months of April, May, June, January, February and March with February month alone showing as much as 30 per cent share in total marketed surplus. However, the average price realized for Fursungi variety of rabi onion in the month of February was 4.33 per cent lower than the average annual prices realized by the farmers. Similarly, the average price realized for Fursungi variety of rabi onion was 1.92 per cent lower in April and 1.64 per cent lower in January than the average annual prices realized by the farmers. On the other hand, the average price realized for Fursungi variety of rabi onion was 7.02 per cent higher in May, 5.59 per cent higher in June and 0.38 per cent higher in March than the average annual prices realized by the farmers. It is to be noted that rabi onion arrives in the market in the month of January and initially prices are lower and then gradually start picking up until the rabi onion gets exhausted. The shelf life of rabi onion is 5-6 months. In general, out of the total quantity of 13047 quintals of Fursungi variety of rabi onion sold in the market, 2270 quintals was sold in April at an average price of Rs.1014/qtl, 851 quintals in May at an average price of Rs.1107/qtl, 1097 quintals in June

at an average price of Rs.1092/qtl, 2202 quintals in January at an average price of Rs.1017/qtl, 3919 quintals in February at an average price of Rs.989/qtl and 2342 quintals in March at an average price of Rs.1038/qtl. The average annual price for Fursungi variety of onion grown during rabi season was estimated at Rs.1034/qtl. The estimates also showed that small category of farmers accounted for the major share in total marketed surplus of Fursungi variety of onion and that the average price realized by small category was lower during the months of January, February and March and higher during the months of April, May, June and July than the average annual price realized.

In case of Nasik Lal variety of onion grown during rabi season, the average category of sampled onion farmer sold 92 per cent of the total marketed surplus in the months of April, May, June, July and March with May and June put together showing nearly 50 per cent share in total marketed surplus. The average price realized for Nasik Lal variety of rabi onion was 11.98 per cent higher in June and 27.76 per cent higher in July than the average annual prices realized by the farmers. However, the average price realized for rabi Nasik Lal variety of onion was 17.84 per cent lower in April, 9.32 per cent lower in May and 7.49 per cent lower in March than the average annual prices realized by the farmers. In general, out of the total quantity of 3399 quintals of Nasik Lal variety of rabi onion sold in the market, 603 quintals was sold in April at an average price of Rs.869/qtl, 802 quintals in May at an average price of Rs.960/qtl, 832 quintals in June at an average price of Rs.1185/qtl, 461 quintals in July at an average price of Rs.1352/qtl, and 420 quintals in March at an average price of Rs.979/qtl. The average annual price for Nasik Lal variety of rabi onion was estimated at Rs.1058/qtl.

In rabi season, about 96 per cent of the total marketed surplus of onion with all the varieties put together was sold during the months of April, May, June, January, February and March with January, February and March put together showing 55 per cent share in total marketed surplus. The average price realized for onion grown during rabi season with all the varieties put together was 0.19 per cent higher in May, 11.89 per cent higher in June, and 24.07 per cent higher in July than the average annual prices realized by the farmers. On the other hand, the average price realized for rabi onion with all the varieties put together was 5.42 per cent lower in April, 2.76 per cent lower in January, 4.85 per cent lower in February and 2.09 per cent lower in March than the average annual prices realized by the farmers. Thus, while rabi onion prices were higher during May, June and July, the prices turned out to be lower in the months of April, January, February and March when compared with the average annual prices realized by the farmers.

Table 4.3.2.: Month-wise and Market-wise Sales of Rabi Onion – (Through Regulated Market Only) – 2013-14

(Quantity in qtl; Price in Rs./qtl)

Farm Category	April		May		June		July		November		January		February		March		Total	
	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price
Fursungi Variety																		
Small	1580	995.31	731	1139.29	753	1129.17	286	1182.5	81	715	1134	968.75	2158	998.06	1067	997.78	7790	1024.12
Medium	544	1086.67	120	992.5	344	980.00	-	-	-	-	436	1026.67	468	1036.88	679	1127.5	2591	1062.97
Large	146	1100.00	-	-	-	-	-	-	-	-	632	1136.67	1292.5	902.5	596	1040	2667	1047.5
Total	2270	1014.25	851	1106.67	1097	1091.88	286	1182.5	81	715	2202	1017.14	3919	989.33	2342	1038	13047	1034.1
Nasik Lal																		
Small	473	793	584	929.5	762	1126.67	461	1352			219	1040	62	975	223	942.5	2784	1041.5
Medium	130	1175	158	1100	-	-	-	-			-	-	-	-	197	1125	485	1133.33
Large	-	-	60	1000	70	1535	-	-			-	-	-	-	-	-	130	1267.5
Total	603	869.4	802	959.63	832	1185	461	1352			219	1040	62	975	420	979	3399	1058.22
Avg. (Total) All Variety																		
Small	2307	969	1951	1057	1793.75	1178	747.2	1304	80.85	715	1931.45	994	257	1004	1264	981	12651	1043
Medium	674	1109	385	1046	344	980					436	1027	465	1037	879.5	1127	3183	1075
Large	146	1100	60	1000	70	1535	-	-	-	-	632	1137	1793	952	826	1077	3527	1080
Total	3127	994	2395.5	1053	2208	1176	747	1304	80.85	715	2999	1022	4833	1000	2969.75	1029	19360	1051

Table 4.3.2 (a): Percentages to the total quantity sold and percent change (increase or decrease) over average annual price (weighted average price) – Rabi Onion

Farm Category	April		May		June		July		November		January		February		March		Total	
	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price
Fursungi Variety																		
Small	20.28	-2.81	9.38	11.25	9.66	10.26	3.67	15.46	1.04	-30.18	14.55	-5.41	27.71	-2.55	13.7	-2.57	100	100
Medium	21	2.23	4.63	-6.63	13.28	-7.81	-	-	-	-	16.83	-3.42	18.06	-2.45	26.21	6.07	100	100
Large	5.48	5.01	-	-	-	-	-	-	-	-	23.7	8.51	48.47	-13.84	22.35	-0.72	100	100
Total	17.4	-1.92	6.52	7.02	8.41	5.59	2.19	14.35	0.62	-30.86	16.88	-1.64	30.04	-4.33	17.95	0.38	100	100
Nasik Lal																		
Small	16.98	-23.86	20.97	-10.75	27.37	8.18	16.56	29.81			7.87	-0.14	2.23	-6.39	8.02	-9.51	100	100
Medium	26.8	3.68	32.58	-2.94	-	-	-	-			-	-	-	-	40.62	-0.74	100	100
Large	-	-	46.15	-21.1	53.85	21.1	-	-			-	-	-	-	-	-	100	100
Total	17.74	-17.84	23.59	-9.32	24.48	11.98	13.57	27.76			6.44	-1.72	1.82	-7.86	12.36	-7.49	100	100
Avg. (Total) All Variety																		
Small	18.24	-7.09	15.42	1.34	14.18	12.94	5.91	25.02	0.64	-31.45	15.27	-4.7	20.36	-3.74	9.99	-5.94	100	100
Medium	21.17	3.16	12.08	-2.7	10.81	-8.84					13.7	-4.47	14.61	-3.53	27.63	4.84	100	100
Large	4.14	1.85	60.1.7	-7.41	1.98	42.13	-	-	-	-	17.92	5.28	50.83	-11.85	23.42	0.28	100	100
Total	16.15	-5.42	12.37	0.19	11.4	11.89	3.86	24.07	0.42	-31.97	15.49	-2.76	24.96	-4.85	15.34	-2.09	100	100

The estimates also showed that, in general, out of the total quantity of 19360 quintals of rabi onion sold in the market with all the varieties put together, 3127 quintals was sold in April at an average price of Rs.994/qtl, 2396 quintals in May at an average price of Rs.1053/qtl, 2208 quintals in June at an average price of Rs.1176/qtl, 747 quintals in July at an average price of Rs.1304/qtl, 2999 quintals in January at an average price of Rs.1022/qtl, 4833 quintals in February at an average price of Rs.1000/qtl and 2970 quintals in March at an average price of Rs.1029/qtl. The average annual price for rabi onion with all the varieties put together was estimated at Rs.1051/qtl. It deserve mention that rabi onion arrives in the market in the month of January and initially prices are lower and then gradually start picking up until the rabi onion gets exhausted. The shelf life of rabi onion is 5-6 months.

The estimates also showed a rising trend in prices realized for rabi onion with the increase in land holding size of farmers. However, though small category of farmers showed marginally lower prices realized for rabi onion, longer retention of rabi onion was practiced by small category as against medium and large category. During the entire period between January and July, small category of farmers kept marketing their rabi onion produce with initially lower and subsequently higher prices realized by them.

4.3.3 Month-wise Disposal of Grapes and prices Realized

Grape harvesting season was noticed to be during the period from January to May. Therefore, marketing of grape was confined to the months of January, February, March, April and May. The estimates relating month-wise disposal pattern of marketed surplus along with average prices realized for Thomson, Sonaka and all varieties of grapes put together grown by various categories of sampled farmers are brought out in Table 4.3.3. A detailed scenario with respect to month-wise disposal pattern of marketed surplus along with average prices realized by various categories of sampled farmers for all the varieties of grapes put together is provided in Appendix 20.

In case of Thomson variety of Grapes, the estimates showed that the entire marketed surplus was sold through on-farm sale during the months of January, February, March, April and May with January, February and May months put together accounting for more than 70 per cent share in total marketed surplus. The average price realized for Thomson variety of grapes was 3.68 per cent higher in February and 4.75 per cent higher in March than the average annual prices realized by the farmers. However, the average price realized for Thomson variety of grapes was 0.06 per cent lower in January, 10.05 per cent lower in April and 4.32 per cent lower in May than the average annual prices

realized by the farmers. In general, out of the total quantity of 14914 quintals of Thomson variety of grapes sold in the market, 3028 quintals was sold in January at an average price of Rs.3311/qtl, 4597 quintals in February at an average price of Rs.3434/qtl, 2394 quintals in March at an average price of Rs.3470/qtl, 1667 quintals in April at an average price of Rs.2980/qtl, and 3228 quintals in May at an average price of Rs.3169/qtl. The average annual price for Thomson variety of grapes was estimated at Rs.3313/qtl. The estimates also showed that the large category of grape farmers sold as much as 87 per cent of the total marketed surplus of grapes in the months of February and May. The major share in total marketed surplus of Thomson variety of grapes was accounted for by small category, followed by medium and large category. However, medium category showed higher prices realized for Thomson variety of grapes as against other categories.

Table 4.3.3: Month-wise and Market-wise Sales of Grapes – All Varieties (Through On-Farm Sale Only)-2013-14
(Quantity in qtl; Price in Rs./qtl)

Farm Category	January		February		March		April		May		Total	
	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price
Thomson Variety												
Small	2303	3226	2149	3433	1702	3273	1503	2950	1995	3189	9651	3245
Medium	725	3717	1165	3568	593	4357	-	-	759	3230	3242	3699
Large	-	-	1282	2800	100	4950	164	3300	474	2900	2021	3370
Total	3028	3311	4597	3434	2394	3470	1667	2980	3228	3169	14914	3313
Sonaka Variety												
Small	408	3277	661	3798	382	3690	705	2930	285	2760	2441	3427
Medium	149	3475	138	3990	160	4290	78	5065	-	-	524	4205
Large	-	-	-	-	-	-	-	-	-	-	-	-
Total	557	3326	799	3836	541	3810	783	3784	285	2760	2965	3595
Avg. (Total) All Variety												
Small	2951	3413	3262	3550	2760	3337	2233	2871	2376	3204	13583	3337
Medium	1131	3864	1417	3515	1034	3914	78	5065	834	3223	4494	3789
Large	-	-	1282	2800	293	4075	806	3190	474	2900	2855	3290
Total	4082	3525	5961	3527	4087	3461	3117	3138	3684	3186	20932	3415

Table 4.3.3 (a): Percentages to the total quantity sold and percent change (increase or decrease) over Average annual price (weighted average price) – Grapes

Farm Category	January		February		March		April		May		Total	
	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price
Thomson Variety												
Small	23.86	-0.59	22.27	5.79	17.63	0.85	15.57	-9.08	20.67	-1.72	100	100
Medium	22.37	0.48	35.93	-3.54	18.28	17.78	-	-	23.42	-12.68	100	100
Large	-	-	63.45	-16.91	4.95	46.88	8.13	-2.08	23.47	-13.95	100	100
Total	20.3	-0.06	30.82	3.68	16.05	4.75	11.18	-10.05	21.65	-4.32	100	100
Sonaka Variety												
Small	16.73	-4.39	27.08	10.8	15.65	7.67	28.86	-14.51	11.68	-19.47	100	100
Medium	28.37	-17.36	26.24	-5.11	30.45	2.02	14.94	20.45	-	-	100	100
Large	-	-	-	-	-	-	-	-	-	-	-	-
Total	18.78	-7.49	26.93	6.69	18.26	5.97	26.4	5.25	9.61	-23.24	100	100
Avg. (Total) All Variety												
Small	21.73	2.27	24.02	6.39	20.32	0	16.44	-13.97	17.5	-3.98	100	100
Medium	25.17	1.98	31.53	-7.22	23.01	3.3	1.74	33.69	18.55	-14.94	100	100
Large	-	-	44.90	-14.89	9.95	23.86	30.27	-3.04	16.14	-11.85	100	100
Total	19.51	3.22	28.47	3.26	19.52	1.34	14.91	-8.12	17.59	-6.71	100	100

The Sonaka variety of grapes was cultivated by small and medium category only. Large category of sampled grape growers did not cultivate Sonaka variety of grapes despite high element of profit and price realization. The estimates showed that the entire marketed surplus of Sonaka variety of grapes was also sold through on-farm sale during the months of January, February, March, April and May with period from January to April accounting for more than 90 per cent share in total marketed surplus. The average price realized for Sonaka variety of grapes was 6.69 per cent higher in February, 5.97 per cent higher in March and 5.25 per cent higher in April than the average annual prices realized by the farmers. However, the average price realized for Sonaka variety of grapes was 7.49 per cent lower in January and 23.24 per cent lower in May than the average annual prices realized by the farmers. In general, out of the total quantity of 2965 quintals of Sonaka variety of grapes sold in the market, 557 quintals was sold in January at an average price of Rs.3326/qtl, 799 quintals in February at an average price of Rs.3836/qtl, 541 quintals in March at an average price of Rs.3810/qtl, 783 quintals in April at an average price of Rs.3784/qtl, and 285 quintals in May at an average price of Rs.2760/qtl. The average annual price for Sonaka variety of grapes was estimated at Rs.3595/qtl. The major share in total marketed surplus of Sonaka variety of grapes was accounted for by small category. However, medium category showed higher prices realized for Sonaka variety of grapes as against small category.

All the varieties of grapes were harvested during the period from January to May. Therefore, the marketing months of grapes encompassed the period from January to May. The estimates showed that the entire marketed surplus of grapes with all the varieties put together was sold through on-farm sale during the months of January, February, March, April and May with February month alone accounting for nearly 30 per cent share in total marketed surplus. The average price realized for grapes with all the varieties put together was 3.22 per cent higher in January, 3.26 per cent higher in February and 1.34 per cent higher in March than the average annual prices realized by the farmers. Contrary to this, the average price realized for grapes with all the varieties put together was 8.12 per cent lower in April and 6.71 per cent lower in May than the average annual prices realized by the farmers. The total quantity of grapes marketed through on-farm sale with all the varieties and categories of farmers put together was estimated at 20932 quintals, which encompassed 4082 quintals quantity sold in January at an average price of Rs.3525/qtl, 5961 quintals in February at an average price of Rs.3527/qtl, 4087 quintals in March at an average price of Rs.3461/qtl, 3117 quintals in April at an average price of Rs.3138/qtl,

and 3684 quintals in May at an average price of Rs.3186/qlt. The average annual price realized for grapes with all the varieties and categories of farmers put together was worked out at Rs.3415/qlt. The estimates also showed that the major share in total marketed surplus of grapes with all the varieties put together was accented for by small category, followed by medium and large category. However, the average price realized for grapes with all the varieties put together was higher for medium category as against small and large category.

4.4 Government Support

One of the major developments witnessed during the nineties period is the shift in cropping pattern in favour of high value fruits and vegetables. The shift in cropping pattern in favour of high value crops is witnessed due to growing urbanization, globalization, rapid shift in food consumption habits and rise in per capita income, which have led to rise in demand for high value commodities. Although various foodgrain, oilseeds, fiber crops, etc. receive government support and intervention in the form of announcement of minimum support price (MSP), the horticulture crops do not fall under any government support due to their perishability. Most of the markets for horticultural crops are run under unregulated marketing conditions and there is no government intervention in this respect, except for onion where NAFED exercises some control. NAFED does not intervene in terms of announcing minimum support or procurement prices for onion crop. NAFED only prevents export trade of onion when there is deficit in production and allows its export trade at times of surplus. Therefore, NAFED continues to be one of the canalizing agencies for export of onion. However, it is felt and also reported by the farmers that there should be MSP for rabi onion, which has shelf life of 5-6 months depending upon the quality of produce. The government intervention and support for rabi onion will certainly solve onion crises, which has become more frequent in recent years. The government support for rabi onion will not only protect farmers but also consumers.

4.5 Sources of Supply for Intermediaries

Various wholesalers, retailers and exporters received their supply of onion and grapes from different sources, which encompassed farmers, commission agents and other wholesalers. The information relating to sources of supply for wholesaler, retailer and exporter with ranking of sources is provided in Table 4.5.1 to Table 4.5.3 for onion crop, whereas similar estimates for grape crop are shown in Table 4.5.4 to Table 4.5.6.

4.5.1 Source of Supply of Onion for Wholesalers

The study covered 10 sampled wholesalers of onion and evaluated the sources of supply of onion for these wholesalers. The major source of supply of onion for wholesalers under 1st ranking was noticed to be from commission agents since 90 per cent of sampled wholesalers received their supply of onion from this market intermediary and the remaining 10 per cent from other wholesaler (Table 4.5.1).

Table 4.5.1: Source of Supply of Onion for Wholesalers

(Wholesalers: N = 10)

Source	Rank 1	Rank 2	Rank 3
Number sourcing from			
Farmers	0	4	6
Commission agents	9	1	0
Other wholesalers	1	5	4
Total	10	10	10
Percentage			
Farmers	0.00	40.00	60.00
Commission agents	90.00	10.00	0
Other wholesalers	10.00	50.00	40.00
Total	100.00	100.00	100.00

Under 2nd ranking, the wholesalers received their major supply of onion from other wholesalers, followed by farmers and commission agents. The major supply of onion for wholesalers under 3rd ranking was from farmers followed by other wholesalers. Thus, under different ranking, the source of supply of onion for wholesalers differed.

4.5.2 Source of Supply of Onion for Retailers

The study also covered 10 sampled retailers of onion and assessed the sources of supply of onion for these retailers. All the 10 sampled retailers received their supply of onion from commission agents. According to 2nd ranking, the major source of supply of onion for these retailers was the wholesalers, followed by farmers (Table 4.5.2).

Table 4.5.2: Source of Supply of Onion for Retailers

(Retailers: N = 10)

Source	Rank 1	Rank 2	Rank 3
Number sourcing from			
Farmers	0	3	7
Commission agents	10	0	0
Wholesalers	0	7	3
Total	10	10	10
Percentage			
Farmers	0.00	30.00	70.00
Commission agents	100.00	0.00	0.00
Wholesalers	0.00	70.00	30.00
Total	100.00	100.00	100.00

According to 70 per cent of sampled retailers, their 3rd most important source of supply of onion was from farmers, whereas 30 per cent of sampled retailers favoured wholesalers as the major source of supply of onion.

4.5.3 Source of Supply of Onion for Exporters

Apart from wholesalers and retailers, the study covered 10 sampled exporters of onion and assessed their sources of supply of onion. The major source of supply of onion for exporters was from commission agents since 70 per cent of sampled exporters received their supply of onion from this market intermediary. According to 2nd ranking, the major source of supply of onion for these exporters was wholesalers, followed by farmers and commission agents (Table 4.5.3).

Table 4.5.3: Source of Supply of Onion for Exporters

(Exporters: N = 10)			
Source	Rank 1	Rank 2	Rank 3
Number sourcing from			
Farmers	3	2	5
Commission agents	7	2	1
Wholesalers	1	5	4
Total	10	10	10
Percentage			
Farmers	30.00	20.00	50.00
Commission agents	70.00	20.00	10.00
Wholesalers	10.00	50.00	40.00
Total	100.00	100.00	100.00

According to 50 per cent of sampled exporters, their 3rd most important source of supply of onion was farmers, whereas 40 per cent of sampled exporters favoured wholesalers as the major source of supply of onion and 10 per cent aired their view in favour of commission agents. Thus, the major source of supply of onion for wholesalers, retailers and exporters was found to be from commission agents since 70-100 per cent of these sampled market intermediaries procured their onion from commission agents, followed by farmers. However, under different ranking, the source of supply of onion for wholesalers, retailers and exporters differed.

4.5.4 Source of Supply of Grape for Wholesalers

The study covered 10 sampled wholesalers of grapes to evaluate their sources of supply of grapes. The farmers constituted the major source of supply of grapes for the wholesalers, followed by commission agents and other wholesalers since 60 per cent of sampled wholesalers received their supply of grapes from farmers and 30 per cent from commission agents (Table 4.5.4).

Table 4.5.4: Source of Supply of Grapes for Wholesalers

(Wholesalers: N = 10)			
Source	Rank 1	Rank 2	Rank 3
Number sourcing from			
Farmers	6	1	3
Commission agents	3	4	3
Other wholesalers	1	5	4
Total	10	10	10
Percentage			
Farmers	60.00	10.00	30.00
Commission agents	30.00	40.00	30.00
Other wholesalers	10.00	50.00	40.00
Total	100.00	100.00	100.00

Under 2nd ranking, the wholesalers received their major supply of grapes from other wholesalers, followed by commission agents and farmers. Similarly, the major supply of grapes for wholesalers under 3rd ranking was from other wholesalers, followed by commission agents and farmers.

4.5.5 Source of Supply of Grape for Retailers

The study also covered 10 sampled retailers of grapes and evaluated the sources of supply of grapes for these retailers. As per 1st ranking, 50 per cent of sampled retailers aired their view in favour of receiving grapes from farmers, 40 per cent among them aired their view in favour of receiving grapes from commission agents and the remaining 10 per cent aired their view in favour of receiving grapes from wholesalers (Table 4.5.5).

Table 4.5.5: Source of Supply of Grapes for Retailers

(Retailers: N = 10)

Source	Rank 1	Rank 2	Rank 3
Number sourcing from			
Farmers	5	5	0
Commission agents	4	5	1
Wholesalers	1	0	9
Total	10	10	10
Percentage			
Farmers	50.00	50.00	0.00
Commission agents	40.00	50.00	10.00
Wholesalers	10.00	0.00	90.00
Total	100.00	100.00	100

The major source of supply of grapes for retailers under 2nd ranking was farmers followed by commission agents since 50 per cent of sampled retailers aired their view in favour of receiving grapes from farmers and another 50 per cent of sampled retailers aired their view in favour of receiving grapes from commission agents. The major source of supply of grapes for retailers under 3rd ranking was wholesalers followed by commission agents since 90 per cent of sampled retailers aired their view in favour of receiving grapes from wholesalers and the remaining 10 per cent aired their view in favour of receiving grapes from commission agents.

4.5.6 Source of Supply of Grapes for Exporters

In addition to wholesalers and retailers, the study covered 10 sampled exporters of grapes to assess their sources of supply of grapes. All the sampled exporters preferred to procure their grapes from farmers, which became their only source of supply under 1st ranking with respect to source of supply (Table 4.5.6). The exporters establish contact with farmers directly and procure grapes, which minimizes their cost of marketing and increases their margins of profit.

Table 4.5.6: Source of Supply of Grapes for Exporters

(Exporters: N = 10)

Source	Rank 1	Rank 2	Rank 3
Number sourcing from			
Farmers	10	0	0
Commission agents	0	4	6
Wholesalers	0	6	4
Total	10	10	10
Percentage			
Farmers	100.00	0.00	0.00
Commission agents	0.00	40.00	60.00
Wholesalers	0.00	60.00	40.00
Total	100.00	100.00	100.00

The major source of supply of grapes for exporters under 2nd ranking was wholesalers followed by commission agents since 60 per cent of sampled exporters aired their view in favour of receiving grapes from wholesalers and the remaining 40 per cent of sampled exporters preferred to procure from commission agents. According to 3rd ranking, the major source of supply of grapes for exporters was commission agents followed by wholesalers since 60 per cent of exporters preferred to procure from commission agents and the remaining 40 per cent from wholesalers.

The foregoing estimates clearly underscore the fact that the wholesalers, retailers and exporters preferred to procure their grape produce from farmers since 60 per cent of wholesalers, 50 per cent of retailers and 100 per cent of exporters aired their view in favour of receiving their grape produce from this source of supply. Generally, the procurement of grapes directly from farmers minimizes cost of marketing and increases margins of profit of these market intermediaries.

CHAPTER – V

PRICE PATTERN OVER TIME AND SPACE

Agricultural commodities in general and horticulture in particular are beset with high price fluctuations due to their unstable production. Among various agricultural commodities, fruits and vegetable prices are more volatile due to low price and income elasticity. The trader's cartels, weak supply chain and market inefficiencies also influence prices of these high value commodities. It is to be noted that high price variability in case of primary products not only affects producers but also consumers, which in turn affect other sectors, resulting in high inflation in the economy (Chengappa, et. al., 2012). The involvement of large number of market functionaries in the supply chain lead to lower share of producer in consumer rupee. The producers are also seen to be exposed to market risk due to lack of market intelligence regarding demand, supply and price prevailing in various market centres. It is also observed that though many commodities generate good amount of marketable surplus, the producers do not get reasonable price for their produce because of deficiencies in the present agricultural marketing system. Many researchers in the past have raised the issue of availability of adequate market intelligence system for agricultural commodities (Kalloo and Pandey, 2002; Singh et.al., 2004). Horticultural commodities are also subjected to high price volatility due to lack of storage, transportation and processing facilities, aside from weather and institutional risks. It deserves mention that the spectre of rising prices of onion during 2013 had adversely affected food inflation. It has been argued that an increase in price of onion affects the consumer by way of increase in food consumption budget, while a decrease in onion prices below the cost of cultivation affects the producer (Chengappa, et. al., 2012). This chapter, therefore, attempts to assess price behaviour of onion and grapes over time at various stages of their marketing in the state of Maharashtra.

5.1 Variation in Prices of Onion

This section focuses on trend in wholesale and retail prices, their seasonal index, inter-year monthly variability, intra-year variability, monthly and annual percentage mark-up in retail prices over wholesale prices for onion in Maharashtra encompassing the period from 2006 to 2014.

5.1.1 Trend in Wholesale Prices of Onion

Large scale fluctuations in the wholesale prices of onions could be observed in the state of Maharashtra over the past one decade. Though, in general, the wholesale prices

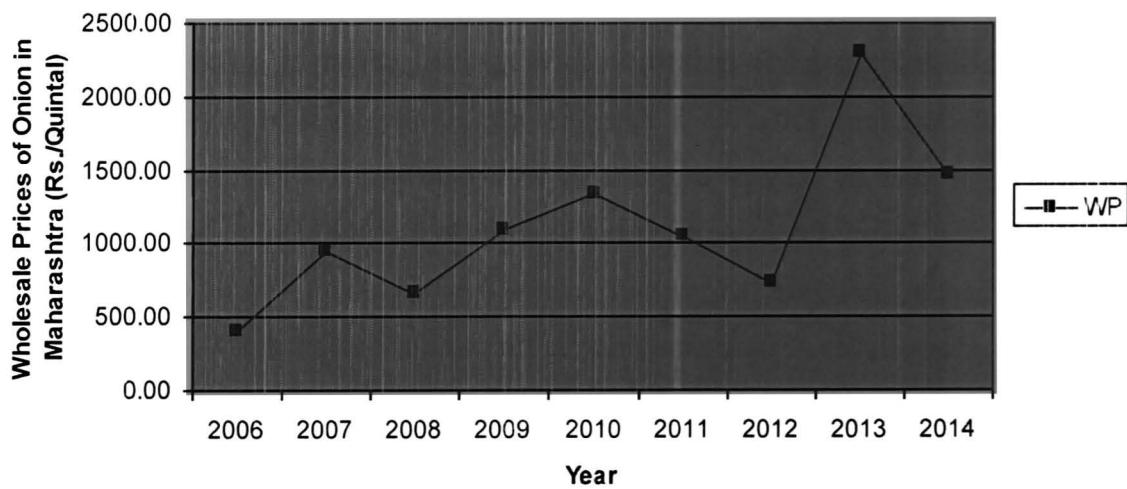
of onions were found to increase over time, time-scale deceleration in the same could also be observed during some phase or the other during the period between 2006 and 2014 (Table 5.1.1 and Figure 5.1). The wholesale onion prices were seen to increase from 2006 to 2007 with a decline in 2008, and further steady increase in the same from 2008 to 2010. The onion prices fell steadily again from 2010 to 2012 only to pick up in the following year with sharp decline thereafter.

Table 5.1.1: Trend in Wholesale Prices of Onion in Maharashtra: 2006 – 2014

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	(Rs./Quintal)
													Annual Average
2006	403	287	273	279	288	320	350	408	419	513	639	712	407
2007	966	1123	683	594	592	846	681	1337	1477	1399	997	757	954
2008	422	369	393	384	559	481	764	883	731	701	1049	1141	656
2009	1378	1162	764	560	762	899	728	739	762	1445	1816	2164	1098
2010	1552	1222	741	633	643	745	761	908	1373	1599	2509	3312	1333
2011	3025	1008	585	568	604	776	915	1118	1223	995	1031	777	1052
2012	559	537	457	512	582	557	669	766	735	861	1272	1292	733
2013	1440	1641	1036	970	998	1371	2228	3789	4411	4462	3383	1773	2292
2014	1105	743	817	945	1302	1641	2213	1947	1761	1614	1757	1794	1470

Note: 1) Monthly figures are computed from average monthly wholesale prices prevailing in Nasik, Pune and Mumbai market centres during the period from 2006 to 2014, which are obtained from NHB Website: <http://www.nhb.gov.in/OnlineClient/MonthwiseAnnualPriceandArrivalReport.aspx>
 2) Wholesale prices of onion prior to 2006 are not available on NHB Website

Figure 5.1: Trend in Wholesale Prices of Onion in Maharashtra: 2006 To 2014



In general, wholesale prices of onion in Maharashtra increased from Rs.407 per quintal in 2006 to Rs.2,292 per quintal in 2013 with a decline in the same to Rs.1,470 per quintal in 2014, showing thereby more than five folds rise in whole sale prices of onion in Maharashtra during the period between 2006 and 2013.

5.1.2 Trend in Retail Prices of Onion

The retail prices of onion in Maharashtra were also seen to be marked with wide fluctuations during the last one decade. The retail prices of onion followed a trend similar to wholesale prices. The retail prices of onion increased from 2006 to 2007 with a decline in 2008, and a steady increase in the same from 2008 to 2011. The retail prices of onion showed a further decline from 2011 to 2012 with a sharp increase in the same in 2013 and a decline thereafter (Table 5.1.2 and Figure 5.2).

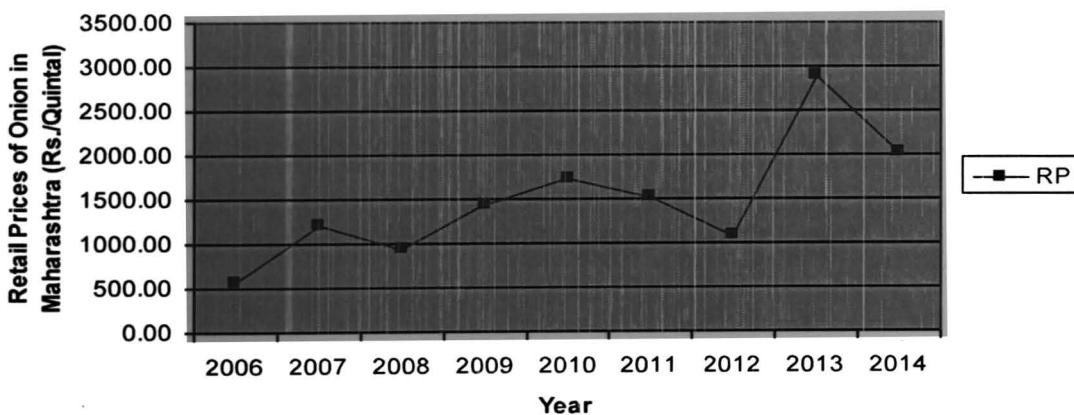
Table 5.1.2: Trend in Retail Prices of Onion in Maharashtra: 2006 – 2014

(Rs./Quintal)

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual Average
2006	589	411	415	425	438	408	438	511	550	700	850	905	553
2007	1172	1375	950	782	800	1050	812	1566	1822	1829	1274	955	1199
2008	740	590	722	723	703	628	974	1186	994	990	1410	1515	931
2009	1801	1521	1077	805	941	1045	1187	1064	1055	1809	2282	2687	1439
2010	1989	1607	990	991	889	969	966	1181	1718	2030	3196	4265	1732
2011	4263	1534	925	833	955	1286	1257	1516	1648	1467	1456	1156	1525
2012	842	846	757	994	938	846	963	1099	1097	1165	1739	1731	1085
2013	1863	2165	1469	1380	1425	1819	2825	4544	5192	5356	4344	2383	2897
2014	1656	1025	1092	1389	1891	2467	2800	2529	2339	2176	2385	2499	2021

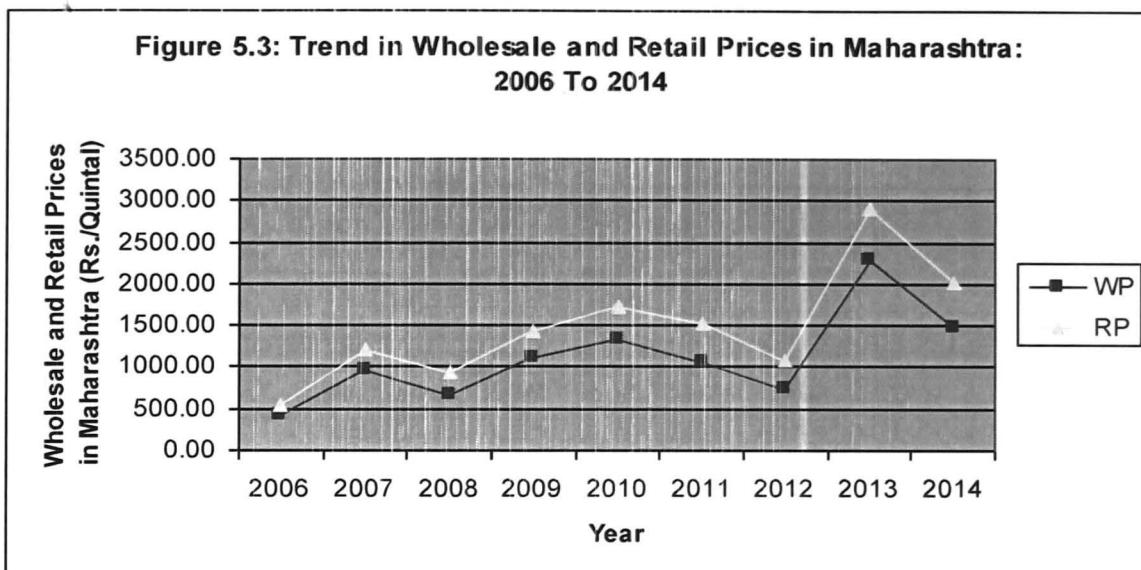
Note: 1) Monthly figures are computed from average monthly retail prices prevailing in Nasik, Pune and Mumbai market centres during the period from 2006 to 2014, which are obtained from NHB Website: <http://www.nhb.gov.in/OnlineClient/MonthwiseAnnualPriceandArrivalReport.aspx>
 2) Retail prices of onion prior to 2006 are not available on NHB Website

Figure 5.2: Trend in Retail Prices of Onion in Maharashtra: 2006 To 2014



The retail prices of onion in Maharashtra increased from Rs.533 per quintal in 2006 to Rs.2,897 per quintal in 2013 with a decline in the same to Rs.2,021 per quintal in 2014, showing thereby nearly six folds rise in the same during the period between 2006 and 2013, notwithstanding deceleration in these prices observed during some of the phases of this period.

It could be further discerned from Figure 5.3 that initially the gap between wholesale and retail prices of onion in Maharashtra was not much but it widened with the passage of time, showing increasing share of market functionaries between wholesale and retail prices of onion.



The wholesale and retail prices of onion in Maharashtra moved closely in 2006. However, the gap between wholesale and retail prices of onion in Maharashtra started growing from 2008 onwards. Higher difference in wholesale and retail prices of onion can be witnessed in 2013 and 2014.

5.1.3 Seasonal Index of Wholesale Prices of Onion

Although monthly wholesale and retail prices of onions over the past one decade are also shown in Table 5.1.1 and Table 5.1.2, these were not of much help in revealing the general price trend as considerable amount of fluctuation in these prices could be observed during different years. Because of wide fluctuations, no concrete conclusion could be drawn as regards the degree of instability in monthly wholesale and retail prices during different years. In order to understand the underlying instabilities in wholesale and retail prices of onions better, the monthly data for the period 2006 to 2014 were used to compute 12 monthly moving totals. These moving totals became the basis for computing specific seasonal relatives and, thereby, seasonal indices. The typical seasonal indices of wholesale and retail prices of onions so obtained, in turn, formed the basis for delineating trend in monthly prices of onions during the past one decade. The seasonal index for wholesale prices of onion, based on average wholesale prices prevailing in Nasik, Pune and Mumbai market centres, are presented in Table 5.1.3.

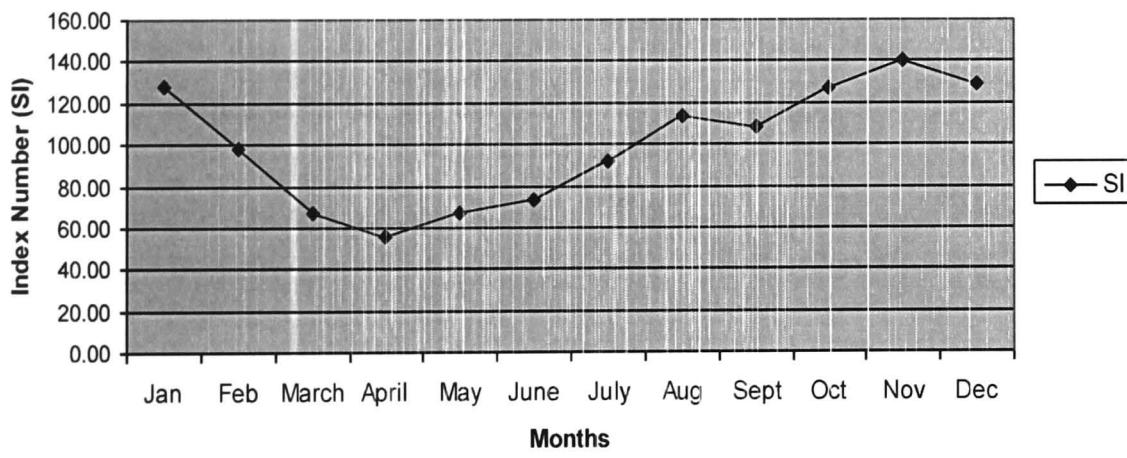
Table 5.1.3: Computation of Typical Seasonal Index for Wholesale Prices of Onion in Maharashtra: 2006 – 2014

Rank	Specific Seasonal Relative as a Percentage											
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	112.89	130.48	95.94	75.74	89.86	98.48	111.27	170.19	202.35	205.62	176.95	233.64
2	56.62	122.17	86.23	61.04	85.58	85.14	109.8	161.75	152.49	177.98	162.58	195.73
3	153.51	116.14	65.15	59.12	77.69	78.28	97.81	135.2	123.25	129.17	155.08	129.33
4	141.03	110.2	64.92	53.95	71.03	75.13	96.39	114.83	95.9	125.22	130.32	122.61
5	212.24	72.92	63.83	51.25	53.23	67	86.91	89.86	89.38	112.41	127.14	99.47
6	73.42	69.95	57.02	50.38	46.12	60.33	65.83	66.24	79.64	89.08	126.91	98.58
7	124.94	51.33	40.54	40.24	45.59	57.96	54.57	62.72	68.21	83.38	122.49	80.38
Total middle five	636.82	491.38	337.15	275.74	333.65	365.88	456.74	567.88	540.66	633.86	702.03	645.72
Mean middle five	127.36	98.28	67.43	55.15	66.73	73.18	91.35	113.58	108.13	126.77	140.41	129.14
Seasonal index	127.63	98.48	67.57	55.26	66.87	73.33	91.54	113.81	108.36	127.04	140.70	129.41

Correction Factor: $1200.00/1197.50 = 1.002087683$

Note: Seasonal relatives have been computed from average monthly wholesale prices prevailing in Nasik, Pune and Mumbai market centres during the period from 2006 to 2014, which were obtained from <http://www.nhb.gov.in/OnlineClient/MonthwiseAnnualPriceandArrivalReport.aspx>

Figure 5.4: Seasonal Index of Wholesale Prices of Onion in Maharashtra: 2006 To 2014



The wholesale price figures of onions obtaining in Maharashtra over the last one decade and shown in Table 5.1.3 clearly exhibited the fact that while these prices peaked in the month of November, they touched their lowest in the month of April. May through November marked the period when the wholesale prices of onions were found to be in the midst of a rising trend. In general, the wholesale prices of onions for the state peaked during the month of August, September, October, November and December and February, March, April, May and June marked the lean months in this respect (Table 5.1.3 and figure 5.4). A noticeable trend emerging out from this analysis was the steep and steady decline in wholesale prices of onions during the period between January and April and sharp increase thereafter.

5.1.4 Seasonal Index of Retail Prices of Onion

The retail prices of onion in Maharashtra behaved similar to wholesale prices of onion. The seasonal index for retail prices of onion, based on average retail prices prevailing in Nasik, Pune and Mumbai market centres, are presented in Table 5.1.4.

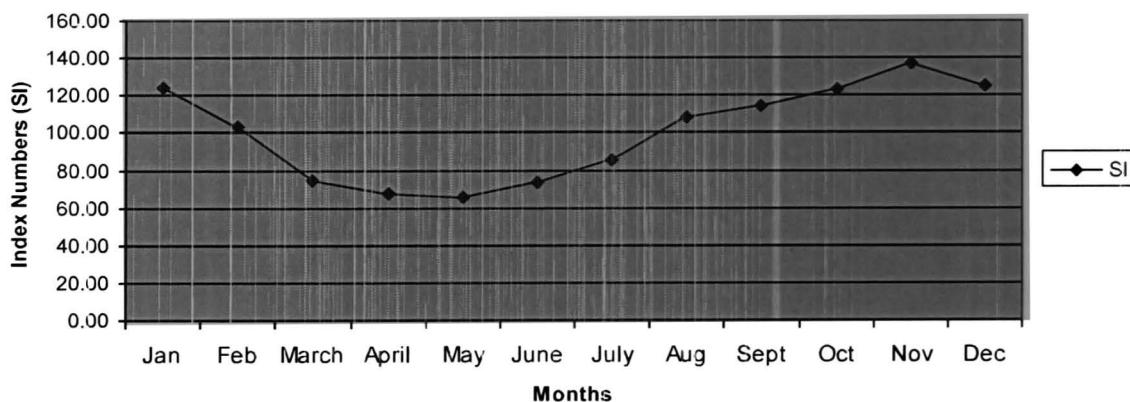
**Table 5.1.4: Computation of Typical Seasonal Index for Wholesale Prices of Onion in Maharashtra:
2006 – 2014**

Rank	Specific Seasonal Relative as a Percentage											
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	219.6	150.22	93.85	96.87	91.51	87.74	99.8	160.44	187.5	194.48	168.19	222.58
2	150.45	126.63	89.85	79.6	80.02	79.72	97.79	138.54	167.43	170.02	156.63	183.68
3	137.09	120.84	73.88	70.31	72.06	77.72	90.93	125.18	140.26	124.83	155.39	129.43
4	136.95	111.09	71.32	65.36	67.97	75.13	85.46	112.01	89.78	123.7	124.99	119.18
5	118.61	77.97	69.76	65.21	56.9	69.2	82	89.73	89.38	106.64	123.33	99.53
6	74.4	76.79	66.97	56.29	52.13	63.37	68.74	72.95	83.75	87.62	123.3	91.1
7	71.35	57.43	46.74	42.66	51.47	58.16	52.85	61.53	72.31	85.99	119.09	84.5
Total middle five	617.5	513.32	371.78	336.77	329.08	365.14	424.92	538.41	570.6	612.81	683.64	622.92
Mean middle five	123.50	102.66	74.36	67.35	65.82	73.03	84.98	107.68	114.12	122.56	136.73	124.58
Seasonal index	123.77	102.89	74.52	67.50	65.96	73.19	85.17	107.92	114.37	122.83	137.03	124.86

Correction Factor: $1200.00/1197.38 = 1.002188111$

Note: Seasonal relatives have been computed from average monthly wholesale prices prevailing in Nasik, Pune and Mumbai market centres during the period from 2006 to 2014, which were obtained from <http://www.nhb.gov.in/OnlineClient/MonthwiseAnnualPriceandArrivalReport.aspx>

**Figure 5.5: Seasonal Index of Retail Prices in Maharashtra:
2006 To 2014**



The trend in retail prices of onion during the last one decade was similar to wholesale prices. While retail prices of onion peaked in the month of November, they touched their lowest in the month of May. The retail prices of onion showed a rising trend from June to November. The general trend showed that the retail prices of onion in Maharashtra peaked during the month of August, September, October, November and December and February, March, April, and May marked the lean months in this respect (Table 5.1.4 and figure 5.5). Like wholesale prices, retail prices of onion showed a steady decline during the period between January and May with a sharp increase thereafter.

5.1.5 Inter and Intra-Year Variability in Onion Prices

Inter-year monthly variability in wholesale and retail prices of onion is estimated through coefficient of variation (CV). The extent of inter-year monthly variability in wholesale and retail prices of onion in Maharashtra during the period between 2006 and 2014 is shown in Table 5.1.5.

Table 5.1.5: Inter-Year Monthly Variability in Wholesale and Retail Prices of Onion in Maharashtra: 2006-2014

Months	Wholesale Prices			Retail Prices		
	Mean	SD	CV	Mean	SD	CV
January	1205.56	810.95	67.27	1657.15	1109.38	66.95
February	899.06	446.79	49.70	1230.41	557.16	45.28
March	638.72	236.64	37.05	932.96	291.64	31.26
April	605.00	228.32	37.74	924.59	309.32	33.46
May	703.44	292.17	41.53	997.83	424.38	42.53
June	848.31	421.15	49.65	1168.54	629.16	53.84
July	1064.65	677.35	63.62	1357.80	856.90	63.11
August	1321.57	1022.83	77.40	1688.30	1201.11	71.14
September	1432.43	1198.26	83.65	1823.80	1373.14	75.29
October	1509.78	1177.03	77.96	1947.00	1370.36	70.38
November	1605.85	873.14	54.37	2104.00	1096.44	52.11
December	1524.52	847.70	55.60	2010.70	1078.57	53.64

Note: Mean prices correspond to averages of wholesale and retail prices prevailing in Nasik, Pune and Mumbai market centres during the period from 2006 to 2014

An evaluation of value of coefficient of variation of wholesale prices of onion showed that the price variability in wholesale prices was much higher during the months of August, September and October, and relatively lower during the months of February, March, April and May. The variability in wholesale prices of onion was moderate during the months of June, July, November, December and January. The nature of this kind of variability in wholesale prices of onion could be correlated with market arrival of onion. The rabi onion arrives in the market during the period from January to March and its shelf life is 4-5 months. The stock of rabi onion is exhausted by August and by then Kharif onion arrives in market, which is highly perishable with much lower shelf life. The late kharif onion arrives in the market sometime in October, which also has much lower shelf life. The un-seasonal rain as well as excess rain many a times damage kharif crop, resulting in sharp rise in onion prices. Lack of rain also affect onion crop. As a result, the price variability in wholesale prices of onion is much higher during the months of August, September, and October as against other months of the year.

The price variability in retail prices of onion was also much higher during the months of August, September and October, and relatively lower during the months of February, March, April and May. The price variability in retail prices of onion was moderate during the months of June, July, November, December and January (Table

5.1.5). Like wholesale prices, retail prices are also subjected to high fluctuations during kharif and late kharif season. The high price variability in wholesale prices lead to high price variability in retail prices. Thus, retail prices of onion are also seen to be beset with high price variability during the months of August, September, and October.

Intra-year variability in wholesale and retail prices of onion is also estimated through coefficient of variation (CV). The extent of intra-year variability in wholesale and retail prices of onion in Maharashtra encompassing the period from 2006 to 2014 is shown in Table 5.1.6.

Table 5.1.6: Intra-Year Variability in Wholesale and Retail Prices of Onion in Maharashtra: 2006-2014

Months	Wholesale Prices			Retail Prices		
	Mean	SD	CV	Mean	SD	CV
2006	407.43	145.33	35.67	553.21	175.87	31.79
2007	954.21	305.50	31.29	1198.79	379.42	31.65
2008	656.22	266.45	40.60	931.36	305.68	32.82
2009	1098.08	503.32	45.84	1439.39	590.22	41.00
2010	1333.22	831.43	62.36	1732.47	1044.91	60.31
2011	1052.03	657.62	62.51	1524.61	902.00	59.16
2012	733.44	281.50	38.38	1084.72	327.28	30.17
2013	2291.83	1345.12	58.69	2897.03	1527.50	52.73
2014	1469.94	475.98	32.38	2020.72	599.61	29.67

Note: Mean prices correspond to averages of wholesale and retail prices prevailing in Nasik, Pune and Mumbai market centres during the period from 2006 to 2014

An evaluation of intra-year variability in wholesale prices of onion showed high variability in wholesale prices in 2010, 2011 and 2013, moderate in 2008 and 2009, and low in 2006, 2007, and 2014. Similarly, retail prices of onion in Maharashtra were also seen to be marked with high variability in 2010, 2011 and 2013, moderate in 2009 and low in 2006, 2007, 2008, and 2014. The intra-year variability was noticed to be relatively lower in retail as against wholesale prices of onion. In general, the intra-year monthly price variability of wholesale and retail prices of onion in Maharashtra was higher as against their inter-year price variability.

5.1.6: Monthly and Annual Percentage Mark-ups

The extent of difference between wholesale and retail prices vary from commodity to commodity, region to region and State to State. Even the same State shows different wholesale and retail prices for a commodity in different areas. While various foodgrain and oilseed crops show lower difference between wholesale and retail prices, this difference is noticed to be higher for high value fruits and vegetable. The extent of mark-up in retail prices over wholesale prices depends upon the number of intermediaries involved between wholesale and retail trade. The estimates relating to monthly and

annual percentage of mark-ups in retail prices over wholesale prices of onion in Maharashtra during the period between 2006 and 2014 are brought out in Table 5.1.7

Table 5.1.7: Monthly and Annual Percentage of Mark-ups in Retail prices over Wholesale Prices of Onion in Maharashtra: 2006-2014

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual Average
2006	46.34	43.21	52.29	52.33	51.91	27.54	25.18	25.40	31.16	36.36	33.02	27.11	35.78
2007	21.39	22.49	39.02	31.65	35.14	24.11	19.19	17.10	23.37	30.76	27.75	26.17	25.63
2008	75.49	60.13	83.96	88.44	25.82	30.63	27.39	34.28	36.04	41.34	34.46	32.85	41.93
2009	30.67	30.90	40.99	43.72	23.45	16.25	63.08	44.04	38.47	25.21	25.67	24.20	31.08
2010	28.14	31.48	33.65	56.50	38.24	30.11	26.89	30.08	25.10	26.98	27.35	28.75	29.95
2011	40.91	52.23	58.06	46.60	58.17	65.75	37.34	35.57	34.78	47.45	41.25	48.82	44.92
2012	50.48	57.44	65.52	94.08	61.08	51.73	43.92	43.41	49.21	35.40	36.70	33.98	47.89
2013	29.35	31.90	41.84	42.18	42.82	32.68	26.78	19.92	17.70	20.04	28.42	34.43	26.41
2014	49.85	37.89	33.56	47.07	45.20	50.34	26.54	29.90	32.82	34.82	35.77	39.32	37.47
Avg.	41.40	40.85	49.88	55.84	42.42	36.57	32.92	31.08	32.07	33.15	32.27	32.85	33.87

Note: 1) Mark-ups are computed from average monthly wholesale and retail prices of onion prevailing in Nasik, Pune and Mumbai market centres during the period from 2006 to 2014, which are obtained from NHB Website: <http://www.nhb.gov.in/OnlineClient/MonthwiseAnnualPriceandArrivalReport.aspx>

The estimates presented in Table 5.1.7 clearly showed higher monthly percentage mark-up in retail prices over wholesale prices of onion during the months of March, April and May, moderate in January and February and low during other months of the year. The monthly percentage mark-up in retail prices over wholesale prices of onion in Maharashtra varied from 17.10 per cent in August, 2007 to as high as 94.08 per cent in April, 2012. During the entire period between 2006 and 2014, the annual percentage mark-up in retail prices over wholesale prices of onion in Maharashtra was the highest in 2011 and lowest in 2007. The annual percentage mark-up in retail prices over wholesale prices of onion in Maharashtra was estimated at 47.89 per cent in 2011 and 25.63 per cent in 2007. In general, the average percentage mark-up in retail prices over wholesale prices of onion in Maharashtra during the entire period of 2006 to 2014 was estimated at 33.87 per cent, which could be considered quite reasonable in view of high fluctuations in wholesale and retail prices of onion in Maharashtra.

5.2 Variation in Prices of Grapes

This section focuses on trend in wholesale and retail prices, their seasonal index, inter-year monthly variability, intra-year variability, monthly and annual percentage mark-up in retail prices over wholesale prices for grapes in Maharashtra encompassing the period from 2006 to 2014. Grape is 5-7 months crop. The arrival of grapes in Maharashtra is noticed during the period from November to May, which includes early and late arrival of grapes in the market.

5.2.1 Trend in Wholesale Prices of Grapes

Although grape is 5-7 month crop, the major arrival is noticed between January and May. There is no market arrival of grapes during the period from June to October. Unlike onion, the wholesale prices of grapes in Maharashtra were not seen to be marked with large scale fluctuations. The wholesale prices of grapes were found to increase steadily from 2006 to 2012 with decline in the same in 2013, and further increase thereafter (Table 5.2.1 and Figure 5.6).

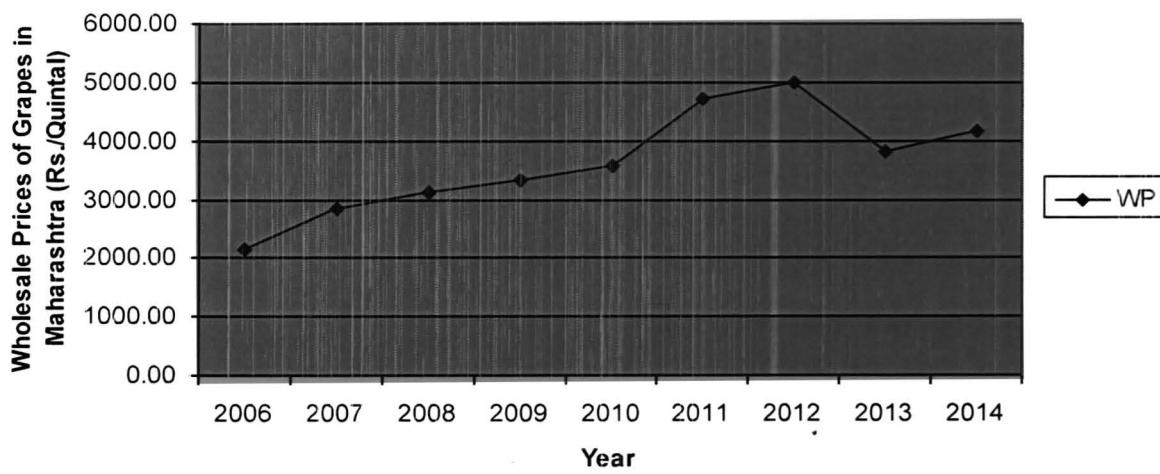
Table 5.2.1: Trend in Wholesale Prices of Grapes in Maharashtra: 2006 – 2014

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	(Rs./Quintal)
													Annual Average
2006	1798	1266	1571	1907	1218	-	-	-	-	-	3667	3667	2156
2007	2266	2098	2571	2789	3313	-	-	-	-	-	2463	4520	2860
2008	2878	2455	2437	2737	3574	-	-	-	-	-	3940	3940	3137
2009	3611	2707	2360	2918	3574	-	-	-	-	-	4135	4100	3344
2010	3413	3001	2840	3472	4022	-	-	-	-	-	4147	4147	3577
2011	4254	4259	4119	5052	6271	-	-	-	-	-	3977	5076	4715
2012	6331	4402	3765	3944	5326	-	-	-	-	-	4100	7000	4981
2013	4280	3749	3493	3781	4589	-	-	-	-	-	2700	4229	3832
2014	3533	4062	4287	5340	4801	-	-	-	-	-	3490	3531	4149

Note: 1) Monthly figures are computed from average monthly wholesale prices prevailing in Nasik, Pune and Mumbai market centres during the period from 2006 to 2014, which are obtained from NHB Website: <http://www.nhb.gov.in/OnlineClient/MonthwiseAnnualPriceandArrivalReport.aspx>

2) Wholesale prices of grapes prior to 2006 are not available on NHB Website

Figure 5.6: Trend in Wholesale Prices of Grapes in Maharashtra: 2006-2014



The wholesale prices of grapes in Maharashtra increased from Rs.2,156 per quintal in 2006 to Rs.4,981 per quintal in 2012 with a decline in the same to Rs.4,149 per quintal in 2014, showing thereby more than two folds rise in the same during the period between 2006 and 2012.

5.2.2 Trend in Retail Prices of Grapes

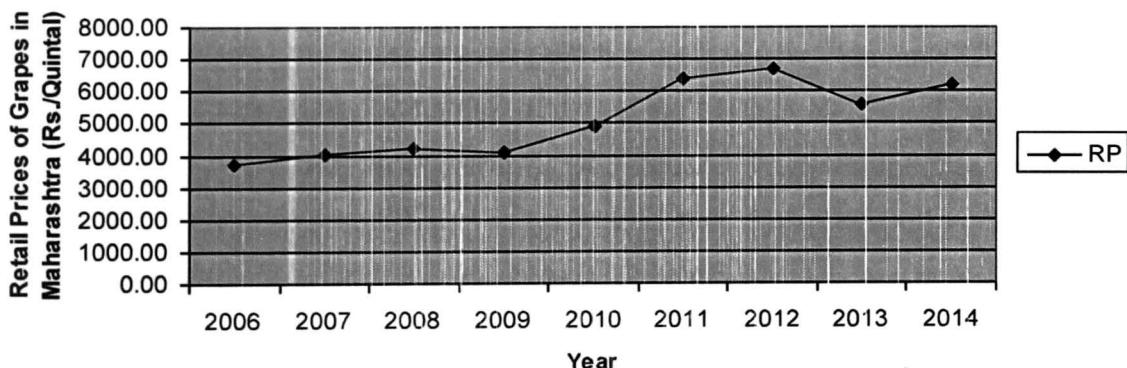
The retail prices of grapes in Maharashtra also followed a trend similar to their wholesale prices, and these prices increased steadily during the period between 2006 and 2012, with a decline in the same in 2013, and rise in the same thereafter (Table 5.2.2 and Figure 5.7). Thus, the fluctuations in retail as well as wholesale prices in grapes were noticed during the period between 2011 and 2014.

Table 5.2.2: Trend in Retail Prices of Grapes in Maharashtra: 2006 – 2014

Year	(Rs./Quintal)												Annual Average
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
2006	3313	2485	3060	3425	2500	-	-	-	-	-	5678	5678	3734
2007	3661	3485	3095	3338	4000	-	-	-	-	-	4750	5678	4001
2008	3556	3210	3156	3457	4250	-	-	-	-	-	5881	5881	4199
2009	5100	3656	3374	3584	4250	-	-	-	-	-	7240	5824	4111
2010	4226	3734	3643	4343	4944	-	-	-	-	-	6747	6747	4912
2011	5256	5245	5161	6118	9165	-	-	-	-	-	6100	7460	6358
2012	8538	5958	5152	5528	7308	-	-	-	-	-	6100	8500	6726
2013	6570	5168	4701	4922	6125	-	-	-	-	-	4360	7250	5585
2014	6000	5906	5712	6441	6200	-	-	-	-	-	6000	7000	6180

Note: 1) Monthly figures are computed from average monthly wholesale prices prevailing in Nasik, Pune and Mumbai market centres during the period from 2006 to 2014, which are obtained from NHB Website: <http://www.nhb.gov.in/OnlineClient/MonthwiseAnnualPriceandArrivalReport.aspx>
 2) Wholesale prices of grapes prior to 2006 are not available on NHB Website

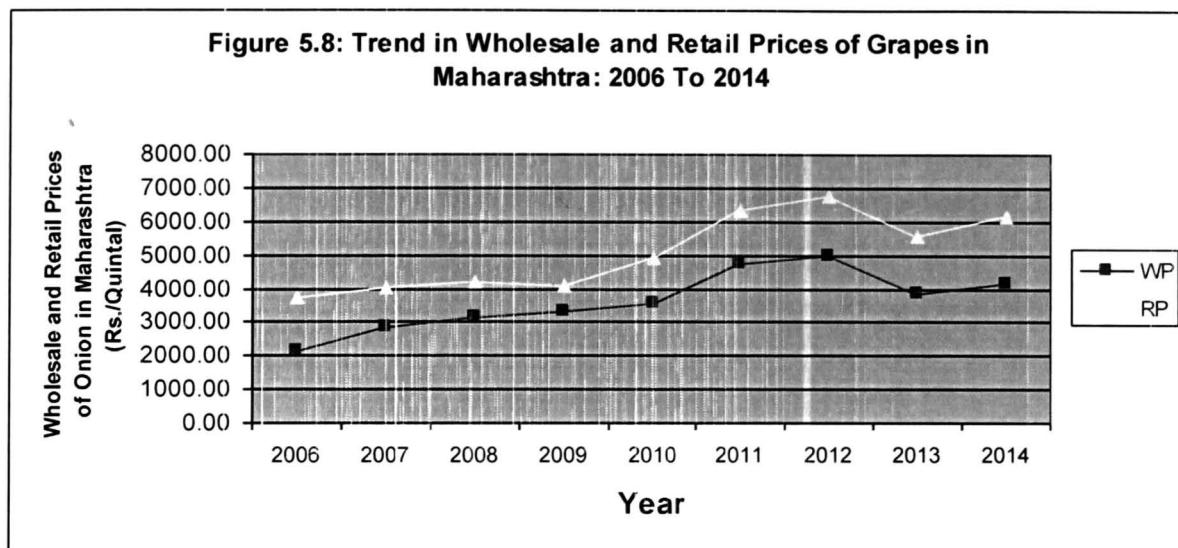
Figure 5.7: Trend in Retail Prices of Grapes in Maharashtra: 2006 To 2014



The retail prices of grapes in Maharashtra increased from Rs.3,734 per quintal in 2006 to Rs.6,726 per quintal in 2012 with a decline in the same to Rs.5,582 per quintal in 2013, and a rise in the same to Rs.6,180 per quintal in 2014, showing two folds rise in the same during the period between 2006 and 2012.

It could be further discerned from Figure 5.8 that the gap between wholesale and retail prices of grapes in Maharashtra narrowed down in 2009 with a rise in the same

thereafter. The gap between wholesale and retail prices of grapes in Maharashtra was substantial during the period between 2011 and 2014, and to some extent in 2006.



In general, the difference between wholesale and retail prices of grapes was much higher as against the difference between wholesale and retail prices of onion in Maharashtra. The higher difference between wholesale and retail price of grape in Maharashtra clearly shows larger share of market functionaries during the movement of grapes from wholesaler to retailer.

5.2.3 Seasonal Index of Wholesale Prices of Grapes

The monthly wholesale and retail prices of grapes in Maharashtra encompassing the period from 2006 to 2014 are shown in Table 5.2.1 and Table 5.2.2. However, these prices could not reveal the general monthly price behaviour since considerable amount of fluctuation in these prices were observed during different years across different months. Therefore, in order to understand the underlying instabilities/fluctuations in wholesale as well as retail prices of grapes better, the monthly data for the period between 2006 and 2014 were used to compute 12 monthly moving totals, which became the basis for computing specific seasonal relatives and, thereby, seasonal indices. The seasonal indices were computed using correction factor. The typical seasonal indices of wholesale and retail prices of grapes so obtained, in turn, formed the basis for delineating trend in monthly prices of grapes during the past one decade. The seasonal index for wholesale prices of grapes, based on average wholesale prices prevailing in Nasik, Pune and Mumbai market centres of Maharashtra during the period between 2006 and 2014, are presented in Table 5.2.3.

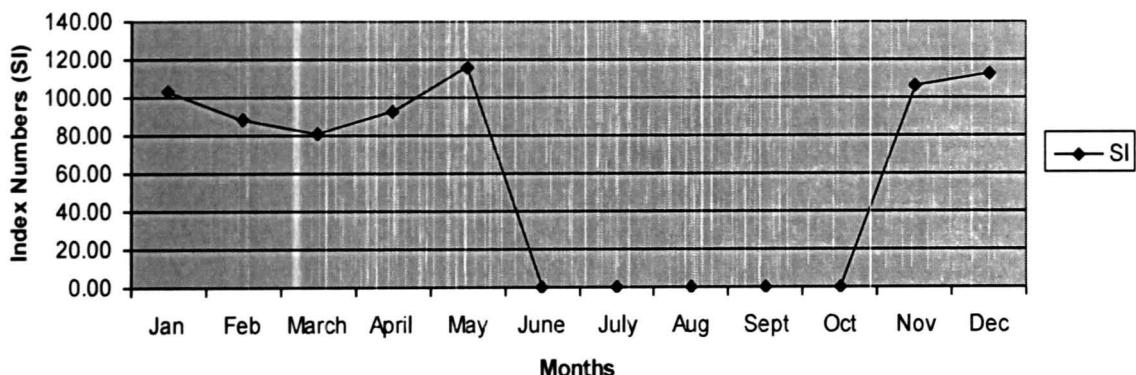
Table 5.2.3: Computation of Typical Seasonal Index for Wholesale Prices of Grapes in Maharashtra: 2006 – 2014

Rank	Specific Seasonal Relative as a Percentage											
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	188.78	150.7	184.7	185.37	192.66	-	-	-	-	-	125.04	259.33
2	165.72	147.17	137.98	159.23	191.97	-	-	-	-	-	201.34	213.43
3	162.77	145.15	127.05	146.54	189.01	-	-	-	-	-	159.89	161.42
4	153.12	131.25	115.41	128.29	178.81	-	-	-	-	-	159.49	157.84
5	147.01	116.8	110.54	125.33	150.08	-	-	-	-	-	144.03	151.97
6	132.85	114.8	108.06	124.13	150	-	-	-	-	-	121.81	148.61
7	127.6	108.87	100.09	116.43	141.91	-	-	-	-	-	91.88	136.41
Total middle five	761.47	655.17	599.04	683.52	859.87	-	-	-	-	-	786.56	833.27
Mean middle five	152.29	131.03	119.81	136.70	171.97	-	-	-	-	-	157.31	166.65
Seasonal index	102.92	88.56	80.97	92.39	116.22	-	-	-	-	-	106.31	112.63

Correction Factor: $700.00/1035.78 = 0.675819189$

Note: Seasonal relatives have been computed from average monthly wholesale prices prevailing in Nasik, Pune and Mumbai market centres during the period from 2006 to 2014, which were obtained from <http://www.nhb.gov.in/OnlineClient/MonthwiseAnnualPriceandArrivalReport.aspx>

Figure 5.9: Seasonal Index of Wholesale Prices of Grapes in Maharashtra: 2006 To 2014



The wholesale prices of grapes in Maharashtra over the last one decade clearly exhibited the fact that while these prices peaked in the month of December and May, they touched their lowest in the month of March. June through October marked the period when there was no market arrival of grapes, and, therefore, these prices remained at zero during this period. With the early market arrival, the wholesale prices of grapes increased from November to December with a fall in the same from January to March and again rise in the same from March to May (Table 5.2.3 and figure 5.9). The entire period between November and May included early and late arrival of grapes in the market.

5.2.4 Seasonal Index of Retail Prices of Grapes

The retail prices of grapes in Maharashtra behaved similar to wholesale prices of grapes. The seasonal index for retail prices of grapes, based on average retail prices prevailing in Nasik, Pune and Mumbai market centres, are presented in Table 5.2.4.

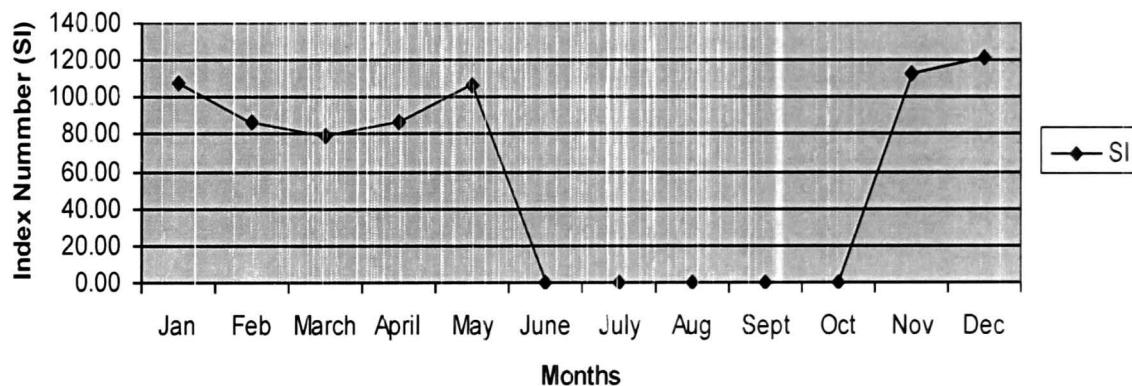
Table 5.2.4: Computation of Typical Seasonal Index for Retail Prices of Grapes in Maharashtra: 2006 – 2014

Rank	Specific Seasonal Relative as a Percentage											
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	193.05	183.77	163.2	170.04	211.64	-	-	-	-	-	219.36	232.68
2	187.49	147.34	127.85	143.98	177	-	-	-	-	-	191.28	203.35
3	187.33	133.38	122.41	141.02	176.01	-	-	-	-	-	181.64	176.73
4	156.09	130.85	115.78	130.47	157.12	-	-	-	-	-	165.18	174.93
5	133.65	112.14	109.42	114.28	140.21	-	-	-	-	-	158.52	172.23
6	126.91	111.85	107.42	111.78	132.8	-	-	-	-	-	133.52	164.96
7	121.02	109.25	103.21	111.64	128.72	-	-	-	-	-	98.65	155.5
Total middle five	791.47	635.56	582.88	641.53	783.14	-	-	-	-	-	830.14	892.2
Mean middle five	158.29	127.11	116.58	128.31	156.63	-	-	-	-	-	166.03	178.44
Seasonal index	107.43	86.27	79.12	87.08	106.30	-	-	-	-	-	112.68	121.11

Correction Factor: $700.00/1031.38 = 0.678702321$

Note: Seasonal relatives have been computed from average monthly wholesale prices prevailing in Nasik, Pune and Murnbai market centres during the period from 2006 to 2014, which were obtained from <http://www.nhb.gov.in/OnlineClient/MonthwiseAnnualPriceandArrivalReport.aspx>

Figure 5.10: Seasonal Index of Retail Prices of Grapes in Maharashtra: 2006 To 2014



The trend in retail prices of grapes during the last one decade was exactly similar to wholesale prices of grapes. While retail prices of grapes peaked in the month of December and May, they touched their lowest in the month of March. The retail prices of grapes in Maharashtra started rising from November to December with a steady fall in the same from January to March, and thereafter they showed again a rising trend and peaked in the Month of May (Table 5.2.4 and figure 5.10). June through October marked the period when there was no market arrival of grapes, and, therefore, these prices remained at zero during this period. The correction factor used for the computation of seasonal index for wholesale and retail prices of grapes remained low due to the fact that computation was done for seven months. The estimated correction factor computed for wholesale and retail prices of grapes moved very closely.

5.2.5 Inter and Intra-Year Variability in Grape Prices

Inter-year monthly variability in wholesale and retail prices of grapes is estimated through coefficient of variation (CV). The extent of inter-year monthly variability in wholesale and retail prices of grapes in Maharashtra encompassing the period from 2006 to 2014 is shown in Table 5.2.5.

Table 5.2.5: Inter-Year Monthly Variability in Wholesale and Retail Prices of Grapes in Maharashtra: 2006-2014

Months	Wholesale Prices			Retail Prices		
	Mean	SD	CV	Mean	SD	CV
January	3595.91	1319.93	36.71	5135.24	1703.52	33.17
February	3110.81	1079.89	34.71	4316.20	1267.57	29.37
March	3049.13	914.75	30.00	4117.00	1055.15	25.63
April	3548.74	1118.98	31.53	4572.72	1226.27	26.82
May	4076.35	1432.93	35.15	5415.67	2006.13	37.04
June	-	-	-	-	-	-
July	-	-	-	-	-	-
August	-	-	-	-	-	-
September	-	-	-	-	-	-
October	-	-	-	-	-	-
November	3624.28	633.28	17.47	5872.89	890.23	15.16
December	4467.72	1053.44	23.58	6668.67	983.02	14.74

Note: Mean prices correspond to averages of wholesale and retail prices prevailing in Nasik, Pune and Mumbai market centres during the period from 2006 to 2014

A critical evaluation of value of coefficient of variation of wholesale prices of grapes showed that the price variability in wholesale prices was relatively higher during the months of January, February, March, April and May, and lowest in the month of November (Table 5.2.5). The variability in wholesale prices of grapes was moderate in the month of December.

Unlike wholesale prices, the retail prices of grapes showed higher variability during the months of January and May, and lowest variability in this respect during the months of November and December. The variability in retail prices of grapes was moderate during the months of February, March and April (Table 5.2.5). Generally, the major arrival of grapes in the market is noticed during the months of February, March and April, and during these months prices remain at lower ebb. As the stock of grapes start depleting in the month of May, their prices increase during this month. Although the variability in prices of grapes is noticed to be low during the months of November and December, the prices of grape generally remain at higher level during these months.

Intra-year variability in wholesale and retail prices of grape is also estimated through coefficient of variation (CV). The extent of intra-year variability in wholesale and retail prices of grapes in Maharashtra encompassing the period from 2006 to 2014 is shown in Table 5.2.6.

Table 5.2.6: Inter-Year Variability in Wholesale and Retail Prices of Grapes in Maharashtra: 2006-2014

Months	Wholesale Prices			Retail Prices		
	Mean	SD	CV	Mean	SD	CV
2006	2156.14	1062.34	49.27	3734.00	1376.51	36.86
2007	2859.62	830.88	29.06	4001.00	914.29	22.85
2008	3137.21	666.05	21.23	4198.57	1203.63	28.67
2009	3343.62	692.35	20.71	4718.17	1424.16	30.18
2010	3577.33	541.78	15.14	4911.83	1324.75	26.97
2011	4715.38	815.03	17.28	6357.62	1477.78	23.24
2012	4981.10	1270.42	25.50	6726.14	1394.13	20.73
2013	3831.52	624.13	16.29	5585.19	1074.62	19.24
2014	4149.00	714.76	17.23	6179.69	428.22	6.93

Note: Mean prices correspond to averages of wholesale and retail prices prevailing in Nasik, Pune and Mumbai market centres during the period from 2006 to 2014

The wholesale and retail prices of grapes in Maharashtra were marked with large scale variability during the period between 2006 and 2014. A critical evaluation of intra-year variability in wholesale prices of grapes revealed high variability in wholesale prices in 2006, moderate in 2007, 2008, 2009 and 2012, and low in 2010, 2011, 2013 and 2014. The retail prices of grapes in Maharashtra were found to be beset with high variability in 2006 and 2009, moderate in 2007, 2008, 2010, 2011 and 2012, and low in 2013 and 2014. In general, wholesale prices of grapes showed higher variability during 2006 and 2007, whereas retail prices of grapes were marked with higher variability during 2006 and 2009.

5.2.6: Monthly and Annual Percentage Mark-ups

The extent of mark-up in retail prices over wholesale prices depends upon the number of intermediaries involved between wholesale and retail trade and their profit margin at successive stage of marketing. The estimates relating to monthly and annual percentage of mark-ups in retail prices over wholesale prices of grapes in Maharashtra encompassing the period from 2006 to 2014 are shown in Table 5.2.7.

Table 5.2.7: Monthly and Annual Percentage of Mark-ups in Retail prices over Wholesale Prices of Grapes in Maharashtra: 2006-2014

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual Average
2006	84.23	96.29	94.84	79.62	105.25	-	-	-	-	-	54.84	54.84	73.18
2007	61.60	66.15	20.40	19.71	20.75	-	-	-	-	-	92.89	25.62	39.91
2008	23.56	30.72	29.50	26.29	18.91	-	-	-	-	-	49.26	49.28	33.83
2009	41.22	35.04	42.93	22.84	18.91	-	-	-	-	-	75.09	42.05	41.11
2010	23.81	24.43	28.27	25.09	22.92	-	-	-	-	-	62.70	62.70	37.30
2011	23.54	23.16	25.29	21.09	46.14	-	-	-	-	-	53.38	46.97	34.83
2012	34.85	35.37	36.84	40.15	37.20	-	-	-	-	-	48.78	21.43	35.03
2013	53.50	37.85	34.59	30.19	33.47	-	-	-	-	-	61.48	71.44	45.77
2014	69.83	45.40	33.23	20.61	29.15	-	-	-	-	-	71.92	98.24	48.94
Avg.	46.24	43.82	38.43	31.73	36.97	-	-	-	-	-	63.37	52.51	41.71

Note: 1) Mark-ups are computed from average monthly wholesale and retail prices of grapes prevailing in Nasik, Pune and Mumbai market centres during the period from 2006 to 2014, which are obtained from NHB Website: <http://www.nhb.gov.in/OnlineClient/MonthwiseAnnualPriceandArrivalReport.aspx>

The estimates shown in Table 5.2.7 revealed relatively higher monthly percentage mark-up in retail prices over wholesale prices of grapes during the months of November and December, moderate in January and low during February, March, April and May. Further, large scale variation in monthly percentage mark-up in retail prices over wholesale prices of grapes in Maharashtra was noticed during the period between 2006 and 2014, which varied from 18.91 per cent in May, 2008 and 2009 to 105.25 per cent in May, 2006. The year 2006 showed very high monthly percentage mark-up in retail prices over wholesale prices of grapes in Maharashtra. During the entire period between 2006 and 2014, the annual percentage mark-up in retail prices over wholesale prices of grapes in Maharashtra was the highest in 2006 and lowest in 2008. The annual percentage mark-up in retail prices over wholesale prices of grapes in Maharashtra was estimated at 33.83 per cent in 2008 and 73.18 per cent in 2006. In general, the average percentage mark-up in retail prices over wholesale prices of grapes in Maharashtra during the entire period of 2006 to 2014 was estimated at 44.71 per cent.

Thus, the percentage mark-up in retail prices over wholesale prices was found to be higher in case of grape as against onion in Maharashtra. The variation in percentage mark-up in retail prices over wholesale prices was also relatively wide across months in case of grapes as against onion. The market functionaries, therefore, made larger amount of profit during the movement of grapes from wholesale to retail trade.

5.3 Analysis of Profitability and Mark-Ups (From Primary Data)

The marketing of produce from the point of production to the consumption point involves several market functionaries like producers, commission agents, wholesalers, retailers, Government agencies, exporters, etc. The consumer's price or retail price depends on the length of channel through which produce travels. At each stage of marketing in the marketing channel, a market functionary incurs some cost and adds his margins of profit before transferring it to another market functionary, who, in turn, incurs some costs and adds his margins of profit before transferring it to another market functionary until the produce reaches the final consumer. The entire process results in significant price difference from the point of production to the point of consumption, and mark up varies depending upon number of marketing intermediaries involved in the channel. The producer's share in consumer rupee is generally low in case fruits and vegetables marketing due to loss of produce in the marketing channel and reasonable margins of profit cornered by market functionaries involved in the channel. The fruits and vegetables are not only highly perishable but also subjected to high price fluctuations.

In the light of above backdrop, this section attempts to estimate the marketing cost/transaction cost for the entire marketing channel/supply chain. It deserves mention here that while onion marketing involves producer, wholesaler, retailer and exporter, the marketing of grapes is different where agents, processors and wholesalers also perform the role of exporters, apart from producer farmers who sometimes export directly. This section, therefore, chiefly focuses on farmer's percentage profit, and percentage mark-ups of wholesaler, retailer, and exporters through whom produce reaches to the ultimate consumer in the domestic and export market.

5.3.1 Farmer's Percentage Profit for Onion and Grapes

The estimates relating to proportion of profit involved in the cultivation of Nasik Lal, Panchganga and all varieties of onion put together grown during kharif season by various categories of sampled farmers are brought out in Table 5.3.1.1. Similar estimates for Fursungi, Nasik Lal and all varieties of onion put together grown during rabi season by various categories of sampled farmers are shown in Table 5.3.1.2. In case of grapes, the estimates relating to proportion of profit involved in the cultivation of Thomson, Sonaka and all varieties of grapes put together are brought out in Table 5.3.1.3.

A detailed scenario with respect to proportion of profit involved in the cultivation of all the varieties of onion grown during kharif and rabi season by various categories of sampled onion farmers is provided in Appendix 21 and Appendix 22, respectively, whereas Appendix 23 provides a detailed scenario in this respect for all the varieties of grapes cultivated on the farms belonging to sampled grape farmers.

In case of Nasik Lal variety of onion grown during Kharif season, the value of main product was estimated at Rs.953/qtl for small category and Rs.971/qtl for medium category with an average of Rs.953/qtl for the average category of farmers (Table 5.3.1.1). The estimates further showed that the average return over variable cost (ROVC) for Nasik Lal variety of onion was Rs.456/qtl, which varied from Rs.361/qtl for medium category to Rs.480/qtl for small category. The small and medium category of sampled onion farmers showed significant variation in proportion of per quintal profit over per quintal variable cost for Nasik Lal variety of onion. In general, the average category of sampled onion farmer generated 91.44 per cent of per quintal net returns/profit over per quintal variable cost in the cultivation of Nasik Lal variety of onion during kharif season.

As for Panchganga variety of onion grown during Kharif season, the value of main product was estimated at Rs.908/qtl for small category, Rs.953/qtl for medium category and Rs.842/qtl for large category with an average of Rs.907/qtl for the average

category of farmers (Table 5.3.1.2). The ROVC for Panchganga variety of onion decreased with the increase in land holding size of sampled farmers with a decline in the same from Rs.398/qlt for small category to Rs.320/qlt for large category. The average ROVC for Panchganga variety of onion was estimated at Rs.367/qlt. The proportion of per quintal profit over per quintal variable cost for Panchganga variety of onion varied across land holding size categories. The average proportion of per quintal profit over per quintal variable cost for Panchganga variety of onion grown during kharif season was estimated at 67.86 per cent, which stood at lower as against Nasik Lal variety of onion.

Table 5.3.1.1: Variety-wise Percentage Profit for Kharif Onion

Farm Category	Value of Main Product (Rs/qlt)	Variable Cost (Rs./qlt)	ROVC (Rs./qlt)	% Profit* (ROVC/VC)*(100)
Nasik Lal Variety				
Small	953	473	480	101.57
Medium	971	610	361	59.11
Large	-	-	-	-
Average	955	499	456	91.44
Panchganga Variety				
Small	908	510	398	78.06
Medium	953	613	339	55.28
Large	842	522	320	61.31
Average	907	540	367	67.86
Avg. All Varieties				
Small	925	497	427	85.97
Medium	945	597	349	58.43
Large	850	528	322	60.96
Average	924	523	401	76.54

Note: VC – Variable Cost; ROVC – Returns over Variable Cost; * - For computing farmer's percentage profit, only variable costs have been considered

The value of kharif onion with all the varieties put together showed significant variation across land holding size categories, and it varied Rs.850/qlt for large category to Rs.945/qlt for medium category. Further, the average return over variable cost (ROVC) with all the varieties of onion grown during kharif season showed a declining trend with the increase in land holding size of farmers, which declined from Rs.427/qlt for small category to Rs.322/qlt for large category with an average of Rs.401/qlt for the average category of farmers. The proportion of per quintal profit over per quintal variable cost with all the varieties of kharif onion put together varied across land holding size categories. The proportion of per quintal profit over per quintal variable cost for the average category of farmer with all the varieties of kharif onion put together was estimated at 76.54 per cent, which appeared to be quite reasonable.

In case of Fursungi variety of onion cultivated during Rabi season, the value of main product was estimated at Rs.1024/qlt for small category and Rs.1063/qlt for

medium category and Rs.1048/qlt for the large category with an average of Rs.1034/qlt for the average category of farmers (Table 5.3.1.2). The ROVC for Fursungi variety of onion varied across land holding size categories, and variation was seen from Rs.347/qlt for large category to Rs.412/qlt for medium category with an average of Rs.388/qlt for the average category of farmers. The estimates also showed a decline in proportion of per quintal profit over per quintal variable cost for Fursungi variety of onion grown during rabi season. The average category of sampled onion farmer was found to generate 60 per cent per quintal net returns/profit over per quintal variable cost in the cultivation of Fursungi variety of onion during rabi season.

The Nasik Lal variety of onion grown during rabi season showed significant variation in value of main product, which varied from Rs.1042/qlt for small category to Rs.1268/qlt for large category with an average of Rs.1058/qlt for the average category of farmers. The ROVC for Nasik Lal variety of onion increased with the increase in land holding size of sampled farmers with an Increase from Rs.454/qlt for small category to Rs.626/qlt for large category. The average ROVC for Nasik Lal variety of onion was estimated at Rs.472/qlt. The proportion of per quintal profit over per quintal variable cost for Nasik Lal variety of onion cultivated during rabi season varied significantly across land holding size categories. It varied from 77.29 per cent for small category to 101.73 for medium category of sampled farmers. The average proportion of per quintal profit over per quintal variable cost for Nasik Lal variety of onion cultivated in rabi season was estimated at 80.62 per cent, which stood at higher as against Fursungi variety of onion.

Table 5.3.1.2: Variety-wise Percentage Profit for Rabi Onion

Farm Category	Value of Main Product (Rs/qlt)	Variable Cost (Rs./qlt)	ROVC (Rs./qlt)	% Profit* (ROVC/VC)*(100)
Fursungi Variety				
Small	1024	627	397	63.43
Medium	1063	651	412	63.41
Large	1048	700	347	49.60
Average	1034	646	388	60.00
Nasik Lal Variety				
Small	1042	587	454	77.29
Medium	1133	562	572	101.73
Large	1268	641	626	97.69
Average	1058	586	472	80.62
Avg. All Varieties				
Small	1043	624	419	67.17
Medium	1075	637	438	68.72
Large	1080	689	391	56.82
Average	1051	638	417	65.39

Note: VC – Variable Cost; ROVC – Returns over Variable Cost; * - For computing farmer's percentage profit, only variable costs have been considered

In case of rabi onion, the value of main product with all the varieties put together increased with the increase in land holding size of sampled farmers; the increase being from Rs.1043/qtl for small category to Rs.1080/qtl for large category. The overall average value of main product in rabi season with all the varieties put together was estimated at Rs.1051/qtl. The ROVC of rabi onion with all the varieties put together was higher for medium and lower for large category. The ROVC of rabi onion with all the varieties put together was estimated at Rs.419/qtl for small category, Rs.438/qtl for medium and Rs.391/qtl for large category with an overall average of Rs.417/qtl for the average category of farmers. The proportion of per quintal profit over per quintal variable cost with all the varieties of rabi onion put together was also higher for medium category and lower for large category. The proportion of per quintal profit over per quintal variable cost for the average category of farmer with all the varieties of rabi onion put together stood at 65.39 per cent, which was lower as against kharif onion with all the varieties put together. However, both kharif and rabi onion showed reasonable margins of profit over variable cost on per quintal basis.

The grape farming was found to be more profitable as against onion cultivation. In case of grapes, the value of Thomson variety was estimated at Rs.3345/qtl for small category, Rs.3699/qtl for medium category and Rs.3370/qtl for the large category with an average of Rs.3313/qtl for the average category of farmers (Table 5.3.1.3). The ROVC for Thomson variety of grapes varied significantly across land holding size categories, and variation was seen from Rs.1624/qtl for small category to Rs.1870/qtl for medium category with an average of Rs.1663/qtl for the average category of farmers. The estimates further showed an increase in proportion of per quintal profit over per quintal variable cost for Thomson variety of grapes. The average category of sampled grape farmer was found to generate 100.78 per cent per quintal net returns/profit over per quintal variable cost in the cultivation of Thomson variety of grapes.

In case of Sonaka variety of grapes, the value of main product was worked out at Rs.3427/qtl for small category and Rs.4205/qtl for medium category with an average of Rs.3595/qtl for the average category of farmers (Table 5.3.1.3). The medium category of grape farmer cultivating Sonaka variety also showed higher ROVC as against small category, which was estimated at Rs.1790/qtl for small category and Rs.2109/qtl for medium category with an average of Rs.1875/qtl for the average category of farmers. The average category of sampled grape farmer generated 109.04 per cent per quintal profit over per quintal variable cost in the cultivation of Sonaka variety of grapes.

Table 5.3.1.3: Variety-wise Percentage Profit for Grapes

Farm Category	Value of Main Product (Rs./qtl)	Variable Cost (Rs./qtl)	ROVC (Rs./qtl)	% Profit* (ROVC/VC)*(100)
Thomson Variety				
Small	3245	1621	1624	100.19
Medium	3699	1830	1870	102.19
Large	3370	1640	1730	105.53
Average	3313	1669	1695	101.56
Sonaka Variety				
Small	3427	1638	1790	109.30
Medium	4205	2096	2109	100.59
Large	-	-	-	-
Average	3595	1719	1844	107.27
Avg. All Varieties				
Small	3337	1642	1695	103.21
Medium	3789	1758	2030	115.46
Large	3290	1479	1811	122.38
Average	3415	1645	1783	108.38

Note: VC – Variable Cost; ROVC – Returns over Variable Cost; * - For computing farmer's percentage profit, only variable costs have been considered

In case of grapes, the value of main product with all the varieties put together was higher for medium and lower for large category. The value of grapes with all the varieties put together was estimated at Rs.3337/qtl for small category, Rs.3789/qtl for medium and Rs.3290/qtl for large category with an overall average of Rs.3415/qtl for the average category of farmers. The estimates further showed higher ROVC for medium category and lower ROVC for small category. The ROVC with all the varieties of grapes put together was estimated at Rs.1695/qtl for small category, Rs.2030/qtl for medium and Rs./1811/qtl for large category with an overall average of Rs.1783/qtl for the average category of farmers. However, the proportion of per quintal profit over per quintal variable cost with all the varieties of grapes put together increased with the increase in land holding size of sampled farmers with the increase being from 103.21 per cent for small category to 122.38 per cent for large category. The proportion of per quintal profit over per quintal variable cost for the average category of farmer with all the varieties of grapes put together was estimated at 108.38 per cent, which was much higher as against onion crop cultivated during kharif and rabi seasons.

5.3.2 Wholesale Trade Details and Mark-up Percentage

The estimates relating to wholesale trade details for Nasik Lal, Panchganga, Fursungi and all varieties of onion put together are brought out in Table 5.3.2.1. In case of grapes, the estimates relating to wholesale trade details for Thomson, Sonaka and all varieties of grapes put together are brought out in Table 5.3.2.2. A detailed scenario with respect to wholesale trade details for all the varieties of onion is provided in Appendix

24, whereas Appendix 25 provides a detailed scenario of wholesale trade details for all the varieties of grapes.

The overall average monthly quantity of onion traded by a wholesaler was estimated at 4,278 quintals, which comprised of 1,130 quintals of Nasik Lal variety of onion, 1,905 quintals of Panchganga variety, 719 quintals of Fursungi variety and 524 quintals of other varieties of onion (Table 5.3.2.1 and Appendix 24).

Table 5.3.2.1: Variety-wise and Overall Wholesale Trade Details of Onion: 2013-14

Month	Average price (Rs/qtl) at which Purchased (PP)	Average Qty Sold (Qtl.) per Wholesaler	Average Sale Price (Rs/qtl) (SP)	Mark - up (Rs/qtl) (SP-PP)	Percentage Mark-up [SP- PP]/PP*100 (Rs/qtl of Onion)
Nasik Lal Variety					
January	1233	526.67	1583	350	28.38
February	1250	2050.00	1585	335	26.76
March	1450	205.00	1920	470	32.41
April	1250	2100.00	1581	331	26.44
May	1083	1153.33	1322	239	22.06
June	1000	95.00	1203	203	20.25
July	1200	1140.00	1424	224	18.63
August	1100	1420.00	1389	289	26.24
September	1115	1615.00	1402	287	25.70
October	1700	577.50	2072	372	21.88
November	1700	533.33	2207	507	29.80
December	1525	1850.00	1983	458	30.00
Average	1277	1129.69	1608	331	25.91
Panchganga Variety					
September	1200	146.67	1516	316	26.36
October	1270	1926.00	1575	305	24.02
November	1113	2700.00	1436	323	29.05
December	1033	2566.67	1322	288	27.90
Average	1167	1904.67	1475	309	26.47
Fursungi Variety					
January	1050	161.67	1355	305	29.08
March	1250	996.50	1584	334	26.72
April	1300	1215.00	1613	313	24.06
June	1133	1020.00	1371	238	21.00
July	1125	550.00	1378	253	22.49
October	1200	140.00	1440	240	20.00
November	1300	160.00	1707	407	31.33
Average	1207	719.41	1518	310	25.72
Overall (All Varieties)					
January	1069	892.33	1372	303	28.37
February	900	2446.00	1144	244	27.13
March	1244	1297.50	1595	351	28.24
April	1100	3579.00	1366	266	24.16
May	1108	1426.33	1377	269	24.27
June	1100	1383.80	1334	234	21.29
July	1155	1967.00	1392	237	20.52
August	1260	1737.00	1567	307	24.33
September	1178	2073.67	1495	317	26.93
October	1320	2913.50	1619	299	22.67
November	1323	3684.33	1710	387	29.26
December	1292	5082.67	1682	390	30.19
Average	1183	4277.90	1487	304	25.73

Note: SP – Sale Price; PP – Purchase Price

Thus, the proportion of quantity sold to the overall wholesale trade of onion for a wholesaler was estimated at 26.41 per cent for Nasik Lal variety, 44.53 per cent for Panchganga variety, 16.81 per cent for Fursungi variety and the remaining 12.25 per cent for other varieties of onion. The quantum of wholesale trade of Nasik Lal variety of onion was found to be the highest in the month of December and lowest in June. The average wholesaler's purchase price for Nasik Lal variety of onion was estimated Rs.1277/qlt, which turned out to be the highest in the months of October and November (Rs.1700/qlt) and lowest in June (Rs.1000/qlt). The average sale price of Nasik Lal variety of onion for a wholesaler was estimated at Rs.1608/qlt, which turned out to be the highest in the month of October (Rs.2072/qlt) and lowest in June (Rs.1203/qlt). The percentage mark-up for a wholesaler for Nasik Lal variety of onion was estimated at 25.91 per cent, which varied from 18.63 per cent in July to 32.41 per cent in March. Thus, percentage mark-up for a wholesaler of Nasik Lal variety of onion varied significantly across various months.

The wholesale trade of Panchganga variety of onion was the highest in November and lowest in September. However, the purchase and sale prices of Panchganga variety of onion for a wholesaler were the highest in October and lowest in December. The average purchase price for Panchganga variety of onion for a wholesale was estimated at Rs.1167/qlt, whereas average sale price for the same stood at Rs.1475/qlt. The average percentage mark-up for a wholesaler for Panchganga variety of onion was estimated at 26.47 per cent, which did not vary much across various months.

The quantum of wholesale trade of Fursungi variety of onion was the highest in the month of April and lowest in November. The average wholesaler's purchase price for Fursungi variety of onion was estimated Rs.1207/qlt, which turned out to be the highest in the months of November and April (Rs.1300/qlt) and lowest in January (Rs.1050/qlt). The average sale price of Fursungi variety of onion for a wholesaler was estimated at Rs.1518/qlt, which stood at the highest in the months of November (Rs.1707/qlt) and lowest in January (Rs.1355/qlt). The average percentage mark-up for a wholesaler for Fursungi variety of onion varied significantly across various months, and, on an average, it was estimated at 25.72 per cent.

In general, the wholesale trade of onion for a wholesaler with all the varieties put together was estimated at 4278 quintals, which turned out to be the highest in the month of December and lowest in January. However, purchase and sale prices of onion for a wholesaler with all the varieties put together were the highest in the month of November and lowest in February. The average purchase price of onion for a wholesaler with all the

varieties put together was estimated at Rs.1183/qtl, whereas average sale price for the same stood at Rs.1487qtl. The average percentage mark-up for a wholesaler with all the varieties of onion put together was estimated at 25.73, which varied significantly from 20.52 per cent in July to 30.19 per cent in December.

In case of grapes, the overall average monthly quantity traded by a wholesaler was estimated at 305 quintals, which consisted of 100 quintals of Thomson variety of grapes, 97 quintals of Sonaka variety, and 108 quintals of other varieties of grapes (Table 5.3.2.2 and Appendix 25). These estimates clearly showed that the proportion of quantity sold to the overall wholesale trade of grapes for a wholesaler was 32.79 per cent for Thomson variety, 31.80 per cent for Sonaka variety and the remaining 35.41 per cent for other varieties of grapes.

Table 5.3.2.2: Variety-wise and Overall Wholesale Trade Details of Grapes: 2013-14

Month	Average price (Rs/qtl) at which Purchased (PP)	Average Qty Sold (Qtl.) per Wholesaler	Average Sale Price (Rs/qtl) (SP)	Mark - up (Rs/qtl) (SP-PP)	(Rs/qtl of Onion)
					Percentage Mark-up [SP- PP]/PP*100
Thomson Variety					
January	4050	84.25	5034	984	24.30
February	4083	92.50	5091	1008	24.67
March	3800	124.00	4638	838	22.05
April	3983	95.00	4899	916	22.99
May	4250	65.00	5223	973	22.88
November	3200	140.00	3904	704	22.00
December	3833	120.00	4675	842	21.96
Average	3956	100.44	4876	920	23.26
Sonaka Variety					
January	3855	113.00	4800	945	24.51
February	3500	120.00	4375	875	25.00
March	3950	89.00	4782	832	21.05
April	4750	110.00	5863	1113	23.42
May	4250	58.33	5285	1035	24.35
November	4050	100.00	5468	1418	35.00
December	3500	120.00	4375	875	25.00
Average	4018	96.94	4984	966	24.03
Overall (All Varieties)					
January	3858	257.25	4801	944	24.46
February	3920	324.17	4870	950	24.24
March	3875	213.00	4710	835	21.54
April	3990	325.00	4921	931	23.32
May	3943	208.33	4878	935	23.71
November	3625	240.00	4686	1061	29.26
December	3700	400.00	4492	792	21.41
Average	3885	304.61	4796	911	23.46

Note: SP – Sale Price; PP – Purchase Price

The estimates further showed that the wholesale trade of Thomson variety of grapes was the highest in November and lowest in May. On the other hand, the purchase and sale prices of Thomson variety of grapes for a wholesaler were the highest in May and lowest in November. The average purchase price for Thomson variety of grapes for a

wholesale was estimated at Rs.3956/qtl, whereas average sale price for the same stood at Rs.4876/qtl. Thus, the average percentage mark-up for a wholesaler for Thomson variety of grapes was estimated at 23.26 per cent, which did not vary much across months.

The wholesale trade of Sonaka variety of grapes for a wholesaler was the highest in the months of February and December and lowest in May. However, the purchase and sale prices of Sonaka variety of grapes for a wholesaler were the highest in the month of April and lowest in February and December. The average purchase price of Sonaka variety of grapes for a wholesaler was estimated at Rs.4018/qtl, whereas average sale price for the same stood at Rs.4984/qtl. The percentage mark-up for Sonaka variety of grapes for a wholesaler varied significantly from 21.05 per cent in March to 35.00 per cent in November. The average percentage mark-up for Sonaka variety of grapes for a wholesaler was estimated at 24.03 per cent.

The wholesale trade of grapes for a wholesaler with all the varieties put together was the highest in the month of December and lowest in May, and, on an average, it was estimated at 305 quintals. The purchase price of grapes for a wholesaler with all the varieties put together was the highest in the month of April and lowest in November, whereas sale price for the same stood at the highest in April and lowest in December. The average purchase price of grapes for a wholesaler with all the varieties put together was estimated at Rs.3885/qtl. On the other hand, the average sale price of grapes for a wholesaler with all the varieties put together was estimated at Rs.4796/qtl. Therefore, the average percentage mark-up of grapes for a wholesaler with all the varieties put together was worked out at 23.46 per cent, which varied significantly from 21.41 per cent in December to 29.26 per cent in November.

5.3.3 Retail Trade Details and Mark-up Percentage

The estimates relating to retail trade details for Nasik Lal, Panchganga, Fursungi and all varieties of onion put together are shown in Table 5.3.3.1. In case of grapes, the estimates relating to retail trade details for Thomson, Sonaka and all varieties of grapes put together are shown in Table 5.3.3.2. A detailed scenario with respect to retail trade details for all the varieties of onion is provided in Appendix 26, whereas Appendix 27 provides a detailed scenario of retail trade details for all the varieties of grapes.

The overall average monthly quantity of onion traded by a retailer was worked out at 49.90 quintals, which encompassed 8.83 quintals of Nasik Lal variety, 3.90 quintals of Panchganga variety, 5.16 quintals of Fursungi variety and 32.01 quintals of other varieties of onion (Table 5.3.3.1 and Appendix 26).

Table 5.3.3.1: Variety-wise and Overall Retail Trade Details of Onion: 2013-14

Month	Average price (Rs/qt) at which Purchased (PP)	Average Qty Sold (Qt.) per Retailer	Average Sale Price (Rs/qt) (SP)	(Rs/qt of Onion)	
				Mark - up (Rs/qt) (SP-PP)	Percentage Mark-up [SP- PP]/PP*100
Nasik Lal Variety					
January	1492	8.93	1884	393	26.31
February	1717	8.13	2249	532	30.99
March	1517	10.73	1920	404	26.62
April	1500	9.25	1831	331	22.03
May	1717	12.33	2292	575	33.51
June	1367	8.20	1741	374	27.35
July	1517	6.93	2036	519	34.24
August	1550	4.75	1914	364	23.48
September	1550	3.60	1958	408	26.34
October	1750	9.73	2258	508	29.05
November	1483	10.67	1770	286	19.30
December	1475	9.73	1834	359	24.33
Average	1555	8.83	1980	426	27.40
Panchganga Varieties					
January	1400	2.00	1778	378	27.00
September	1200	8.00	1608	408	34.00
October	1800	3.00	2322	522	29.00
November	1400	3.50	1680	280	20.00
December	1400	3.00	1806	406	29.00
Average	1440	3.90	1839	399	27.69
Fursungi Variety					
January	1463	4.90	1960	497	33.99
February	1550	3.93	2022	472	30.43
March	1583	4.30	1965	381	24.08
April	1670	6.98	2102	432	25.86
May	1408	4.67	1868	460	32.63
June	1650	4.00	2041	391	23.72
July	1483	4.60	1933	449	30.28
August	1850	6.00	2250	400	21.62
September	1600	4.00	1994	394	24.63
October	1500	7.00	1980	480	32.00
November	1475	5.90	1792	317	21.47
December	1513	5.45	1882	370	24.44
Average	1568	5.16	1983	415	26.44
Overall (All Varieties)					
January	1260	32.13	1633	373	29.58
February	1220	28.07	1585	365	29.94
March	1195	31.98	1497	302	25.31
April	1355	23.66	1694	339	25.00
May	1268	34.50	1680	412	32.54
June	1335	27.30	1688	353	26.42
July	1510	26.78	1983	473	31.31
August	2613	36.50	3347	735	28.13
September	2510	40.93	3207	697	27.76
October	2525	37.68	3232	707	28.00
November	2290	37.57	2839	549	23.96
December	1585	34.63	1974	389	24.52
Average	1707	49.90	2167	460	26.95

Note: SP – Sale Price; PP – Purchase Price

Thus, the overall average quantity of onion traded by a retailer encompassed a share of 17.70 per cent of Nasik Lal variety, 7.82 per cent of Panchganga variety, 10.34 per cent of Fursungi variety and the remaining 64.14 per cent with respect to other varieties of onion. The estimates further showed that the retail trade of Nasik Lal variety of onion was the highest in the month of May and lowest in September. The average purchase price of Nasik Lal variety of onion for a retailer was estimated at Rs.1555/qlt, which turned out to be the highest in the months of October (Rs.1750/qlt) and lowest in December (Rs.1475/qlt). The average sale price of Nasik Lal variety of onion for a retailer was estimated at Rs.1980/qlt, which stood at the highest in the month of May (Rs.2292/qlt) and lowest in June (Rs.1741/qlt). Therefore, the average percentage mark-up for a retailer for Nasik Lal variety of onion was estimated at 27.40 per cent, which varied from 19.30 per cent in November to 34.24 per cent in July, showing significant variation in percentage mark-up for a retailer across various months.

The retail trade of Panchganga variety of onion was the highest in September and lowest in January. The purchase and sale prices of Panchganga variety of onion for a retailer were the highest in October and lowest in September. The average purchase price for Panchganga variety of onion for a retailer was estimated at Rs.1440/qlt, whereas average sale price for the same stood at Rs.1839/qlt. The average percentage mark-up for a retailer for Panchganga variety of onion was estimated at 27.69 per cent, which varied significantly across various months.

The retail trade of Fursungi variety of onion turned out to be the highest in the month of October and lowest in February. The purchase and sale prices of Fursungi variety of onion for a retailer were the highest in the month of August, whereas lowest purchase price stood in the month of January and sale price in November. The average purchase price for Fursungi variety of onion for a retailer was estimated at Rs.1568/qlt, whereas average sale price for the same stood at Rs.1983/qlt. The average percentage mark-up for a retailer for Fursungi variety of onion was worked out at 26.44 per cent, which also varied significantly across various months.

The overall average retail trade of onion for a retailer with all the varieties put together turned out to be 49.90 quintals, which was the highest in the month of September and lowest in April. The purchase and sale prices of onion for a retailer with all the varieties put together were the highest in the month of August, whereas lowest purchase price stood in the month of February and sale price in March. The average purchase price of onion for a retailer with all the varieties put together was worked out at

Rs.1707/qtl, while average sale price for the same stood at Rs.2167/qtl. Therefore, the average percentage mark-up for a retailer with all the varieties of onion put together turned out to be 26.95 per cent, which varied significantly across months.

The estimates for grapes showed that the overall average monthly quantity traded by a retailer was 6.85 quintals, which comprised of 3.85 quintals of Thomson variety, 2.59 quintals of Sonaka variety, and 0.39 quintal of other varieties of grapes, showing thereby the proportion of quantity sold to the overall trade of grapes to the tune of 56.27 per cent for Thomson variety, 37.89 per cent for Sonaka variety and the remaining 5.84 per cent for other varieties of grapes (Table 5.3.3.2 and Appendix 27).

Table 5.3.3.2: Variety-wise and Overall Retail Trade Details of Grapes: 2013-14

(Rs/qtl of Onion)

Month	Average price (Rs/qtl) at which Purchased (PP)	Average Qty Sold (Qtl.) per Retailer	Average Sale Price (Rs/qtl) (SP)	Mark - up (Rs/qtl) (SP-PP)	Percentage Mark-up [SP-PP]/PP*100
Thomson Variety					
January	6163	6.25	8104	1942	31.51
February	5842	2.37	7682	1841	31.51
March	5731	3.53	7598	1867	32.57
April	6300	3.83	7981	1681	26.69
November	6188	1.25	7874	1686	27.25
December	5642	4.33	7108	1467	26.00
Average	5963	3.85	7730	1767	29.63
Sonaka Variety					
January	5775	1.50	7394	1619	28.04
February	6111	3.37	7860	1749	28.62
March	6000	2.83	7770	1770	29.49
April	6113	2.39	8152	2040	33.37
May	5950	0.40	7903	1953	32.82
November	5975	1.40	7887	1912	32.00
December	6000	3.10	7681	1681	28.02
Average	6035	2.59	7863	1827	30.27
Overall (All Varieties)					
January	5065	8.10	6640	1575	31.09
February	5646	6.14	7332	1686	29.86
March	5456	6.81	7135	1679	30.78
April	5731	6.77	7518	1787	31.19
May	5133	0.60	6785	1652	32.18
November	6117	2.65	7878	1762	28.80
December	5866	7.43	7466	1601	27.29
Average	5558	6.85	7237	1679	30.20

Note: SP – Sale Price; PP – Purchase Price

The retail trade of Thomson variety of grapes for a retailer was the highest in January and lowest in November. The purchase price of Thomson variety of grapes for a retailer was the highest in April and lowest in December. On the other hand, the sale price of Thomson variety of grapes for a retailer was the highest in January and lowest in December. The average purchase price for Thomson variety of grapes for a retailer was

estimated at Rs.5963/qlt, while average sale price for the same stood at Rs.77306/qlt. Therefore, the average percentage mark-up for a retailer for Thomson variety of grapes turned out to be 29.63 per cent, which did not vary much across various months.

The retail trade of Sonaka variety of grapes for a retailer was the highest in the month of February and lowest in May. The purchase and sale prices of Sonaka variety of grapes for a retailer were the highest in the month of April and lowest in January. The average purchase price of Sonaka variety of grapes for a retailer was estimated at Rs.6035/qlt, while average sale price for the same turned out to be Rs.7863/qlt. The percentage mark-up for Sonaka variety of grapes for a retailer did not vary much and, on an average, it was estimated at 30.27 per cent.

A retailer was found to trade an average of 6.85 quintals of grapes with all the varieties put together. The retail trade of grapes for a retailer with all the varieties put together turned out to be the highest in January and lowest in May. The purchase and sale prices of grapes for a retailer with all the varieties put together were the highest in the month of November and lowest in January. The overall average purchase price of grapes for a retailer with all the varieties put together was worked out at Rs.5558/qlt, whereas the overall average sale price for the same stood at Rs.7237/qlt, showing thereby the average percentage mark-up of grapes for a retailer to the tune of 30.20 per cent with all the varieties of grapes put together. The average percentage mark-up of grapes for a retailer with all the varieties of grapes put together did not vary much across months.

5.3.4 Export Trade Details and Mark-up Percentage

The onion prices in the domestic market generally decline with the increase in minimum export price (MEP) imposed by the central government. However, although this discourages export trade of onion due to rise in export prices, it also checks domestic prices and provides relief to consumers. Onion is being exported from India to various regions and countries of the world viz. Middle East and Gulf (Dubai, Sharjah, Doha, Muscat, Bahrain, Dammam, Saudi Arabia, Kuwait, etc.), Malaysia, Singapore, Port Kelang and African Ports Globular /Pungent, Sri Lanka, Bangladesh, Pakistan and Nepal, Europe, Japan, etc. The major reason of onion export can be traced to the fact that it is consumed in all the countries of the world, while its cultivation stands limited to some countries. Unlike restrictions imposed on onion exports at times of deficit in production, there is not much restriction on grape exports from India. Fresh grapes are being exported from India to about 30 countries including U.K., Netherlands, U.A.E., Bangladesh, Germany, Belgium, Saudi Arabia, Oman, Kuwait, Sri Lanka, and Bahrain. However, the

Indian fresh grape exports for the recently-ended 2015 season were down by 36 per cent, with multiple spells of hailstorms and un-seasonal rains impacting the output in the key growing regions of Maharashtra.

The estimates relating to export trade details for Nasik Lal, Panchganga, Fursungi and all varieties of onion put together are shown in Table 5.3.4.1. In case of grapes, the estimates relating to export trade details for Thomson, Sonaka and all varieties of grapes put together are shown in Table 5.3.4.2. A detailed scenario with respect to export trade details for all the varieties of onion is provided in Appendix 28, whereas Appendix 29 provides a detailed scenario of retail trade details for all the varieties of grapes.

The overall average monthly quantity of onion traded by an exporter was estimated at 4000 quintals, which consisted of 790 quintals of Nasik Lal variety, 642 quintals of Panchganga variety, 408 quintals of Fursungi variety and 2160 quintals of other varieties of onion (Table 5.3.4.1 and Appendix 28). These estimates were concomitant of the fact that the overall average quantity of onion traded by an exporter encompassed a share of 19.75 per cent of Nasik Lal variety, 16.05 per cent of Panchganga variety, 10.20 per cent of Fursungi variety and the remaining 54 per cent of other varieties of onion. The export trade of Nasik Lal variety of onion was the highest in the month of January and lowest in July. However, the average purchase and sale prices of Nasik Lal variety of onion for an exporter were the highest in the month of October and lowest in January. The average purchase price for Nasik Lal variety of onion for an exporter was estimated at Rs.1991/qtl, whereas average sale price for the same stood at Rs.3097. Thus, the average percentage mark-up for an exporter of Nasik Lal variety of onion was worked out at 55.54 per cent, which varied significantly from 40.51 per cent in June to 64.00 per cent in July. The higher quantity of export trade of Nasik Lal variety of onion in January was associated with lower purchase and sale prices.

The Panchganga variety of onion was exported only during the months of January, October and December. The quantity of Panchganga variety of onion traded by an exporter remained by and large same during various months. However, the average purchase and sale prices of Panchganga variety of onion for an exporter were the highest in the month of October and lowest in January. The average purchase price for Panchganga variety of onion for an exporter was estimated at Rs.1933/qtl, whereas average sale price for the same stood at Rs.3072/qtl. Therefore, the average percentage mark-up for an exporter of Panchganga variety of onion was estimated at 58.88 per cent, which varied significantly across various months.

Table 5.3.4.1: Variety-wise and Overall Export Trade Details of Onion: 2013-14

Month	Average price (Rs/qtl) at which Purchased (PP)	Average Qty Sold (Qtl.) Per Exporter	Average Sale Price (Rs/qtl) (SP)	Mark - up (Rs/qtl) (SP-PP)	(Rs/qtl of Onion)
					Percentage Mark-up [SP- PP]/PP*100
Nasik Lal Variety					
January	1325	1123.33	2073	748	56.47
February	2000	872.50	3049	1049	52.46
March*	1931	637.50	3044	1113	57.63
April	1875	550.00	2960	1085	57.88
May	2125	510.00	3464	1339	63.01
June	1750	440.00	2459	709	40.51
July	2100	420.00	3444	1344	64.00
August	2525	895.00	3916	1391	55.10
September	2220	447.50	3561	1341	60.39
October	2717	880.00	4234	1518	55.86
November	2084	873.75	3222	1138	54.57
December	1889	1028.57	2853	964	51.00
Average	1991	790.10	3097	1106	55.54
Panchganga Variety					
January	1100	625.00	1733	633	57.50
October	2950	650.00	4815	1865	63.22
December	1750	650.00	2668	918	52.43
Average	1933	641.67	3072	1138	58.88
Fursungi Variety					
January	1200	150.00	1980	780	65.00
February	2100	597.50	3236	1136	54.08
March	2133	773.33	3190	1057	49.53
April	1733	316.67	2555	822	47.40
May	2233	333.33	3106	873	39.09
June	1733	233.33	2586	853	49.19
July	2167	216.67	3264	1098	50.66
Average	1980	408.00	2951	971	49.06
Overall (All Varieties)					
January	1261	1898.33	1987	726	57.57
February	1906	2820.00	2914	1009	52.93
March	1658	2669.17	2541	883	53.28
April	1395	2175.67	2120	725	51.95
May	1700	2290.33	2539	839	49.38
June	1585	1993.33	2414	829	52.28
July	2100	1865.67	3211	1111	52.92
August	3161	2410.00	4668	1506	47.65
September	2700	1772.50	4143	1443	53.44
October	3117	3163.33	4768	1651	52.97
November	2208	2323.75	3411	1203	54.48
December	1858	1678.57	2812	953	51.30
Average	2038	4000.03	3102	1065	52.24

Note: SP – Sale Price; PP – Purchase Price

The export trade of Fursungi variety of onion was the highest in the month of March and lowest in January. The purchase price of Fursungi variety of onion for an exporter was the highest in May and lowest in January. The sale price of Fursungi variety of onion for an exporter was the highest in July and lowest in January. The average purchase price for Fursungi variety of onion for an exporter was estimated at Rs.1980/qtl,

whereas average sale price for the same stood at Rs.2951/qlt. The average percentage mark-up for an exporter of Fursungi variety of onion was, therefore, estimated at 49.06 per cent, which varied significantly across various months.

An exporter was found to trade 4000 quintals of average monthly quantity of onion with all the varieties put together. The quantity of onion exported by an exporter with all the varieties put together was the highest in the month of October and lowest in December. However, the overall average purchase price of onion for an exporter with all the varieties put together was the highest in the month of August and lowest in January. The overall average sale price of onion for an exporter with all the varieties put together was the highest in the month of October and lowest in January. The overall average purchase price of onion for an exporter with all the varieties put together was estimated at Rs.2038/qlt, whereas overall average sale price for the same stood at Rs.3102/qlt, showing thereby the average percentage mark-up for an exporter to the tune of 52.24 per cent with all the varieties onion put together.

The overall average monthly quantity of grapes traded by an exporter was estimated at 1289 quintals, which comprised of 343 quintals of Thomson variety, 36 quintals of Sonaka variety, and 910 quintal of other varieties of grapes, showing thereby the proportion of quantity exported to the overall export trade of grapes to the tune of 26.61 per cent for Thomson variety, 2.79 per cent for Sonaka variety and the remaining 70.60 per cent for other varieties of grapes (Table 5.3.4.2 and Appendix 29).

Table 5.3.4.2: Variety-wise and Overall Export Trade Details of Grapes: 2013-14

Month	Average price (Rs/qlt) at which Purchased (PP)	Average Qty Sold (Qtl.) Per Exporter	Average Sale Price (Rs/qlt) (SP)	Mark - up (Rs/qlt) (SP-PP)	(Rs/qlt of Onion)
					Percentage Mark-up [SP- PP]/PP*100
Thomson Variety					
January	3667	216.67	10458	6792	185.23
February	4100	395.33	11848	7748	188.96
March	4200	325.00	11625	7425	176.79
December	3500	500.00	10325	6825	195.00
Average	4007	343.13	11394	7387	184.38
Sonaka Variety					
January	4000	15.00	12600	8600	215.00
March	4350	40.00	13050	8700	200.00
November	4200	50.00	11130	6930	165.00
December	4000	40.00	11400	7400	185.00
Average	4138	36.25	12045	7908	191.12
Overall (All Varieties)					
January	3750	231.67	10994	7244	193.17
February	4210	632.83	11661	7451	176.98
March	4985	1385.00	12620	7635	153.16
November	4200	50.00	11130	6930	165.00
December	3750	540.00	10363	7113	189.67
Average	4394	1288.55	11839	7444	169.40

Note: SP – Sale Price; PP – Purchase Price

An exporter showed highest export trade of Thomson variety of grapes in December and lowest in January. The purchase price of Thomson variety of grapes for an exporter was the highest in March and lowest in December. The sale price of Thomson variety of grapes for an exporter was the highest in February and lowest in December. The average purchase price for Thomson variety of grapes for an exporter was worked out at Rs.4007/qlt, whereas average sale price for the same stood at Rs.11394/qlt. Thus, the average percentage mark-up for an exporter of Thomson variety of grapes was estimated at 184.38 per cent, which did not vary much across various months.

The export trade of Sonaka variety of grapes was the highest in the month of November and lowest in January. The purchase price of Sonaka variety of grapes for an exporter was the highest in November and lowest in January and December, whereas the sale price of the same stood at the highest in March and lowest in November. The average purchase price of Sonaka variety of grapes for an exporter was estimated at Rs.4138/qlt, while average sale price for the same turned out to be Rs.12045/qlt. The percentage mark-up for Sonaka variety of grapes for an exporter varied significantly from 165.00 per cent in November to 215.00 per cent in January. The average percentage mark-up for Sonaka variety of grapes for an exporter was estimated at 191.12 per cent.

The average monthly export trade of grapes for an exporter with all the varieties put together was estimated at 1289 quintals with the month of November showing lowest and March showing the highest export trade of grapes. The purchase and sale prices of grapes for an exporter with all the varieties put together were the highest in the month of March and lowest in December. There was wide difference between purchase and sale price of grapes for an exporter with all the varieties put together. This was mainly due to vary high element of cost and margin involved between purchase and sale price of grapes in export trade. The overall average purchase price of grapes for an exporter with all the varieties put together was estimated at Rs.4394/qlt, while the overall average sale price for the same stood at Rs.11839/qlt, showing thereby the average percentage mark-up of grapes for an exporter as high as 169.40 per cent with all the varieties put together. The average percentage mark-up of grapes for an exporter with all the varieties put together varied from 153.16 per cent in March to 193.17 per cent in January.

5.4 Vertical Price Spread in Onion and Grapes

The sampled onion farmers diverted their produce in the domestic market through regulated market (to the wholesaler) and in the export market through wholesaler and exporters. The sampled grape farmers diverted their produce in the domestic market

using on farm sale (through commission agents) and in the export market to the exporters (through commission agents). Therefore, two marketing channels for onion were prevalent in the study area.

Channel I: Farmer – Wholesaler – Retailer – Consumer

Channel II: Farmer – Wholesaler – Exporter

The marketing channel for grapes in domestic and export market were as follows:

Channel I: Farmer – Wholesaler (through commission agents) – Retailer – Consumer

Channel II: Farmer – Exporter (through commission agents)

5.4.1 Price Spread in Domestic Market

The difference between price paid by the consumer and the price received by the producer for a commodity is known as price spread. The price spread varies from commodity to commodity and for the same commodity from state to state and region to region. There is also significant variation in price spread in domestic and export market. The price spread of onion in domestic market encompassing marketing cost and margins of various intermediaries for Nasik Lal and Panchganga varieties of Kharif onion and Fursungi and Nasik Lal varieties of Rabi onion is brought out in Table 5.4.1.1. In case of onion, there is significant expense borne by the farmer on account of losses, particularly in kharif season, apart from bearing other expenses relating to transportation, storage, etc.

Table 5.4.1.1: Price Spread for Onion in Domestic Market: 2013-14

Sr. No.	Particulars	Kharif Onion				Rabi Onion			
		Nasik Lal		Panchganga		Fursungi		Nasik Lal	
		Rs/qtl	% share in Consumer's rupee	Rs/qtl	% share in Consumer's rupee	Rs/qtl	% share in Consumer's rupee	Rs/qtl	% share in Consumer's rupee
A	Net price received by the farmer	955.00	49.65	907.00	49.33	1034.00	52.16	1058.00	50.50
	Expenses borne by the farmer	123.00	6.40	130.00	7.07	146.73	7.40	140.24	6.69
	Expenses towards losses borne by farmer	128.25	6.67	129.67	7.05	26.41	1.33	148.63	7.09
B	Wholesaler's purchase price/ Farmer's sale price	1206.25	62.72	1166.67	63.45	1207.14	60.89	1346.87	64.29
	Expenses borne by the wholesaler	60.72	3.16	60.72	3.30	60.72	3.06	60.72	2.90
	Wholesaler's net margin	253.48	13.18	212.61	11.56	300.11	15.14	215.13	10.27
C	Retailer's purchase price/ Wholesaler's sale price	1520.45	79.06	1440.00	78.31	1567.97	79.09	1622.72	77.46
	Expenses borne by the retailer	36.00	1.87	36.00	1.96	36.00	1.82	36.00	1.72
	Retailer's net margin	366.83	19.07	362.80	19.73	378.55	19.09	436.19	20.82
D	Consumer's purchase price/ Retailer's sale price	1923.28	100.00	1838.80	100.00	1982.52	100.00	2094.91	100.00

The sale prices of onion for farmers were worked out at Rs.1206/qtl for kharif Nasik Lal variety, Rs.1167/qtl for kharif Panchganga variety, Rs.1207/qtl for rabi Fursungi variety and Rs.1347/qtl for rabi Nasik Lal variety. The farmer's marketing costs, including expenses towards losses, for the respective varieties were estimated at Rs.251.25/qtl, Rs.259.67/qtl, Rs.173.14/qtl and Rs.288.87/qtl. The kharif onion generally shows relatively larger loss of quantity during various handling, transportation, storage operations as against rabi onion, which is of much better quality with higher shelf life. The higher loss for rabi Nasik Lal variety is mainly due to the fact that it is actually late kharif onion, though treated as rabi onion. The farmer's share in retail price/consumer's purchase price of onion was estimated at 49.65 per cent for kharif Nasik Lal variety, 49.33 per cent for kharif Panchganga variety, 52.16 per cent for rabi Fursungi variety and 50.50 per cent for rabi Nasik Lal variety, showing not much variation in producer's share in consumer rupee for various varieties of onion grown during kharif and rabi season. The net margin of wholesaler of onion in consumer's price turned out to be 13.18 per cent for kharif Nasik Lal variety, 11.56 per cent for kharif Panchganga variety, 15.14 per cent for rabi Fursungi variety and 10.27 per cent for rabi Nasik Lal variety. On the other hand, the net margins of retailer of onion in consumer's price were worked out at 19.07 per cent for kharif Nasik Lal variety, 19.73 per cent for kharif Panchganga variety, 19.09 per cent for rabi Fursungi variety and 20.82 per cent for rabi Nasik Lal variety. The retailer of onion not only showed higher share of net margin in consumer's price but also lower share of marketing cost in consumer's price than wholesalers for various varieties of onion. In general, the producer's share in consumer's rupee varied from 49 per cent to 52 per cent in domestic market for various varieties of onion.

The price spread for grapes in domestic market for Thomson and Sonaka varieties is shown in Table 5.4.1.2. In the domestic trade of grapes, the wholesaler procures produce from farmers through commission agents. In fact, farmers of grapes use on-farm sale and commission agents links the farmer to the wholesalers. The farmer bears the charges of commission agents. Therefore, the grape farmers not only bears minor expenses towards transportation of produce from field to road but also charges of commission agents. In the domestic market, the sale prices of grapes were estimated at Rs.3956/qtl for Thomson variety and Rs.4018/qtl for Sonaka variety. The marketing cost of farmer was estimated at Rs.642/qtl for Thomson variety and Rs.423/qtl for Sonaka variety of grapes, which also included charges of commission agents. The higher marketing cost for Thomson as against Sonaka variety was due to higher quantity supply.

Table 5.4.1.2: Price Spread for Grapes in Domestic Market: 2013-14

Sr. No.	Particulars	Thomson		Sonaka	
		Rs/qtl	% share in Consumer's rupee	Rs/qtl	% share in Consumer's rupee
A	Net price received by the farmer	3313.00	42.86	3595.00	45.72
	Expenses borne by the farmer	47.40	0.61	35.65	0.45
	Commission agent's charges	595.15	7.70	387.40	4.93
B	Wholesaler's purchase price/ Farmer's sale price	3955.55	51.17	4018.05	51.10
	Expenses borne by the wholesaler	1232.50	15.94	1232.50	15.68
	Wholesaler's net margin	775.11	10.03	784.93	9.98
C	Retailer's purchase price/ Wholesaler's sale price	5963.16	77.14	6035.48	76.76
	Expenses borne by the retailer	175.50	2.27	175.50	2.23
	Retailer's net margin	1591.41	20.59	1651.61	21.01
D	Consumer's purchase price/ Retailer's sale price	7730.07	100.00	7862.59	100.00

The share of farmer in retail price was estimated at 42.86 per cent for Thomson variety and 45.72 per cent for Sonaka variety of grapes, showing higher share for Sonaka as against Thomson variety. The estimates also showed much lower share of net margin of wholesaler in consumer's price as against share of net margin of retailer in the same. The net margin of retailer of grapes in consumer's price was worked out at 20.59 per cent for Thomson variety and 21.01 per cent for Sonaka variety, whereas share of net margin of wholesaler of grapes in consumer's price turned out to be 10.03 per cent for Thomson variety and 9.98 per cent for Sonaka variety. In general, the grape farmers showed reasonable share in consumer's rupee in domestic market.

5.4.2 Price Spread in Export Channel

The intermediaries involved in the marketing of produce in domestic and export market differ. While presence of retailers is seen in domestic market, the exporters predominantly appear in export channel. The exporters of onion generally buy their produce from the wholesalers. The price spread of onion in export channel encompassing marketing cost and margins of wholesalers and exporters, and expenses borne by the farmer for Nasik Lal and Panchganga varieties of Kharif onion and Fursungi and Nasik Lal varieties of Rabi onion is brought out in Table 5.4.2.1.

It could be readily discerned from Table 5.4.2.1 that the net sale price received by the farmer in the export trade did not differ for various varieties of onion in domestic and export market. However, the farmer's share in export price reduced for all the varieties of onion due to higher export price as against retail price of onion in domestic market.

Table 5.4.2.1: Price Spread for Onion in Export Market Market: 2013-14

Sr. No.	Particulars	Kharif Onion				Rabi Onion			
		Nasik Lal		Panchganga		Fursungi		Nasik Lal	
		Rs/qtl	% share in Consumer's rupee	Rs/qtl	% share in Consumer's rupee	Rs/qtl	% share in Consumer's rupee	Rs/qtl	% share in Consumer's rupee
A	Net price received by the farmer	955.00	30.86	907.00	29.53	1034.00	35.03	1058.00	34.11
	Expenses borne by the farmer	123.00	3.97	130.00	4.23	146.73	4.97	140.24	4.52
	Expenses towards losses borne by farmer	128.25	4.14	129.67	4.22	26.41	0.89	148.63	4.79
B	Wholesaler's purchase price/ Farmer's sale price	1206.25	38.97	1166.67	37.98	1207.14	40.90	1346.87	43.42
	Expenses borne by the wholesaler	60.72	1.96	60.72	1.98	60.72	2.06	60.72	1.96
	Wholesaler's net margin	728.74	23.55	705.94	22.98	712.14	24.13	569.49	18.36
C	Exporter's purchase price/ Wholesaler's sale price	1995.71	64.48	1933.33	62.94	1980.00	67.09	1977.08	63.74
	Expenses borne by the exporter	580.50	18.76	580.50	18.90	580.50	19.67	580.50	18.71
	Exporter's net margin	518.88	16.76	557.84	18.16	390.90	13.24	544.27	17.55
D	Export price	3095.09	100.00	3071.67	100.00	2951.40	100.00	3101.85	100.00

The farmer's share in export price of onion was estimated at 30.86 per cent for kharif Nasik Lal variety, 29.53 per cent for kharif Panchganga variety, 35.03 per cent for rabi Fursungi variety and 34.11 per cent for rabi Nasik Lal variety, showing higher share of farmer in export price for rabi as against kharif onion. It is to be noted that the wholesaler's sale price of onion for retailer in domestic market and exporter in export market differed significantly and turned out to be higher in export market due to better quality of produce diverted to exporter as against retailer. Generally, retailer buys lower quality of produce from wholesaler, which fetches lower price in domestic market. On the other hand, the exporter buys the best quality of produce from wholesaler in order to meet international standards. The shares of net margin of wholesaler in export price of onion were estimated at 23.55 per cent for kharif Nasik Lal variety, 22.98 per cent for kharif Panchganga variety, 24.13 per cent for rabi Fursungi variety and 18.36 per cent for rabi Nasik Lal variety. The shares of net margins of exporter in export price of onion were worked out at 16.76 per cent for kharif Nasik Lal variety, 18.16 per cent for kharif Panchganga variety, 13.24 per cent for rabi Fursungi variety and 17.55 per cent for rabi Nasik Lal variety. Thus, in the export trade of onion, the shares of net margins of wholesalers were even higher than exporters for various varieties.

In the export trade of grapes, the exporters were found to procure their produce from farmers through commission agents. The charges of commission agents were found to be marginally higher in the export channel as against domestic market. Therefore, farmer's sale price of grapes was marginally higher in export channel as against domestic market. The price spread of grapes in export channel encompassing marketing cost and margins of exporters and expenses borne by the farmer for Thomson and Sonaka varieties of grapes is shown in Table 5.4.2.2.

Although the net price received by the farmer for grapes in export channel and domestic market remained the same, the farmer's share in export price reduced significantly for both Thomson and Sonaka varieties of grapes, which was mainly due to very high export price of grapes in the export channel. The export trade of grapes involves very high element of cost, which are borne by the exporter. The net margins of exporters are also very high in the export channel of grapes. The exporter of grapes bears the cost of processing, which encompasses labour expenses for grading, packing, pre-cooling, cold storage, loading, unloading, etc., packing material expenses viz. boxes, plastic sheets, pouches, tissue papers, air bubble sheets, grape guards, pallets, angle boards, strap and clips, etc., and pre-cooling and cold storage expenses. Apart from these expenses, the exporter of grapes also bears inland expenses viz. inland transport, clearing and forwarding, customs duty, terminal handling charges, etc. Therefore, the expenses borne by the exporter of grapes turn out to be very high. The expenses borne by the exporter coupled with high element of net margin of exporter makes the export price of grapes very high in the export channel.

Table 5.4.2.2: Price Spread for Grapes in Export Market: 2013-14

Sr. No.	Particulars	Thomson		Sonaka	
		Rs/qlt	% share in Consumer's rupee	Rs/qlt	% share in Consumer's rupee
A	Net price received by the farmer	3313.00	29.08	3595.00	29.85
	Expenses borne by the farmer	47.40	0.42	35.65	0.30
	Commission agent's charges	646.60	5.67	506.85	4.21
B	Exporter's purchase price/ Farmer's sale price	4007.00	35.17	4137.50	34.35
	Expenses borne by the exporter	2795.00	24.53	2795.00	23.20
	Exporter's net margin	4592.00	40.30	5112.50	42.44
C	Export price	11394.00	100.00	12045.00	100.00

In the export channel, the sale prices of grapes for the farmer were estimated at Rs.4007/qlt for Thomson variety and Rs.4138/qlt for Sonaka variety, whereas export

price for the same stood at Rs.11394/qtl for Thomson variety and Rs.12045/qtl for Sonaka variety, showing significant difference between farmer's sale price and export price. The shares of marketing cost of exporter in export price of grapes were estimated at 24.53 per cent for Thomson variety and 23.20 per cent for Sonaka variety. The shares of net margin of exporter in export price of grapes turned out to be as much as 40.30 per cent for Thomson variety and 42.44 per cent for Sonaka variety. Due to significantly high shares of marketing costs and net margins in export price, the farmer's share in export price of grapes turned out to be only 29.08 per cent for Thomson variety and 29.88 per cent for Sonaka variety.

The foregoing observations clearly underscore the fact that the producer's share in consumer's rupee varied from 49 per cent to 52 per cent in domestic market for various varieties of onion, and this share in export channel for the same varied from 30 per cent to 35 per cent. In case of grapes, producer's share in consumer's rupee varied from 43 per cent to 46 per cent in domestic market for various varieties, and this share in export channel for the same varied from 29 per cent to 30 per cent. The lower share of farmer in export price as against retail price in domestic market was due to higher export price. The higher export price in export channel for both onion and grapes was in turn due to better quality of produce diverted in the export channel, which fetched better prices.

Generally, the producer's share in export price is high when the farmers divert their produce either directly in the export market or through cooperative societies. One of the earlier studies conducted by Shah and Kshirsagar (2001) showed that farmers diverting their grape produce in export market through cooperative societies received more than two folds returns in export market as against domestic market, implying very high share of producer in export price as against domestic price. However, in case of grape produce exported by exporters using export channel, the major net margin is taken away by the exporters, resulting in lower share of farmer in export price. Therefore, there is need for the farmers to directly export their grape produce in export market using cooperative societies or farmers' groups without involving exporters, which will ensure much higher retunes for their grape produce in the export market.

CHAPTER – VI

STAKEHOLDERS PERCEPTIONS ON PRODUCTION AND TRADE OF ONION AND GRAPES

Indian agricultural sector is exposed to number of problems, which among others mainly revolve around fragmentation of land holding, lack of irrigation infrastructure facilities, lack of availability of seed, sustainability, overdependence on traditional crops, lack of yield, supply chain bottlenecks and market intelligence service, price and yield risk, lack of insurance cover, availability of labour, water management, government intervention and support, etc. The production of high value fruits and vegetables is also greatly influenced by transportation, processing, storage facilities. The post harvest infrastructure facility for horticulture crops in India is not only poor but grossly inadequate. There are public sector agencies like NCDC, APEDA, NHB, NABARD, etc. who are making concerted efforts and investments to create adequate infrastructure facilities for horticulture crops like developing pre cooling units, cold storages, refrigerated vans for the transportation of highly perishable commodities, etc.. However, the amount of investment made by these agencies towards creation of post harvest infrastructure for horticulture crops is very meager, and India has to do a lot of catching up to truly transform this sector. The problems faced in the production and marketing of horticulture crops differ significantly across farmers, traders and other stakeholders. While farmers have their own problems in cultivating a particular crop, the traders confront with different set of problems, which are manly marketing related. This chapter, therefore, mainly revolves around perceptions of farmers as well other stakeholders (traders) regarding problems faced by them in the marketing of their produce, apart from analysing perceptions of farmers regarding reasons for cultivating the study crops.

6.1 Reasons for Growing Study Crops

At the time of survey, the sampled onion and grape farmers were asked to indicate the reasons that weighed in favour of cultivation onion and grape crops. The perceptions with respect to reasons for growing onion and grape crops were recorded and analysed, and these perceptions for the sampled onion farmers and grape farmers are presented in Table 6.1.1 and Table 6.1.2.

Profitability was found to be the major reason for the cultivation of onion crop by various categories of sampled households since 57 per cent of the total sampled onion growing households aired their view in favour of this reason, whereas 24 per cent of the

sampled households aired their view in favour of land suitability, 8 per cent in favour of proper adjustment of the crop in the crop rotation and 10 per cent in favour of other reasons like short duration of crop, suitability of crop to weather conditions, high value crop, etc. (Table 6.1.1). Home consumption was cited as one of the reasons for growing onion crop by only 1 per cent of total sampled households. Thus, profitability, land and weather suitability, adjustment of crop in the crop rotation, etc. were the major reasons for the cultivation of onion crop.

Table 6.1.1: Reasons for Growing Onion Crop by Sampled Farmers

(Multiple responses)

Particulars	Farm Category			
	Small	Medium	Large	Total
Home Consumption	-	2	-	2
Profitability	95	23	9	127
Land suitability	43	7	3	53
Government subsidies	1	1	-	2
Fits well with crop rotation	13	4	1	18
Short duration, weather suitability, etc.	16	4	2	22
Total sample	168	41	15	224
Percentage to total farmers in the size group				
Home Consumption	-	4.88	-	0.89
Profitability	56.55	56.10	60.00	56.70
Land suitability	25.60	17.07	20.00	23.66
Government subsidies	0.60	2.44	-	0.89
Fits well with crop rotation	7.74	9.76	6.67	8.04
Short duration, weather suitability, etc.	9.52	9.76	13.33	9.82
Total	100.00	100.00	100.00	100.00

Note: Other Reasons: Short duration of crop, cash crop, suitability to weather condition

The proportion of sampled onion growing households showing profitability as the major reason for the cultivation of onion crop was higher for large category, whereas proportion of households showing land suitability stood at higher for small category. The proportion of households citing other reasons like short duration, weather suitability, etc. was also higher for large category as against small and medium category.

The sampled grape growing households also cited profitability as the major reason for the cultivation of grapes on their farms since 58 per cent of the total sampled households aired their view in favour of this reason, while 25 per cent of the sampled households aired their view in favour of land suitability, and 16 per cent in favour of other reasons like weather suitability, high value cash crop, less water consumption due to drip irrigation, etc. (Table 6.1.2). It was only in case of 1 per cent of total sampled households that home consumption was cited as one of the reasons for the cultivation of grape crop. Therefore, the major reasons that weighed in favour of cultivation of grape crops were profitability, land and weather suitability, and high value nature of the crop.

Table 6.1.2: Reasons for Growing Grape Crop by Sampled Farmers

(Multiple responses)

Particulars	Farm Category			
	Small	Medium	Large	Total
Home Consumption	2	-	-	2
Profitability	115	21	5	141
Land suitability	49	9	2	60
Government subsidies	1	-	-	1
Fits well with crop rotation	1	-	-	1
Whether suitability, high value crop, etc.	35	4	1	40
Total sample	203	34	8	245
Percentage to total farmers in the size group				
Home Consumption	0.99	-	-	0.82
Profitability	56.65	61.76	62.50	57.55
Land suitability	24.14	26.47	25.00	24.49
Government subsidies	0.49	-	-	0.41
Fits well with crop rotation	0.49	-	-	0.41
Whether suitability, high value crop, etc.	17.24	11.76	12.50	16.33
Total	100.00	100.00	100.00	100.00

Note: whether suitability, high value cash crop, less water consumption due drip irrigation, etc.

Interestingly, the proportions of sampled grape growing households showing profitability as the major reason for the cultivation of grape crop increased with the increase in land holding size of sampled households, whereas proportions of households showing other reasons like weather suitability, high value cash crop, etc. decreased with the increase in land holding size of sampled households. The proportions of households showing land suitability as the major reason for the cultivation grape crop were by and large same across various categories of farmers.

6.2 Problems Faced by Onion and Grape Growers

The sampled farmers were noticed to face several problems in the cultivation of onion and grape crops and these problems mainly encompassed: (a) lower yield (b) unstable yield, (c) lack of remunerative price, (d) poor road network for transportation, (e) poor refrigeration facilities/ Eradiation, (f) other infrastructure problems, (g) erratic electricity supply, (h) labour problem, (i) poor quality of underground water, (j) non-availability of good quality of seed, (k) lack of/poor extension services /lack of technical know how, (l) price fluctuations, (m) lack of MSP/government procurement, (n) lack of market information, (o) collusion among traders/trade malpractices, and (p) disease infestation. Among these problems, disease infestation was reported only by grape growing sampled farmers, and onion producing farmers did not report any problem with respect to disease infestation. Perceptions of the sampled onion and grape farmers were, therefore, sought with respect to the problems faced by them in the cultivation of onion and grape pulse crops, and these perceptions were ranked in order of their severity

ranging from low, moderate, high to severe. The reported perceptions with respect to major problems faced by the sampled farmers in the cultivation onion and grape crops and the severity of problem in this respect are brought out in Table 6.2.1 and Table 6.2.2 with all the categories of sampled farmers put together. The household category-wise reported perceptions in terms of problems faced by the sampled onion and grape farmers and the severity of problem in this respect are provided in Appendix 30 and 31.

**Table 6.2.1: Major Problems Faced by Sampled Farmers in Cultivation of Onion Crop
(Multiple responses)**

Problem	Severity of problem			
	Low	Moderate	High	Severe
1) Lower Yield	20	77	42	11
2) Unstable yield	17	72	43	18
3) Lack of remunerative price	5	81	57	7
4) Poor road network for transportation	53	68	24	5
5) Poor refrigeration facilities/ Eradiation	31	19	9	17
6) Other infrastructure problems	41	77	26	6
7) Erratic electricity supply	1	36	71	42
8) Labour problem	6	29	61	54
9) Poor quality of underground water	2	54	82	12
10) Non-availability of good quality of seed	59	67	20	4
11) Lack of/poor extension services /lack of technical know how	44	61	22	23
12) Price fluctuations	1	30	62	57
13) Lack of MSP/government procurement	4	10	39	29
14) Lack of market information	54	64	28	4
15) Collusion among traders/trade malpractices	30	74	31	15
16) Distance market	43	85	19	3
17) Diseases	-	-	-	-
18) Insects/pests	-	-	-	-
19) Weeds	-	-	-	-
Total responses	363	783	563	263
Percentage to total farmers in the size group				
1) Lower Yield	5.51	9.83	7.46	4.18
2) Unstable yield	4.68	9.20	7.64	6.84
3) Lack of remunerative price	1.38	10.34	10.12	2.66
4) Poor road network for transportation	14.60	8.68	4.26	1.90
5) Poor refrigeration facilities/ Eradiation	8.54	2.43	1.60	6.46
6) Other infrastructure problems	11.29	9.83	4.62	2.28
7) Erratic electricity supply	0.28	4.60	12.61	15.97
8) Labour problem	1.65	3.70	10.83	20.53
9) Poor quality of underground water	0.55	6.90	14.56	4.56
10) Non-availability of good quality of seed	16.25	8.56	3.55	1.52
11) Lack of/poor extension services /lack of technical know how	12.12	7.79	3.91	8.75
12) Price fluctuations	0.28	3.83	11.01	21.67
13) Lack of MSP/government procurement	1.10	1.28	6.93	11.03
14) Lack of market information	14.88	8.17	4.97	1.52
15) Collusion among traders/trade malpractices	8.26	9.45	5.51	5.70
16) Distance market	11.85	10.86	3.37	1.14
17) Diseases	-	-	-	-
18) Insects/pests	-	-	-	-
19) Weeds	-	-	-	-
Total responses	100.00	100.00	100.00	100.00

There were multiple responses with respect to severity of various problems faced by sampled onion farmers in the cultivation of onion crop. The survey revealed that among the severe problems faced by the onion farmers, the most important constraint perceived by 22 per cent responses was the price fluctuation. Onion prices are subjected to high price fluctuation due to loss of crop (Table 6.2.1) The un-seasonal rain or excess rain many a times not only damage kharif onion but also rabi onion. Labour shortage was noticed to be the 2nd highest ranked severe problem faced by onion farmers since 21 per cent of responses were in favour of this problem. The 3rd highest ranked severe problem faced by sampled onion farmer was related to electricity supply. About 15 per cent of total responses showed concern about erratic and irregular supply of electricity, which affected functioning of oil engines and pump sets. Lack of MSP/government support was reported as the 4th most severe problem since 11 per cent of total responses favoured this problem. In case of onion, there is no announcement of MSP or any government support, which results in poor prices on offer to farmers at times of good harvest or higher volume of production. Another severe constraint perceived by 9 per cent responses was related to lack of extension services/ lack of technical know how in the cultivation of onion crop.

There were also some other problems faced by onion farmers in terms of their degree of severity, which revolved around lower yield and yield instability, market infrastructure related problem, poor quality of underground water, and collusion among traders and trade malpractices.

The sampled grape farmers also faced various problems in the cultivation of grape crop and multiple responses were extracted in this respect. The most severe problem perceived by 20 per cent of total responses was in terms of lack of announcement of MSP or any government support, which created dissatisfaction among farmers, especially during higher marketed surplus of grape crop in market, resulting in poor prices on offer (Table 6.2.2) The 2nd most severe problem faced by grape farmers was in terms of labour shortage since 16 per cent of total responses favoured this problem. Grape cultivation is highly labour intensive and often labour shortage creates problem. The 3rd most important severe problem reported by grape farmers was related to lack of extension services/ lack of technical know how in the cultivation of grape crop since 14 per cent of total responses favoured this problem as the most severe. Erratic electricity supply was the 4th most important severe problem faced by sampled grape farmers. About 13 per cent of total responses showed concern about erratic electricity supply. In case of grapes, pre-cooling units and cold storages require uninterrupted and regular supply of electricity supply.

Table 6.2.2: Major Problems Faced by Sampled Farmers in Cultivation of Grape Crop
 (Multiple responses)

Problem	Severity of problem			
	Low	Moderate	High	Severe
1) Lower Yield	41	83	25	1
2) Unstable yield	32	79	35	4
3) Lack of remunerative price	11	102	29	8
4) Poor road network for transportation	77	52	15	6
5) Poor refrigeration facilities/ Eradiation	62	53	14	21
6) Other infrastructure problems	71	54	17	8
7) Erratic electricity supply	3	57	63	27
8) Labour problem	6	56	55	33
9) Poor quality of underground water	21	70	49	10
10) Non-availability of good quality of seed	108	39	0	3
11) Lack of/poor extension services /lack of technical know how	59	47	16	28
12) Price fluctuations	5	73	61	11
13) Lack of MSP/government procurement	24	45	40	41
14) Lack of market information	92	51	7	0
15) Collusion among traders/trade malpractices	44	85	19	2
16) Distance market	-	-	-	-
17) Diseases*	85	58	6	1
18) Insects/pests	-	-	-	-
19) Weeds	-	-	-	-
Total responses	741	1004	451	204
Percentage to total farmers in the size group				
1) Lower Yield	5.53	8.27	5.54	0.49
2) Unstable yield	4.32	7.87	7.76	1.96
3) Lack of remunerative price	1.48	10.16	6.43	3.92
4) Poor road network for transportation	10.39	5.18	3.33	2.94
5) Poor refrigeration facilities/ Eradiation	8.37	5.28	3.10	10.29
6) Other infrastructure problems	9.58	5.38	3.77	3.92
7) Erratic electricity supply	0.40	5.68	13.97	13.24
8) Labour problem	0.81	5.58	12.20	16.18
9) Poor quality of underground water	2.83	6.97	10.86	4.90
10) Non-availability of good quality of seed	14.57	3.88	0.00	1.47
11) Lack of/poor extension services /lack of technical know how	7.96	4.68	3.55	13.73
12) Price fluctuations	0.67	7.27	13.53	5.39
13) Lack of MSP/government procurement	3.24	4.48	8.87	20.10
14) Lack of market information	12.42	5.08	1.55	0.00
15) Collusion among traders/trade malpractices	5.94	8.47	4.21	0.98
16) Distance market	-	-	-	-
17) Diseases*	11.47	5.78	1.33	0.49
18) Insects/pests	-	-	-	-
19) Weeds	-	-	-	-
Total responses	100.00	100.00	100.00	100.00

Note: * - Shortage of insecticides and pesticides in the market to control diseases affecting grape crop during the period of cultivation

The other problems faced by sampled grape farmers in terms of their degree of severity were price fluctuations, poor quality of underground water, market infrastructure related problems, lack of remunerative prices, poor road network for the transportation of produce from field to road, unstable yield, and non availability of good quality plant.

6.3 Problems Faced by Wholesalers

The sampled wholesalers of onion and grapes faced wide range of problems, which mainly encompassed: (a) lower quantum of supply, (b) poor quality of supply, (c) lower prices due to lower demand, (d) competition from other wholesalers, (e) completion due to imports (f) poor road network, (g) inadequate facility of driers (h) other infrastructure problems, (i) erratic supply/ production, (j) high marketing charges/ taxes, (k) mixing of different varieties, (l) poor refrigeration facilities, and (m) non-availability of cold storages. Among these problems, inadequate facility of driers was reported only by wholesalers of onion, whereas wholesalers of grapes faced problems relating to lack of refrigeration facilities and non-availability of cold storages. The perceptions were ranked in order of their severity ranging from low, moderate, high to severe. The reported perceptions with respect to major problems faced by the wholesalers of onion and grapes are brought out in Table 6.3.1 and Table 6.3.2.

The most severe problem perceived by 36 per cent of sampled wholesalers of onion was high marketing charges/ taxes. Another severe problem faced by 27 per cent of sampled wholesalers of onion was relating to poor facility of driers (Table 6.3.1).

Table 6.3.1: Major Problems Faced by Sampled Wholesalers of Onion

(Multiple responses; No. of Wholesalers = 10))

Problem	Severity of problem			
	Low	Moderate	High	Severe
1) Lower supply	3	7	-	-
2) Poor quality supply	-	8	2	-
3) Lower price due to lower demand	1	1	8	-
4) Competition from other wholesalers	1	6	2	1
5) Competition from imports	5	3	2	-
6) Poor road network	7	1	1	1
7) Poor facilities of drier	-	2	5	3
8) Other Infrastructure problems	2	4	4	-
9) Erratic Supply/ Production	-	5	3	2
10) High Marketing Charges / taxes	3	2	1	4
11) Mixing of different Varieties	1	3	6	-
Total responses	23	42	34	11
Percentage to total farmers in the size group				
1) Lower supply	. 13.04	16.67	-	-
2) Poor quality supply	-	19.05	5.88	-
3) Lower price due to lower demand	4.35	2.38	23.53	-
4) Competition from other wholesalers	4.35	14.29	5.88	9.09
5) Competition from imports	21.74	7.14	5.88	-
6) Poor road network	30.43	2.38	2.94	9.09
7) Poor facilities of drier	-	4.76	14.71	27.27
8) Other Infrastructure problems	8.70	9.52	11.76	-
9) Erratic Supply/ Production	-	11.90	8.82	18.18
10) High Marketing Charges / taxes	13.04	4.76	2.94	36.36
11) Mixing of different Varieties	4.35	7.14	17.65	-
Total responses	100.00	100.00	100.00	100.00

Onion contains about 90 per cent of water, which requires drying. Drying of onion is one of the most important marketing functions, which increases shelf life of onion crop. Erratic supply/ production was noticed to be the 3rd highest ranked severe problem faced by the wholesalers of onion since 18 per cent of responses were in favour of this problem. The other severe problems faced by the wholesalers of onion were relating to competition from other wholesalers and poor road network.

The sampled wholesalers of grapes also faced various problems with their degree of severity ranging from low, medium, high to severe. The major and most severe problem faced by 60 per cent of sampled wholesalers of grapes was relating to mixing of different varieties of grapes. Therefore, the wholesalers had to make considerable effort to grade the produce in order to get higher prices. Poor and inadequate availability of refrigeration facilities was reported to be the 2nd highest ranked severe problem faced by wholesalers since 20 per cent of responses were in favour of this problem (Table 6.3.2).

Table 6.3.2: Major Problems Faced by Sampled Wholesalers of Grapes

(Multiple responses; No. of Wholesalers = 10))

Problem	Severity of problem			
	Low	Moderate	High	Severe
1) Lower supply	5	5	-	-
2) Poor quality supply	3	4	3	-
3) Lower price due to lower demand	1	7	2	-
4) Competition from other wholesalers	2	5	3	-
5) Competition from imports	7	3	-	-
6) Poor road network	5	4	1	-
7) Poor refrigeration facilities	3	2	3	2
8) Other Infrastructure problems	5	4	1	-
9) Erratic Supply/ Production	2	4	3	1
10) High Marketing Charges / taxes	1	4	4	1
11) Mixing of different Varieties	3	1	-	6
12) Non-availability of cold storages	2	5	3	-
Total responses	39	48	23	10
Percentage to total farmers in the size group				
1) Lower supply	12.82	10.42	-	-
2) Poor quality supply	7.69	8.33	13.04	-
3) Lower price due to lower demand	2.56	14.58	8.70	-
4) Competition from other wholesalers	5.13	10.42	13.04	-
5) Competition from imports	17.95	6.25	-	-
6) Poor road network	12.82	8.33	4.35	-
7) Poor refrigeration facilities	7.69	4.17	13.04	20.00
8) Other Infrastructure problems	12.82	8.33	4.35	-
9) Erratic Supply/ Production	5.13	8.33	13.04	10.00
10) High Marketing Charges / taxes	2.56	8.33	17.39	10.00
11) Mixing of different Varieties	7.69	2.08	-	60.00
12) Non-availability of cold storages	5.13	10.42	13.04	-
Total responses	100.00	100.00	100.00	100.00

The sampled wholesalers of grapes also faced some other severe problems, which revolved around erratic supply/ production and high marketing charges. It is to be noted

lack of availability of cold storages, poor refrigeration facilities, lack of refrigerated vans for the transportation of grapes, poor road network, etc. are some of the major problems faced by the wholesalers of grapes. These problems not only affect wholesalers and other market functionaries but also producers of grapes.

6.4 Problems Faced by Retailers

The sampled retailers of onion and grapes faced varied problems in the marketing of their produce, which mainly encompassed: (a) lower quantum of supply, (b) poor quality of supply, (c) non-remunerative prices due to lower demand, (d) competition from other retailers, (e) competition from large organized retail chains (f) completion due to imports (g) government intervention in price, (h) poor infrastructure, (i) higher perishability of produce, etc. The perceptions of retailers regarding problems faced by them were ranked in order of their severity ranging from low, moderate, high to severe. The reported perceptions with respect to major problems faced by the retailers of onion and grapes are brought out in Table 6.4.1 and Table 6.4.2.

Poor market infrastructure facilities for the disposal of produce was reported as the most severe problem by 50 per cent of sampled retailers of onion (Table 6.4.1). The onion crop, particularly kharif onion, is highly perishable in nature and, therefore, requires quick market clearance.

Table 6.4.1: Major Problems Faced by Sampled Retailers of Onion

(Multiple responses; No. of Retailers = 10)

Problem	Severity of problem			
	Low	Moderate	High	Severe
1) Lower Supply	7	3	0	0
2) Poor Quality Supply	5	4	1	0
3) Non remunerative price due to lower demand	1	6	2	1
4) Competition from other retailers	0	1	8	1
5) Competition from large organized retail chains	2	4	3	1
6) Competition from imports	5	4	1	0
7) Government intervention in price	5	2	2	1
8) Poor infrastructure	0	5	1	4
9) Other problems*	4	5	1	0
Total responses	29	34	19	8
Percentage to total farmers in the size group				
1) Lower Supply	24.14	8.82	0.00	0.00
2) Poor Quality Supply	17.24	11.76	5.26	0.00
3) Non remunerative price due to lower demand	3.45	17.65	10.53	12.50
4) Competition from other retailers	0.00	2.94	42.11	12.50
5) Competition from large organized retail chains	6.90	11.76	15.79	12.50
6) Competition from imports	17.24	11.76	5.26	0.00
7) Government intervention in price	17.24	5.88	10.53	12.50
8) Poor infrastructure	0.00	14.71	5.26	50.00
9) Other problems	13.79	14.71	5.26	0.00
Total responses	100.00	100.00	100.00	100.00

Note: * - Other problems include higher perishability of produce, lack of storage facilities, lower prices on offer during surplus production, etc.

The retailers face problem in terms of market clearance due to poor road network and other market infrastructure related facilities. The other severe problems perceived by sampled retailers of onion revolved around non-remunerative price due to lower demand, competition from other retailers, competition from large organized retail chains, etc.

The problems faced by sampled retailers of grapes were by and large same as perceived by sampled retailers of onion. However, degree of severity of problems faced by retailers of grapes differed. The most severe problem perceived by 33 per cent of sampled retailers was relating to poor quality of supply of grape produce (Table 6.4.2).

Table 6.4.2: Major Problems Faced by Sampled Retailers of Grapes

(Multiple responses; No. of Retailers = 10))

Problem	Severity of problem			
	Low	Moderate	High	Severe
1) Lower supply	4	4	2	-
2) Poor quality supply	-	-	8	2
3) Non-remunerative price due to lower demand	-	6	3	1
4) Competition from other retailers	-	3	7	-
5) Competition from large organized retail chains	5	5	-	-
6) Competition from imports	7	2	1	-
7) Government intervention in price	6	1	1	2
8) Poor infrastructure	2	5	2	1
Total responses	24	26	24	6
Percentage to total farmers in the size group				
1) Lower supply	16.67	15.38	8.33	-
2) Poor quality supply	-	-	33.33	33.33
3) Non-remunerative price due to lower demand	-	23.08	12.50	16.67
4) Competition from other retailers	-	11.54	29.17	-
5) Competition from large organized retail chains	20.83	19.23	-	-
6) Competition from imports	29.17	7.69	4.17	-
7) Government intervention in price	25.00	3.85	4.17	33.33
8) Poor infrastructure	8.33	19.23	8.33	16.67
Total responses	100.00	100.00	100.00	100.00

Lack of government intervention in the marketing of grape produce was reported as another most severe problem. About 33 per cent of sampled retailers of grapes aired their view in favour of absence of government support in the marketing of grape produce. There were many other severe problems perceived by sampled retailers of grapes, which encompassed non-remunerative price on offer due to lower demand, poor market infrastructure facilities for the disposal of grape produce, etc.

6.5 Problems Faced by Exporters

There were numerous problems faced by the sampled exporters of onion and grapes, and important among these were: (a) lower domestic production, (b) poor quality of supply, (c) lower price due to lower world demand, (d) competition from wholesalers, (e) competition from other exporters, (f) poor road network, (g) poor port facilities, (h) poor facility of drier/refrigeration, (i) other infrastructure problems, (j) lengthy

government procedures, (k) export policy uncertainty, (l) erratic supply/production, (m) low domestic demand, (n) mixing of different varieties, (o) problem of chemical residue, and (p) high port charges/taxes. The perceptions of exporters regarding problems faced by them were ranked in order of their severity ranging from low, moderate, high to severe. The reported perceptions with respect to major problems faced by the exporters of onion and grapes are brought out in Table 6.5.1 and Table 6.5.2.

One of the major and severe problems faced by 33 per cent of sampled exporters of onion was relating to poor road network (Table 6.5.1). The exporters generally procured their onion produce from regulated market through commission agents. The transportation of this produce from market to port was done through the vehicles brought by exporters. Poor road network often caused damage to the produce.

Table 6.5.1: Major Problems Faced by Sampled Exporters of Onion

(Multiple responses; No. of Exporters = 10))

Problem	Severity of problem			
	Low	Moderate	High	Severe
1) Lower domestic production	7	3	-	-
2) Poor quality supply	6	3	1	-
3) Lower price due to lower world demand	-	7	3	-
4) Competition from wholesalers	4	2	3	1
5) Competition from other exporters	3	1	6	-
6) Poor road network	1	3	2	4
7) Poor port facilities	2	5	2	1
8) Poor facilities of drier	1	2	5	2
9) Other infrastructure problems	2	5	1	2
10) Lengthy government procedures	3	4	2	1
11) Export policy uncertainty	1	6	2	1
12) Erratic supply/production	2	7	1	-
13) Low domestic demand	4	2	4	-
14) Mixing of different varieties	2	5	3	-
15) Problem of chemical residue	3	6	1	-
16) High port charges/taxes	4	3	3	-
Total responses	45	64	39	12
Percentage to total farmers in the size group				
1) Lower domestic production	15.56	4.69	-	-
2) Poor quality supply	13.33	4.69	2.56	-
3) Lower price due to lower world demand	-	10.94	7.69	-
4) Competition from wholesalers	8.89	3.13	7.69	8.33
5) Competition from other exporters	6.67	1.56	15.38	0.00
6) Poor road network	2.22	4.69	5.13	33.33
7) Poor port facilities	4.44	7.81	5.13	8.33
8) Poor facilities of drier	2.22	3.13	12.82	16.67
9) Other infrastructure problems	4.44	7.81	2.56	16.67
10) Lengthy government procedures	6.67	6.25	5.13	8.33
11) Export policy uncertainty	2.22	9.38	5.13	8.33
12) Erratic supply/production	4.44	10.94	2.56	-
13) Low domestic demand	8.89	3.13	10.26	-
14) Mixing of different varieties	4.44	7.81	7.69	-
15) Problem of chemical residue	6.67	9.38	2.56	-
16) High port charges/taxes	8.89	4.69	7.69	-
Total responses	100.00	100.00	100.00	100.00

Another most severe problem faced by 17 per cent of sampled exporters of onion was relating to poor facility of driers. Drying of onion is one of the most important marketing functions. Therefore, lack of availability of driers poses considerable hindrance in the export of onion. Similarly, other infrastructure related problems was cited as the most severe problem by 17 per cent of sampled exporters of onion. Infrastructure not only includes road network but also storage facilities, availability of driers, facilities of grading and standardization, porters, market news service, etc. The sampled exporters of onion also faced several other severe problems, which encompassed competition from wholesalers, lengthy government procedures in terms of clearance of consignment, uncertainty with respect to export trade of onion. The export trade of onion is often banned by NAFED when there is deficit in production, which creates problem for the exporters. However, NAFED exercises ban on export trade of onion in order to check domestic price of onion, especially when there is deficit in onion production.

The sampled exporters of grapes faced numerous problems in the export trade of grapes with their degree of severity ranging from low, medium, high and severe. The most severe problem faced by 39 per cent of sampled exporters of grapes was relating to poor road network (Table 6.5.2). The sampled exporters were found to procure their grape produce directly from farmers. The access to farmers many a times becomes difficult due to poor condition of roads. In most cases, there is absence of metal road from highway/nearby road to farmer's field. Therefore, absence of metal road makes it difficult for the exporters to transport grape produce from farmer's field to port. Another severe problem faced by 11 per cent of sampled exporters of grapes was relating to lengthy government procedures in terms of clearance of consignment of grapes. Similarly, about 11 per cent of sampled exporters of grapes cited export policy uncertainty as the other severe problem faced by them. There were also some other severe problems faced by sampled grape exporters, and important among these encompassed lack of pre-cooling and cold storage facilities, low domestic demand, poor infrastructure facilities at ports, etc.

It is to be noted that in the export trade of grapes there are several measures taken by the government, which not only include monitoring of pesticide residue but also product standardization and documentation of several other aspects viz. commercial invoice, bill of lading, consular invoice, certificate of origin, inspection of certification, dock receipt and warehouse receipt, destination control statement, insurance certificate, export license, export packing list, etc.

Table 6.5.2: Major Problems Faced by Sampled Exporters of Grapes

(Multiple responses; No. of Exporters = 10))

Problem	Severity of problem			
	Low	Moderate	High	Severe
1) Lower domestic production	7	3	-	-
2) Poor quality supply	7	3	-	-
3) Lower price due to lower world demand	1	7	2	-
4) Competition from wholesalers	3	2	5	-
5) Competition from other exporters	4	2	4	-
6) Poor road network	1	-	2	7
7) Poor port facilities	3	6	1	-
8) Poor refrigeration facilities	4	3	2	1
9) Other infrastructure problems	4	3	2	1
10) Lengthy government procedures	2	1	5	2
11) Export policy uncertainty	-	3	5	2
12) Erratic supply/production	3	7	-	-
13) Low domestic demand	3	5	1	1
14) Mixing of different varieties	4	5	1	-
15) Problem of chemical residue	6	3	1	-
16) High port charges/taxes	1	3	4	2
Total responses	55	57	40	18
Percentage to total farmers in the size group				
1) Lower domestic production	12.73	5.26	-	-
2) Poor quality supply	12.73	5.26	-	-
3) Lower price due to lower world demand	1.82	12.28	5.00	-
4) Competition from wholesalers	5.45	3.51	12.50	-
5) Competition from other exporters	7.27	3.51	10.00	-
6) Poor road network	1.82	-	5.00	38.89
7) Poor port facilities	5.45	10.53	2.50	-
8) Poor refrigeration facilities	7.27	5.26	5.00	5.56
9) Other infrastructure problems	7.27	5.26	5.00	5.56
10) Lengthy government procedures	3.64	1.75	12.50	11.11
11) Export policy uncertainty	-	5.26	12.50	11.11
12) Erratic supply/production	5.45	12.28	-	-
13) Low domestic demand	5.45	8.77	2.50	5.56
14) Mixing of different varieties	7.27	8.77	2.50	-
15) Problem of chemical residue	10.91	5.26	2.50	-
16) High port charges/taxes	1.82	5.26	10.00	11.11
Total responses	100.00	100.00	100.00	100.00

The stakeholders in the supply chain of grapes include exporters, farmers, State Government Horticulture Departments, testing laboratories, Agmark Certification Department, Phyto-sanitary department, pack houses, etc. In case of grape export, a 'Grape Net System' has been introduced, which involves stakeholders like APEDA registered Exporters/Pack houses/Laboratories, State Horticulture Department, Agmark Department, Phyto-Sanitary Department, and National Referral Laboratory. System is opened for registration of Grape farms by State Horticulture department, every year during October. Once the grape farms are registered and tested for exports to EU, the exporters can initiate their process of sourcing, packing and issuance of Agmark and Phyto-Sanitary certificate by Agmark and Phyto-Sanitary department, respectively.

CHAPTER – VII

SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS

7.1 Backdrop

With the passage of time, Indian agriculture is becoming more competitive and commercial oriented with focus on horticultural crops since they have potential of replacing subsistence farming not only in the rainfed dryland, hills and arid regions but also in coastal agro-ecosystems. Diversification drive in favour of horticultural crops is chiefly due to economic factors since these crops are not only characterized by high productivity per unit area coupled with higher net returns but also in generating substantially high employment and exports.

In terms of fruits and vegetable production, Maharashtra is considered to be the most important state, which leads the country in the production of grapes, bananas, oranges and onions, and a host of other horticultural crops. At present, Maharashtra accounts for 77 per cent of the area and 83 per cent of the total output of grapes in India. Similarly, the state accounts for 25 per cent of the area and 28 per cent of the total output of onion in India. The state of Maharashtra has great potential in the cultivation of various horticultural crops, particularly grapes among fruits and onion among vegetables. However, the cultivation of horticulture crops is one end of the spectrum, the other end being their efficient marketing. An efficient marketing system implies improving the whole gamut of marketing functions such as harvesting, grading, processing, packing, pricing, development of channels and production. This obviously necessitates determining the price mechanism of produce from the point of production to the point of consumption when some cost is incurred and value is added to the product.

Although it is widely believed that the marketing of fruits and vegetables is a complex process due to their perishability, fragility, seasonality and bulkiness, it is expected that measures and programme initiatives such as adoption of improved pre- and post-harvest technology and water and pest control practices will not only increase the productivity of individual horticultural crops and their quality, these are likely to substantially minimize the post-harvest losses, increase the total crop area cover and generate adequate quality surplus for their conversion into value-added food products. It is generally seen that at the farm level price of the produce is much lower than the prevailing market price. This is owing to the fact that various marketing operations involve significant margins in the form of cost of performing the marketing functions and

the profit of various market functionaries in each marketing function. As a result of this, the consumer's price turns out to be much higher than producer's price. Greater price fluctuations also affect producers' share in consumer rupee. Fluctuations in prices occur when there is either glut in the market due to favourable production or lack of supply of the crop in the market due to poor harvest. This creates demand-supply gap of the crop in the market. Unlike grapes, there are generally wide fluctuations in monthly prices of onion, which lead to seasonality and which cause a perpetual concern to producers. Added to this, fluctuations in annual prices, which are generally cyclical in nature, also affect the export performance. These facts make it necessary to understand the nature of these fluctuations and the present study is an attempt in this direction. The study attempts to assess the relationship of prices of onion and grapes not only at the farm level but also at wholesale, retail and export level with a view to understand price mechanism involved in the marketing of these valued crops.

7.2 Objectives of the Study

The present investigation is carried out with following specific objectives:

1. To study the cost structure and profitability of onion and grape crops in State
2. To study the marketing of onion and grapes in State
3. To study the divergence among farm harvest prices, wholesale prices, retail prices and export prices and the relationship between these movements
4. To study stakeholders perceptions on production and trade of onion and grapes

7.3 Methodology

The study is chiefly based on farm level data collected from onion and grape cultivating farmers belonging to the state of Maharashtra. However, since the study attempts to assess relationship between wholesale prices, retail prices, export prices and prices realized by the farmers, it also uses data collected from wholesalers, retailers and exporters of onions and grapes belonging to the State.

In order to collect the primary data, a sample survey was conducted in six districts of Maharashtra, which encompassed three districts for the reference crop 'onion' and another three districts for the reference crop 'grape'. The reference agricultural year 2013-14 was considered as the reference period for data collection on relevant parameters. The selected six sampled districts belonged to Western Maharashtra region, which account for bulk of the onion and grape cultivation of the State. Based on higher allocation of area under onion crop, the districts of Pune, Ahmednagar and Nasik were selected for primary data collection for onion crop. Similarly, based on higher allocation

of area under grape crop, the districts of Nasik, Sangli and Solapur were selected for primary data collection for the grape crop. From each of the selected sampled districts for onion and grape crop, one Taluka was selected based on higher area allocation under the reference crops. A further stratification included selection of two villages from each Taluka/ district for canvassing the questionnaire.

It was decided to select a sample of 25 farmers from each of the selected twelve sampled villages belonging to five districts of Maharashtra. Therefore, a complete enumeration of the twelve selected villages drawn from the districts of Pune, Ahmednagar, Nasik, Sangli and Solapur was done with view to further categorization of farmers into small (less than 2 hectares), medium (2-4 hectares) and large (above 4 hectares). The probability proportion to sample size technique (PPS) was used for further selection of farmers under each of the land holding size category from the selected sampled villages. The number of sampled farmers for onion crop selected from six villages of Pune, Ahmednagar and Nasik districts encompassed 113 in small category, 25 in medium and 12 in large category with a sum of 150 farmers drawn from the districts of Pune, Ahmednagar and Nasik. Similarly, the number of sampled farmers for grape crop selected from six villages of Nasik, Sangli and Solapur districts encompassed 114 in small category, 30 in medium and 6 in large category with a sum of 150 farmers drawn from the districts of Nasik, Sangli and Solapur. Thus, altogether 150 sampled onion farmers from Pune, Ahmednagar and Nasik districts and another 150 sampled grape farmers from Nasik, Sangli and Solapur districts with a sum of 300 sampled farmers from the state of Maharashtra were selected for the present investigation.

The study also covered wholesalers, retailers and exporters of onion and grape crops. In case of onion, 10 wholesalers and 10 retailers were selected from Pune. Similarly, as for grape, 10 wholesalers and 10 retailers were selected from Nasik. Apart from wholesalers and retailers, 10 exporters of grapes and 10 exporters of onions were also selected from Pune and Mumbai. Separate questionnaires were used for the collection of data from farmers, wholesalers, retailers and exporters.

Simple statistical tools like averages and percentages were used to compare and interpret results. Seasonal indices for the average wholesale and retail prices of onion and grapes prevailing in Nasik, Pune and Mumbai market centres have been computed to understand intra-year movement of prices based upon monthly data. The inter-year and intra-year instability in wholesale and retail prices of onion and grapes were computed through coefficient of variation (CV).

7.4 Major Findings

The major findings mainly revolve around socio-economic characteristics and resource endowments of sampled farmers, economics of cultivation of onion and grape crops, marketing of onion and grapes, price pattern over time and space, and stakeholders' perceptions regarding production and trade of onion and grapes.

7.4.1 Socio-economic Characteristics and Resource Endowments of Farmers

The socio-economic characteristics and resource endowments of sampled farmers of study districts are assessed with respect to their family size and composition, education status, caste composition, land use pattern, cropping pattern, irrigated area and sources.

7.4.1.1 Family Size of Onion and Grape Farmers

The sampled onion and grape farmers showed an average family size of 7 persons with 5 adults and 2 children. However, while onion farmers showed sex ratio of adults in favour of females, the sex ratio was in favour of males in case of grape farmers.

7.4.1.2 Educational Status of Onion and Grape Farmers

The sampled grape farmers were relatively more educated as compared to onion farmers. While about 82 per cent of the head of the households of grape growing farmers received education up to secondary and higher level, this proportion for onion growing farmers stood at only 71 per cent. The illiteracy among heads of households was found to be more in case of onion growing farmers. However, the proportion of head of the households attaining education up to primary level was relatively higher in case of onion growing farmers as against grape growing farmers. In fact, not only all the categories of sampled grape farmers enjoyed higher education status as compared to sampled onion farmers but small and large category, in particular, showed very high status of education since majority of them attained education beyond secondary level.

7.4.1.3 Caste Composition of Onion and Grape Farmers

Caste composition revealed much higher proportion of sampled grape farmers belonging to general category as against sampled onion farmers since 84 per cent of grape farmers belonged to other category as against 63 per cent onion farmers belonging to other category. Further, while significant proportion of onion farmers also belonged to OBC category, this proportion was very less for grape farmers.

7.4.1.4 Irrigation Details for Onion and Grape Growing Farmers

The estimates relating to irrigation status showed significantly high proportion of operational holding of both sampled onion and grape farmers under irrigation, which was as much as 91 per cent for onion farmers and 95 per cent for grape farmers. However,

while sampled onion farmers showed their entire irrigated area under open well irrigation, the proportion of area under open well was 74 per cent of the operational holding for grape farmers. The sampled grape farmers also showed reasonable proportion of area under tubewell, canal and tank irrigation. The canal irrigated area was significantly high for large category, whereas small and medium category of grape farmers showed higher proportion of area under tubewell irrigation.

7.4.1.5 Cropping Pattern of Onion and Grape Growing Farmers

The cropping pattern of sampled onion farmers differed significantly from sampled grape farmers. While onion crop predominated the cropping pattern of sampled onion farmers during kharif and rabi seasons, the area predominance was significantly high by grape crop for the sampled grape farmers. The average category of onion farmer showed 22 per cent of the net sown area under onion crop in kharif season and 57 per cent in rabi season. The area under onion crop as proportion of GCA was also high and the average category of onion farmers showed 10 per cent of GCA under onion crop in kharif season and 23 per cent of GCA under onion crop in rabi season. As for grape farmers, the average category of farmers showed 50 per cent of their GCA under grape crop. The other crops that predominated the cropping pattern of grape farmers were maize and leafy vegetables in kharif season, jowar and wheat in rabi season, and sugarcane among perennial crops.

7.4.1.6 Area under Onion and Grape Crops

The estimates showed a decline in proportion of area under onion crop with the rise in land holding size of sampled onion farmers. Similarly, sampled grape farmers also showed a decline in proportion of area under grape crop with the rise in their land holding size. The area under onion crop with all the sampled onion farmers put together was estimated at 160.77 hectares. The estimated area under grape crop with all the sampled grape farmers put together was 141.11 hectares.

7.4.1.7 Area under Onion and Grape Crops – Variety-wise

The estimates relating to variety-wise area under onion and grapes showed large number of varieties of onion and grapes cultivated on the farms belonging to sampled onion and grape farmers. However, the major area allocation was only under few varieties. For instance, the average category of sampled onion farmers allocated 43 per cent of the total kharif onion cropped area under Nashik Lal variety and 36 per cent under Panchganga variety. Similarly, the average category of sampled onion farmers allocated 60 per cent of their total rabi onion cropped area under Fursungi variety and 19 per cent

under Nashik Lal variety. In case of grapes, the average category of grape farmers allocated 68 per cent of the total grape cropped area under Thomson variety and 15 per cent under Sonaka variety. Therefore, both onion and grape farmers showed high proportion of area only under couple of varieties.

7.4.2 Economics of Cultivation of Onion and Grape Crops

The extent of profit from any enterprise depends on cost and return structure. The study not only evaluates cost and return structure in the cultivation of onion and grape crops on the sampled farms but also evaluates area, production, consumption, retention, and wastage of onion and grape crops.

7.4.2.1 Production, Consumption and Marketed Surplus

The major varieties of onion cultivated by sampled onion farmers were Nashik Lal and Panchganga varieties in kharif season, and Fursungi and Nashik Lal varieties in rabi season. The major varieties of grapes cultivated by sampled grape farmers were Thomson and Sonaka variety. The production, consumption and marketed surplus estimates were, therefore, evaluated for these varieties of onion and gapes along with general scenario encompassing all the varieties put together.

7.4.2.1.1 Production, Consumption and Marketed Surplus for Kharif Onion

The average per farm area with all the varieties of kharif onion put together was estimated at 0.65 hectare for small category, 0.86 hectare for medium category and 1.47 hectares for the large category with an overall average of 0.74 hectare for the average category of onion farmers. The average per farm production of all the varieties of kharif onion put together was estimated at 75.45 quintals for small category, 105.67 quintals for medium and 179.93 quintals for large category with an overall average of 87.10 quintals for the average category of onion farmers. The average per farm area, production, consumption, retention, wastage and sale of all the varieties of onion put together increased with the increase in land holding size of onion farmers.

The average category of sampled onion farmers showed 1.25 per cent of total production of all the varieties of kharif onion put together as family consumption, 1.06 per cent as quantity retained for future use, 2.27 per cent as wastage and 95.42 per cent as quantity sold in the market at an average price of Rs.923.85 per quintal. The average price of kharif onion with all the varieties put together varied from Rs.850.00 per quintal for large category to Rs.945.42 per quintal for medium category. All the categories of sampled farmers showed about 95 per cent of total production of kharif onion as sold in the market as marketed surplus.

7.4.2.1.2 Production, Consumption and Marketed Surplus for Rabi Onion

The average per farm production of all the varieties of rabi onion put together was estimated at 137.87 quintals from 0.76 hectare for small category, 168.86 quintals from 0.90 hectare for medium and 377.02 quintals from 1.92 hectares for large category with an overall average of 161.40 quintals from 0.87 hectare for the average category of onion farmers. During rabi season, the average per farm area, production, consumption, retention, wastage and sale of all the varieties of onion put together increased with the increase in land holding size of onion farmers.

The average category of onion farmer showed 2.19 per cent of total production of all the varieties of rabi onion as family consumption, 1.81 per cent as quantity retained for future use, 2.37 per cent as wastage and 93.63 per cent as quantity sold in the market at an average price of Rs.1051.07 per quintal. The wastage of rabi onion as proportion of total production decreased with the increase in land holding size of sampled onion farmers, whereas the quantity of rabi onion retained as proportion of production increased with the increase in land holding size of sampled farmers. In general, all the categories of sampled farmers showed about 94 per cent of total production of rabi onion as sold in the market as marketed surplus. The price of rabi onion with all the varieties put together increased with the increase in land holding size of sampled farmers.

A critical evaluation of average estimates relating to area, production, consumption, retention, wastage, marketed surplus and price for kharif and rabi onion with all the varieties put together showed higher area, production, consumption, retention, wastage, marketed surplus and prices of onion during rabi season as compared to kharif season. However, in general, the consumption, retention and wastage of onion as proportion of production were higher during rabi as against kharif season. On the other hand, the marketed surplus of onion as proportion of production was marginally higher during kharif as against rabi season. The longer shelf life and better quality of produce were the major reasons for higher prices on offer for rabi onion as compared to kharif onion. The productivity of rabi onion is also significantly high as against kharif onion. The sampled onion farmers, therefore, allocated higher per farm area under rabi as against kharif onion. In general, the sampled farmers received 14 per cent higher prices for rabi onion as against kharif onion.

7.4.2.1.3 Production, Consumption and Marketed Surplus for Grapes

The average per farm production of all the varieties of grapes put together was estimated at 93.84 quintals from 0.60 hectare for small category, 139.41 quintals from

0.96 hectare for medium and 331.80 quintals from 2.10 hectares for large category with an overall average of 111.92 quintals from 0.73 hectare for the average category of grape farmers. The estimates also showed that the average per farm production, consumption, retention and marketed surplus of grapes increased with the increase in land holding size of sampled grape farmers.

The consumption and retention of grapes as proportion production was quite low among sampled grape farmers, whereas wastage of grapes as proportion of production stood at relatively high. The average category of sampled grape farmer showed 0.49 per cent of total production of all the varieties of grapes put together as family consumption, 0.36 per cent as quantity retained for future use, 2.10 per cent as wastage and 97.05 per cent as quantity sold in the market at an average price of Rs.3415.36 per quintal. The average price of grapes with all the varieties put together was the highest for medium and lowest for large category. In fact, there was wide variation in grape prices, which varied from Rs.2300 per quintal for Manik variety in case of medium farmers to as much as to Rs.5000 per quintal for Jumbo variety produced by small category of farmers. In general, all the categories of farmers showed about 97 per cent of total production of grapes with all the varieties put together as quantity sold in the market as marketed surplus.

7.4.2.2 Cost of Cultivation

The input and marketing costs were evaluated for two major varieties of rabi and kharif onion and two varieties of grapes along with general scenario encompassing all the varieties put together.

7.4.2.2.1 Cost of Cultivation for Kharif Onion

The sampled onion farmers were found to cultivate large number of varieties of onion on their farm during kharif season. The per hectare cost of cultivation with all the varieties of onion cultivated during kharif season put together was estimated at Rs.60,939 for the average category of sampled onion farmer, which encompassed 75 per cent expenses towards inputs and 25 per cent towards various marketing activities. The average category of sampled onion farmer was seen to spend 17 per cent of the total input cost on seed, 9 per cent on irrigation, 21 per cent on manure and fertilizer, 20 per cent on labour, 21 per cent on machine hiring and 12 per cent on pesticides/weedicides. Further, the average category of sampled onion farmer was found to spend 31 per cent of total marketing cost on transportation, 49 per cent towards various market charges, and 20 per cent towards other miscellaneous marketing related activities. The sampled farmers did not show any storage cost for kharif onion due to low shelf life of the crop.

7.4.2.2.2 Cost of Cultivation for Rabi Onion

In case of rabi onion, per hectare cost of cultivation with all the varieties of onion put together was estimated at Rs.1,15,907 for the average category of sampled onion farmer, which encompassed 77 per cent expenses towards inputs and 23 per cent towards various marketing activities. The average category of sampled onion farmer was seen to spend 11 per cent of the total input cost on seed, 10 per cent on irrigation, 25 per cent on manure and fertilizer, 29 per cent on labour, 15 per cent on machine hiring and 9 per cent on pesticides/weedicides. A further break-up showed that the average category of sampled onion farmer was spending 17 per cent of total marketing cost on storage, 25 per cent on transportation, 31 per cent towards various market charges, and 27 per cent towards other miscellaneous marketing activities. The estimates further revealed that the major expenditure of input cost was on manure and fertilizer, labour and machine hiring.

The average category of farmer showed 90.20 per cent higher per hectare cost of cultivation of onion during rabi as against kharif season. The higher per hectare cost of cultivation during rabi season was mainly due to higher amount of expenditure incurred on inputs and to some extent on marketing activities. The cultivation of rabi onion was noticed to be more profitable due to higher productivity, better quality, longer shelf life and much higher prices. Higher expenditure on rabi onion was due to better returns.

7.4.2.2.3 Cost of Cultivation for Grapes

The per hectare cost of cultivation with all the varieties of grapes put together was estimated at Rs.2,54,270 for the average category of grape farmer, which included 97 per cent expenses on inputs and 3 per cent on various marketing activities. The average category of grape farmer was seen to spend 11 per cent of the total input cost on irrigation, 20 per cent on manure and fertilizer, 21 per cent on labour, 16 per cent on machine hiring, 21 per cent on pesticides/weedicides, and 11 per cent on other inputs. The other input cost included cost of Gibberellic acid (GA3) for dipping grape bunches to increase berry size, and annual repair and maintenance charges for grape garden infrastructure. The seed cost estimates for grape farmers were not available since the infrastructure for grape gardens was enacted many years ago, which resulted in non availability of information on seed cost with the grape farmers.

7.4.2.3 Profitability Analysis

The profitability analysis was performed for two major varieties of rabi and kharif onion and two varieties of grapes along with general scenario encompassing all the varieties put together.

7.4.2.3.1 Profitability Analysis for Kharif Onion

The per hectare ROVC with all the varieties of kharif onion grown during kharif season put together was estimated at Rs.49,130 for small category, Rs.43,669 for medium category and Rs.39,450 for the large category with an average of Rs.46,834 for the average category of farmer. Thus, the per hectare ROVC of kharif onion with all the varieties put together declined with the increase in land holding size of sampled onion farmers. The per quintal ROVC of kharif onion with all the varieties put together was estimated at Rs.428 for small category, Rs.348 for medium category and Rs.322 for large category with an average of Rs.401 for the average category of farmer. The average category of sampled onion farmer generated 76.67 per cent per quintal net returns over per quintal variable cost in the cultivation of kharif onion with all the varieties put together. The higher per quintal ROVC for small category during kharif season with all the varieties of onion put together was due to lower per quintal variable cost of cultivation as against medium and large category.

7.4.2.3.2 Profitability Analysis for Rabi Onion

In rabi season, the average per hectare ROVC with all the varieties put together was estimated at Rs.76,005 for small category, Rs.82,085 for medium category and Rs.76,587 for the large category with an overall average of Rs.77,376 for the average category of farmer. Thus, the medium category showed 8.00 per higher per hectare ROVC as against small category and 7.18 per cent higher per hectare ROVC as compared to large category. The per quintal ROVC of rabi onion with all the varieties put together was estimated at Rs.419 for small category, Rs.438 for medium category and Rs.391 for large category with an average of Rs.417 for the average category of farmer. The average category of sampled onion farmer generated 65.36 per cent per quintal net returns over per quintal variable cost in the cultivation of rabi onion with all the varieties put together.

In general, as against kharif season, per hectare ROVC in rabi season with all the varieties put together was 54.70 per cent higher for small farmer, 87.97 per cent for medium category, 94.14 per cent for large category with an overall average of 65.21 per cent for the average category of farmer cultivating onion crop. Thus, the proportion of per hectare net returns in rabi season over kharif season with all the varieties of onion put together increased with the increase in land holding size of sampled onion farmers. Generation of substantial net returns in the cultivation of rabi onion obviously led the sampled farmers to allocate much larger area under rabi onion as against kharif onion.

The sampled onion farmers allocated 126.17 per cent higher area under rabi onion as against kharif onion with all the varieties put together.

7.4.2.3.3 Profitability Analysis for Grapes

The average per hectare ROVC with all the varieties of grapes put together was estimated at Rs.2,64,312 for small category, Rs.2,85,539 for medium category and Rs.2,89,589 for the large category with an overall average of Rs.2,72,573 for the average category of grape farmer. The per quintal ROVC of grapes with all the varieties put together was worked out at Rs.1695 for small category, Rs.2030 for medium category and Rs.1811 for large category with an average of Rs.1783 for the average category of grape farmer. The higher per quintal ROVC for medium category with all the varieties put together was mainly due to relatively higher prices of grapes received by medium category of farmers as against small and large category. The average category of sampled grape farmer showed 108.38 per cent per quintal net returns over per quintal variable cost in the cultivation of grapes with all the varieties of grapes put together. Per hectare as well as per quintal ROVC in the cultivation of grapes was, therefore, significantly high on the sampled grape farms.

The foregoing estimates clearly showed cultivation of grapes as a lucrative proposition since all the categories of sampled grape farmers generated more than 100 per cent per quintal net returns over per quintal variable cost. Although onion cultivation was also found to be profitable, the generation of per quintal net return over per quintal variable cost for the average category of farmer with all the varieties put together was 76.67 per cent in kharif season and 65.36 per cent in rabi season. Therefore, the extent of profit involved in the cultivation of grapes was much higher as against onion.

7.4.3 Marketing of Onion and Grapes

In this study, an attempt is made to examine marketing of onion and grape crops with major focus on their disposal pattern, quantity of disposal and prices realized, and also source of supply for intermediaries.

7.4.3.1 Farmer's Disposal pattern

The sampled onion farmers were seen to dispose of their marketed surplus of onion of all the varieties grown during kharif and rabi seasons only through regulated market and they did not use any other channel for the marketing of their onion produce. The onion farmers preferred to sell their produce through regulated market since this channel fetched them relatively better prices as against other channels available to them for marketing of their produce.

The sampled grape farmers preferred to dispose of their marketed surplus of various varieties of grapes only through on-farm sale. The agencies engaged in on-farm sale were found to bring their own vehicle for lifting grape produce from farmer's field. The transportation cost incurred in transportation of grapes from farmer's field to the nearby road was borne by the sampled grape farmer.

7.4.3.2 Market-wise Disposal Pattern of Marketed Surplus

The total quantity of onion sold through regulated market during kharif season with all the varieties put together was estimated at 3,652 quintals for small category, 1,221 quintals for medium category and 685 quintals for large category with a sum of 5,556 quintals for all the categories put together. The average per farm quantity of onion sold through regulated market during kharif season with all the varieties put together was worked out at 83 quintals, which fetched an average price of Rs.924 per quintal.

The total quantity of onion diverted through regulated market during rabi season with all the varieties put together was worked out at 12,650 quintals for small category, 3,183 quintals for medium category and 3,537 quintals for large category with a sum of 19,360 quintals for all the categories put together. The average per farm quantity of onion diverted through regulated market during rabi season with all the varieties put together was estimated at 151 quintals, which got an average price of Rs.1,051 per quintal.

The total quantity of on-farm sale of grapes with all the varieties put together was estimated at 13,583 quintals for small category, 4,494 quintals for medium category and 2,855 quintals for large category with a sum of 21,016 quintals for all the categories put together. The average per farm quantity of grapes sold through on-farm sale with all the varieties put together was worked out at 109 quintals, which fetched an average price of Rs.3,415 per quintal.

7.4.3.3 Month-wise Disposal of Onion and Grapes and Prices Received

Out of the total quantity of 5558 quintals of kharif onion sold in the market with all the varieties put together, 1000 quintals was sold in October at an average price of Rs.957/qtl, 2578 quintals in November at an average price of Rs.976/qtl, 574 quintals in December at an average price of Rs.775/qtl, 531 quintals in January at an average price of Rs.849/qtl and 498 quintals in February at an average price of Rs.875/qtl. The average annual price for kharif onion with all the varieties put together was estimated at Rs.924/qtl. The higher quantum of kharif onion sold during the months of October, November, December and January was due to the reason that these were the harvesting months for kharif and late kharif onion.

In rabi season, out of the total quantity of 19360 quintals of onion sold in the market with all the varieties put together, 3127 quintals was sold in April at an average price of Rs.994/qlt, 2396 quintals in May at an average price of Rs.1053/qlt, 2208 quintals in June at an average price of Rs.1176/qlt, 747 quintals in July at an average price of Rs.1304/qlt, 2999 quintals in January at an average price of Rs.1022/qlt, 4833 quintals in February at an average price of Rs.1000/qlt and 2970 quintals in March at an average price of Rs.1029/qlt. The average annual price for rabi onion with all the varieties put together was estimated at Rs.1051/qlt. Notably, rabi onion arrives in the market in the month of January and initially prices are lower and then gradually rise.

The total quantity of grapes marketed through on-farm sale with all the varieties and categories of farmers put together was estimated at 21016 quintals, which encompassed 4082 quintals quantity sold in January at an average price of Rs.3525/qlt, 5961 quintals in February at an average price of Rs.3527/qlt, 4087 quintals in March at an average price of Rs.3461/qlt, 3117 quintals in April at an average price of Rs.3138/qlt, and 3684 quintals in May at an average price of Rs.3186/qlt. The average annual price realized for grapes with all the varieties and categories of farmers put together was worked out at Rs.3415/qlt.

7.4.3.4 Sources of Supply for Intermediaries

The major source of supply of onion for wholesalers, retailers and exporters was found to be from commission agents since 70-100 per cent of these sampled market intermediaries procured their onion from commission agents, followed by farmers.

In case of grapes, the wholesalers, retailers and exporters preferred to procure their produce from farmers since 60 per cent of wholesalers, 50 per cent of retailers and 100 per cent of exporters aired their view in favour of receiving their grape produce from this source of supply. Generally, the procurement of grapes directly from farmers minimizes cost of marketing and increases margins of profit of market intermediaries.

7.4.4 Price Pattern over Time and Space

Using secondary data and data collected from wholesaler, retailer and exporter, the study attempts to assess price behaviour of onion and grapes over time at various stages of their marketing in the state of Maharashtra.

7.4.4.1 Variation in Prices of Onion

The wholesale prices of onion in Maharashtra over the last one decade peaked in the month of November and touched their lowest in the month of April. May through November marked the period when the wholesale prices of onions were found to be in

the midst of a rising trend. In general, the wholesale prices of onions for the state peaked during the month of August, September, October, November and December, whereas February, March, April, May and June marked the lean months in this respect.

The trend in retail prices of onion during the last one decade was similar to wholesale prices. While retail prices of onion peaked in the month of November, they touched their lowest in the month of May. The retail prices of onion showed a rising trend from June to November.

An evaluation of intra-year variability in wholesale prices of onion showed high variability in wholesale prices in 2010, 2011 and 2013, moderate in 2008 and 2009, and low in 2006, 2007, and 2014. Similarly, retail prices of onion in Maharashtra were also seen to be marked with high variability in 2010, 2011 and 2013, moderate in 2009 and low in 2006, 2007, 2008, and 2014. The intra-year variability was noticed to be relatively lower in retail as against wholesale prices of onion. In general, the intra-year monthly price variability of wholesale and retail prices of onion in Maharashtra was higher as against their inter-year price variability.

The average percentage mark-up in retail prices over wholesale prices of onion in Maharashtra during the entire period of 2006 to 2014 was estimated at 33.87 per cent, which could be considered quite reasonable in view of high fluctuations in wholesale and retail prices of onion in Maharashtra.

7.4.4.2 Variation in Prices of Grapes

The wholesale prices of grapes in Maharashtra over the last one decade peaked in the month of December and May, and touched their lowest in the month of March. June through October marked the period when there was no market arrival of grapes, and, therefore, these prices remained at zero during this period. With the early market arrival, the wholesale prices of grapes increased from November to December with a fall in the same from January to March and again rise in the same from March to May.

The trend in retail prices of grapes during the last one decade was exactly similar to wholesale prices of grapes. While retail prices of grapes peaked in the month of December and May, they touched their lowest in the month of March. The retail prices of grapes in Maharashtra started rising from November to December with a steady fall in the same from January to March, and thereafter they showed again a rising trend and peaked in the Month of May.

The wholesale and retail prices of grapes in Maharashtra were marked with large scale variability during the period between 2006 and 2014. A critical evaluation of intra-

year variability in wholesale prices of grapes revealed high variability in wholesale prices in 2006, moderate in 2007, 2008, 2009 and 2012, and low in 2010, 2011, 2013 and 2014. The retail prices of grapes in Maharashtra were found to be beset with high variability in 2006 and 2009, moderate in 2007, 2008, 2010, 2011 and 2012, and low in 2013 and 2014. In general, wholesale prices of grapes showed higher variability during 2006 and 2007, whereas retail prices of grapes were marked with higher variability during 2006 and 2009.

The annual percentage mark-up in retail prices over wholesale prices of grapes in Maharashtra was estimated at 33.83 per cent in 2008 and 73.18 per cent in 2006. In general, the average percentage mark-up in retail prices over wholesale prices of grapes in Maharashtra during the entire period of 2006 to 2014 was estimated at 44.71 per cent.

7.4.4.3 Wholesale Trade Details and Mark-up Percentage

The overall average monthly quantity of onion traded by a wholesaler was estimated at 4,278 quintals, which comprised of 1,130 quintals of Nasik Lal variety of onion, 1,905 quintals of Panchganga variety, 719 quintals of Fursungi variety and 524 quintals of other varieties of onion.

The wholesale trade of onion for a wholesaler turned out to be the highest in the month of December and lowest in January. However, purchase and sale prices of onion for a wholesaler with all the varieties put together were the highest in the month of November and lowest in February. The average purchase price of onion for a wholesaler with all the varieties put together was estimated at Rs.1183/qtl, whereas average sale price for the same stood at Rs.1487/qtl. The average percentage mark-up for a wholesaler with all the varieties of onion put together was estimated at 25.73, which varied significantly from 20.52 per cent in July to 30.19 per cent in December.

In case of grapes, the overall average monthly quantity traded by a wholesaler was estimated at 305 quintals, which consisted of 100 quintals of Thomson variety of grapes, 97 quintals of Sonaka variety, and 108 quintals of other varieties of grapes.

The wholesale trade of grapes for a wholesaler with all the varieties put together was the highest in the month of December and lowest in May. The purchase price of grapes for a wholesaler with all the varieties put together was the highest in the month of April and lowest in November, whereas sale price for the same stood at the highest in April and lowest in December. The average purchase price of grapes for a wholesaler with all the varieties put together was estimated at Rs.3885/qtl. On the other hand, the average sale price of grapes for a wholesaler with all the varieties put together was estimated at Rs.4796/qtl. Therefore, the average percentage mark-up of grapes for a

wholesaler with all the varieties put together was worked out at 23.46 per cent, which varied significantly from 21.41 per cent in December to 29.26 per cent in November.

7.4.4.4 Retail Trade Details and Mark-up Percentage

The overall average monthly quantity of onion traded by a retailer was worked out at 49.90 quintals, which encompassed 8.83 quintals of Nasik Lal variety, 3.90 quintals of Panchganga variety, 5.16 quintals of Fursungi variety and 32.01 quintals of other varieties of onion.

The overall average retail trade of onion for a retailer with all the varieties put together turned out to be the highest in the month of September and lowest in April. The purchase and sale prices of onion for a retailer with all the varieties put together were the highest in the month of August, whereas lowest purchase price stood in the month of February and sale price in March. The average purchase price of onion for a retailer with all the varieties put together was worked out at Rs.1707/qtl, while average sale price for the same stood at Rs.2167/qtl. Therefore, the average percentage mark-up for a retailer with all the varieties of onion put together turned out to be 26.95 per cent, which varied significantly across months.

The estimates for grapes showed that the overall average monthly quantity traded by a retailer was 6.85 quintals, which comprised of 3.85 quintals of Thomson variety, 2.59 quintals of Sonaka variety, and 0.39 quintal of other varieties of grapes, showing thereby the proportion of quantity sold to the overall trade of grapes to the tune of 56.27 per cent for Thomson variety, 37.89 per cent for Sonaka variety and the remaining 5.84 per cent for other varieties of grapes.

The retail trade of grapes for a retailer with all the varieties put together turned out to be the highest in January and lowest in May. The purchase and sale prices of grapes for a retailer with all the varieties put together were the highest in the month of November and lowest in January. The overall average purchase price of grapes for a retailer with all the varieties put together was worked out at Rs.5558/qtl, whereas the overall average sale price for the same stood at Rs.7237/qtl, showing thereby the average percentage mark-up of grapes for a retailer to the tune of 30.20 per cent with all the varieties of grapes put together. The average percentage mark-up of grapes for a retailer with all the varieties of grapes put together did not vary much across months.

7.4.4.5 Export Trade Details and Mark-up Percentage

The overall average monthly quantity of onion traded by an exporter was estimated at 4000 quintals, which consisted of 790 quintals of Nasik Lal variety, 642

quintals of Panchganga variety, 408 quintals of Fursungi variety and 2160 quintals of other varieties of onion.

The quantity of onion exported with all the varieties put together was the highest in the month of October and lowest in December. However, the overall average purchase price of onion for an exporter with all the varieties put together was the highest in the month of August and lowest in January. The overall average sale price of onion for an exporter with all the varieties put together was the highest in the month of October and lowest in January. The overall average purchase price of onion for an exporter with all the varieties put together was estimated at Rs.2038/qlt, whereas overall average sale price for the same stood at Rs.3102/qlt, showing thereby the average percentage mark-up for an exporter to the tune of 52.24 per cent with all the varieties onion put together.

The overall average monthly quantity of grapes traded by an exporter was estimated at 1289 quintals, which comprised of 343 quintals of Thomson variety, 36 quintals of Sonaka variety, and 910 quintal of other varieties of grapes.

The average monthly export trade of grapes for an exporter was the lowest in November and highest in March. The purchase and sale prices of grapes for an exporter with all the varieties put together were the highest in the month of March and lowest in December. There was wide difference between purchase and sale price of grapes for an exporter with all the varieties put together. This was mainly due to vary high element of cost and margin involved between purchase and sale price of grapes in export trade. The overall average purchase price of grapes for an exporter with all the varieties put together was estimated at Rs.4394/qlt, while the overall average sale price for the same stood at Rs.11839/qlt, showing thereby the average percentage mark-up of grapes for an exporter as high as 169.40 per cent with all the varieties put together.

7.4.4.6 Vertical Price Spread in Onion and Grapes

The sampled onion farmers diverted their produce in the domestic market through regulated market (to the wholesaler) and in the export market through wholesaler and exporters. The sampled grape farmers diverted their produce in the domestic market using on farm sale (through commission agents) and in the export market to the exporters (through commission agents).

7.4.4.6.1 Price Spread in Domestic Market

The net margin of wholesaler of onion in consumer's price turned out to be 13.18 per cent for kharif Nasik Lal variety, 11.56 per cent for kharif Panchganga variety, 15.14 per cent for rabi Fursungi variety and 10.27 per cent for rabi Nasik Lal variety. On the

other hand, the net margins of retailer of onion in consumer's price were worked out at 19.07 per cent for kharif Nasik Lal variety, 19.73 per cent for kharif Panchganga variety, 19.09 per cent for rabi Fursungi variety and 20.82 per cent for rabi Nasik Lal variety. In general, the producer's share in consumer's rupee varied from 49 per cent to 52 per cent in domestic market for various varieties of onion.

The share of farmer in retail price was estimated at 42.86 per cent for Thomson variety and 45.72 per cent for Sonaka variety of grapes, showing higher share for Sonaka as against Thomson variety. The estimates also showed much lower share of net margin of wholesaler in consumer's price as against share of net margin of retailer in the same. The net margin of retailer of grapes in consumer's price was worked out at 20.59 per cent for Thomson variety and 21.01 per cent for Sonaka variety, whereas share of net margin of wholesaler of grapes in consumer's price turned out to be 10.03 per cent for Thomson variety and 9.98 per cent for Sonaka variety.

7.4.4.6.2 Price Spread in Export Channel

The farmer's share in export price of onion was estimated at 30.86 per cent for kharif Nasik Lal variety, 29.53 per cent for kharif Panchganga variety, 35.03 per cent for rabi Fursungi variety and 34.11 per cent for rabi Nasik Lal variety, showing higher share of farmer in export price for rabi as against kharif onion. It is to be noted that the wholesaler's sale price of onion for retailer in domestic market and exporter in export market differed significantly and turned out to be higher in export market due to better quality of produce diverted to exporter as against retailer.

The shares of marketing cost of exporter in export price of grapes were estimated at 24.53 per cent for Thomson variety and 23.20 per cent for Sonaka variety. The shares of net margin of exporter in export price of grapes turned out to be as much as 40.30 per cent for Thomson variety and 42.44 per cent for Sonaka variety. Due to significantly high shares of marketing costs and net margins in export price, the farmer's share in export price of grapes turned out to be only 29.08 per cent for Thomson variety and 29.88 per cent for Sonaka variety.

7.4.5 Stakeholders Perceptions on Production and Trade of Onion and Grapes

While farmers face problems in cultivating a particular crop, the traders confront with different set of problems, which are mainly marketing related. Therefore, the study tried to assess perceptions of farmers as well other stakeholders regarding problems faced by them in the marketing of their produce, apart from analysing perceptions of farmers regarding reasons for cultivating the study crops.

7.4.5.1 Reasons for Growing Study Crops

Profitability was cited as one of the major reasons for cultivating onion crop. The other reasons for cultivating onion crop were land suitability, short duration of crop, weather suitability, etc. In case of grapes, profitability turned out to be the major reason for its cultivation. The other reasons for grape cultivation revolved around weather suitability, high value cash crop, etc.

7.4.5.2 Problems Faced by Onion and Grape Growers

The survey revealed that among the severe problems faced by the onion farmers, the most important constraint was the price fluctuation. Labour shortage was another severe problem faced by onion farmers. The other problems faced by onion farmers were relating to erratic and irregular supply of electricity, lack of MSP/government support, lower yield and yield instability, market infrastructure related problem, poor quality of underground water, and collusion among traders and trade malpractices.

The sampled grape farmers also faced various problems in the cultivation of grape crop. The most severe problem was in terms of lack of announcement of MSP or any government support. Labour shortage was another severe problem faced by grape farmers. The other problems faced by grape growers revolved around lack of extension services/ lack of technical know how in the cultivation of grape crop, erratic electricity supply, price fluctuations, poor quality of underground water, market infrastructure related problems, lack of remunerative prices, poor road network, unstable yield, and non availability of good quality plant.

7.4.5.3 Problems Faced by Wholesalers

The most severe problems faced by sampled wholesalers of onion were relating to high marketing charges/ taxes, poor facility of driers, erratic supply/production, competition from other wholesalers and poor road network. The most severe problems faced by sampled wholesalers of grapes were relating to mixing of different varieties of grapes, poor and inadequate availability of refrigeration facilities, erratic supply/ production, lack of availability of cold storages, poor refrigeration facilities, lack of refrigerated vans for the transportation of grapes, poor road network, etc.

7.4.5.4 Problems Faced by Retailers

The major problems of retailers of onion were relating to poor market infrastructure facilities, non-remunerative price due to lower demand, competition from other retailers, competition from large organized retail chains, etc. The major problems faced by retailers of grapes were relating to poor quality of supply of grape produce, lack

of government intervention in the marketing of grape produce, non-remunerative price on offer due to lower demand, poor market infrastructure facilities for the disposal of grape produce, etc.

7.4.5.5 Problems Faced by Exporters

One of the major and severe problems faced by exporters of onion was relating to poor road network. The other problems faced by exporters of onion revolved around poor facility of driers, competition from wholesalers, lengthy government procedures in terms of clearance of consignment, uncertainty with respect to export trade of onion, etc. The most severe problem faced exporters of grapes was relating to poor road network. The other problems faced by exporters of grapes revolved around lengthy government procedures in terms of clearance of consignment of grapes, lack of pre-cooling and cold storage facilities, low domestic demand, poor infrastructure facilities at ports, etc.

7.4.6 Conclusions and Policy Implications

Agricultural commodities in general and horticulture in particular are beset with high price fluctuations due to their unstable production. Among various agricultural commodities, fruits and vegetable prices are more volatile due to low price and income elasticity. The trader's cartels, weak supply chain and market inefficiencies also influence prices of these high value commodities. High price variability in case of primary products not only affects producers but also consumers, which in turn affect other sectors, resulting in high inflation in the economy. The involvement of large number of market functionaries in the supply chain lead to lower share of producer in consumer rupee. The producers are also seen to be exposed to market risk due to lack of market intelligence regarding demand, supply and price prevailing in various market centres. Lack of adequate infrastructure also results in significant loss of produce from the point of production to the consumption point. This coupled with margin money taken away by various market functionaries creates disincentives to the farmers in agricultural production enterprise. Although many commodities generate good amount of marketable surplus, the producers do not get reasonable price for their produce because of deficiencies in the present agricultural marketing system. Horticultural commodities are also subjected to high price volatility due to lack of storage, transportation and processing facilities, aside from weather and institutional risks.

Although various foodgrain, oilseeds, fiber crops, etc. receive government support and intervention in the form of announcement of minimum support price (MSP), the horticulture crops do not fall under any government support due to their high degree of

perishability. This creates disincentives for the farmers in the cultivation of horticulture crops. The marketing related problems faced by onion and grape growers, therefore, mainly revolved around high price fluctuations due to lack of rain, un-seasonal or excess rain or hail storm, lack of remunerative price, lack of MSP and government procurement, etc. The other problems faced by onion and grape farmers were relating to lower yield and yield instability, labour shortage, erratic and irregular electricity supply, lack of extension services, lack of facilities of driers, lack of refrigeration facilities, market infrastructure related problem, poor quality of underground water, and collusion among traders and trade malpractices, etc. These problems need to be addressed through various institutional and policy instruments. It is felt and also reported by the farmers that there should be MSP for rabi onion, which has shelf life of 4-5 months depending upon the quality of produce. The government intervention and support for rabi onion will certainly solve onion crises, which has become more frequent in recent years. The government support for rabi onion will not only protect farmers but also consumers.

The study revealed that the onion and grape prices remained at lower ebb during harvesting/peak period and high during lean period. Due to lack of storage facilities in case of onion and lack of pre-cooling and cold storage facilities for grapes, most of the farmers preferred to dispose of their produce immediately after harvest, which resulted in low prices on offer for both onion and grape farmers. There is, therefore, a need to develop adequate post harvest infrastructure facilities for these high value crops in order to protect farmers from undue low prices for their produce. Public and private sector investment initiatives towards creation of adequate post harvest infrastructure facilities like storage, transportation, pre-cooling units, cold storages, refrigerated vans for the transportation of highly perishable fruits and vegetable, etc. will certainly boost horticulture crop production and marketing, both in domestic and export markets.

One of the major observations of this study was the highly profitable nature of grape cultivation as against onion cultivation since cultivation of grapes generated more than 100 per cent per quintal net returns over per quintal variable cost as against generation of 76.67 per cent per cent per quintal net returns over per quintal variable cost for kharif onion and 64.48 per cent per cent per quintal net returns over per quintal variable cost for rabi onion. Therefore, the extent of profit involved in the cultivation of grapes was much higher as against onion.

The study showed that the producer's share in consumer's rupee varied from 49 per cent to 52 per cent in domestic market for various varieties of onion, and this share in

export channel for the same varied from 30 per cent to 35 per cent. In case of grapes, producer's share in consumer's rupee varied from 43 per cent to 46 per cent in domestic market for various varieties, and this share in export channel for the same varied from 29 per cent to 30 per cent. The lower share of farmer in export price as against retail price in domestic market was due to higher export price. Since in the export trade of grapes the exporter cornered the major net margin, there is need for the farmers to directly export their grape produce in export market using cooperative societies or farmers' groups without involving exporters, which will ensure much higher retunes for their grape produce in the export market. In fact, one of the major factors responsible for lower share of producer in retail and export prices of onion and grapes was the higher cumulative marketing margins cornered by various market functionaries within the channel. The situation is unlikely to be altered unless various regulative measures are brought in place to check practices of these functionaries involved in the marketing of high value crops. Introduction of appropriate market regulatory framework to check the practices of various market functionaries involved in the marketing of high value crops will lead to reduced marketing margins of these market intermediaries, resulting in higher share of producer in retail and export price.

Although factors such as growing urbanization and globalization, change in consumption habits and rise in per capita income have led to rise in demand for high value crops in both domestic and international market, the prevailing constraints like lack of assured market and a lack of developed seed sector pose considerable hindrance for farmers to fully exploit emerging opportunities in high value crop cultivation. There are also other constraints that restrict farmers to adopt high value fruits and vegetable cultivation. Constraints such as high price and yield risk, lack of access to credit, lack market infrastructure and efficient marketing system, greater magnitude of post harvest losses, lack of bargaining power due to low volume of supply, etc. result in inadequate motivation of smallholders to practice high value fruits and vegetable cultivation. One of the strategies to strengthen farm-firm linkages is group or contract farming which can not only help farmers to overcome various constraints but also encourage them to take greater price, yield and market risk. Evidences have shown that smallholders have benefited immensely from public intervention, which facilitates better risk management through improved information system, development of financial markets and promotion of market based price and yield insurance schemes.

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APPENDIX

Appendix 1: Cropping Pattern of Onion Growing Farmers – Over All Seasons

Name of the Crop	Small		Medium		Large		Total	
	Area (Ha)	% of GCA						
Kharif crops								
Onion	33.10	12.33	10.32	9.87	5.87	5.69	49.29	10.35
Jowar	1.65	0.62	3.83	3.66	3.24	3.14	8.72	1.83
Bajra	42.06	15.67	12.75	12.19	14.57	13.93	69.18	14.53
Maize	13.24	4.93	6.78	6.48	3.64	3.53	23.66	4.97
Mung	29.07	10.83	11.66	11.14	10.91	10.58	51.64	10.84
Tur	1.72	0.64	0.20	0.19	1.92	1.86	3.85	0.81
Uddi	-	-	0.10	0.1	0.81	0.78	0.91	0.19
Kulith	0.71	0.26	0.20	0.19	4.25	4.12	5.16	1.03
Groundnut	0.40	0.15	0.81	0.77	0.20	0.2	1.42	0.3
Green Pea	1.62	0.6	0.40	0.39	1.62	1.57	3.64	0.77
Moth Bean	0.51	0.19	0.20	0.19	2.23	2.16	2.94	0.62
Lucerne	0.51	0.19	1.21	1.16	-	-	1.72	0.36
Kadwal	1.98	0.74	0.20	0.19	-	-	2.18	0.46
Grass	0.20	0.08	-	-	-	-	0.20	0.04
Total	126.76	47.22	48.68	46.52	49.07	47.57	224.51	47.14
Rabi crops								
Onion	74.23	27.65	18.02	17.22	19.23	18.64	111.48	23.41
Jowar	20.45	7.62	10.96	10.48	13.66	13.25	45.08	9.47
Wheat	8.79	3.27	4.35	4.16	4.66	4.51	17.79	3.75
Maize	4.43	1.65	1.99	1.9	1.62	1.57	8.03	1.69
Gram	7.34	2.73	2.43	2.32	0.81	0.78	10.58	2.22
Groundnut	0.49	0.18	-	-	-	-	0.49	0.1
Sunflower	0.20	0.08	-	-	-	-	0.20	0.04
Potato	-	-	-	-	0.81	0.78	0.81	0.17
Other Veg.	-	-	-	-	0.08	0.08	0.08	0.02
Kadwal	0.71	0.26	0.40	0.39	0.08	0.08	1.19	0.25
Lucerne	0.30	0.11	-	-	-	-	0.30	0.06
Total	116.94	43.56	38.15	36.46	40.95	39.7	196.04	41.17
Perennial crops								
Grape	2	0.3	-	-	-	-	2	0.17
Pomegranate	17.87	6.66	10.96	10.48	4.86	4.71	33.68	7.07
Orange	1.01	0.38	1.62	1.55	1.42	1.36	4.05	0.85
Sugarcane	4.25	1.58	5.22	4.99	6.07	5.89	15.55	3.26
Chikku	0.61	0.23	-	-	0.59	0.57	1.19	0.25
Mango	0.20	0.08	-	-	0.20	0.2	0.40	0.09
Total	24.75	9.22	17.81	17.02	13.14	12.73	55.69	11.69
GCA	268.44	100	104.64	100	103.16	100	476.23	100

Appendix 2: Cropping Pattern of Grape Growing Farmers – Over All Seasons

Name of the Crop	Small		Medium		Large		Total	
	Area (Ha)	% of GCA	Area (Ha)	% of GCA	Area (Ha)	% of GCA	Area (Ha)	% of GCA
Kharif crops								
Jowar	2.61	1.51	1.80	2.36	-	-	4.41	1.55
Bajra	1.71	0.99	-	-	-	-	1.71	0.60
Maize	12.20	7.03	13.34	17.45	3.85	11.24	29.38	10.34
Mung	3.80	2.19	-	-	-	-	3.80	1.34
Tur	-	-	-	-	-	-	0.00	0.00
Hulgā	-	-	-	-	-	-	0.00	0.00
Groundnut	0.71	0.41	0.40	0.53	-	-	1.11	0.39
Soybean	2.33	1.34	0.40	0.53	0.61	1.78	3.34	1.18
Onion	1.82	1.05	3.24	4.24	0.00	0.00	5.06	1.78
Vegetables	7.07	4.08	2.63	3.44	0.81	2.37	10.52	3.70
Grass	0.56	0.32	-	-	-	-	0.56	0.20
Kadwal	0.71	0.41	-	-	0.40	1.18	1.11	0.39
Lucerne	1.07	0.62	-	-	0.00	0.00	1.07	0.38
Total	34.59	19.95	21.82	28.54	5.67	16.57	62.07	21.85
Rabi crops								
Jowar	12.34	7.12	5.26	6.88	0.61	1.78	18.21	6.41
Wheat	6.28	3.62	6.28	8.21	1.62	4.73	14.17	4.99
Maize	4.33	2.50	0.40	0.53	-	-	4.74	1.67
Gram	1.03	0.60	2.02	2.65	0.20	0.59	3.26	1.15
Groundnut	0.15	0.09	-	-	-	-	0.15	0.05
Turmeric	0.40	0.23	-	-	-	-	0.40	0.14
Onion	0.61	0.35	-	-	0.81	2.37	1.42	0.50
Vegetables	0.50	0.29	-	-	-	-	0.50	0.17
Fodder (Kadwal)	1.74	1.00	-	-	0.20	0.59	1.94	0.68
Total	27.38	15.79	13.97	18.27	3.44	10.06	44.79	15.77
Perennial crops								
Grape	39.70	51.74	32.99	43.14	18.42	53.85	141.11	49.68
Betel	1.68	0.97	-	-	-	-	1.68	0.59
Banana	0.40	0.23	-	-	-	-	0.40	0.14
Ber	-	-	0.61	0.79	-	-	0.61	0.21
Chikku	1.01	0.58	-	-	-	-	1.01	0.36
Pomegranate	0.91	0.53	2.43	3.18	0.61	1.78	3.95	1.39
Sugarcane	17.71	10.22	4.66	6.09	6.07	17.75	28.44	10.01
Total	111.42	64.26	40.68	53.20	25.10	73.37	177.20	62.38
GCA	173.39	100.00	76.47	100.00	34.21	100.00	284.07	100.00

**Appendix 3: Area, Production, consumption and Marketed Surplus for Kharif Onion – All Varieties
(Per farm)**

Category	Variety	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	Baju 258	0.40	43.47	0.44	0.54	0.99	41.50	965
	Fursungi	0.74	90.02	1.00	1.04	1.61	86.37	823.75
	Malav	0.40	51.38	0.52	0.53	0.92	49.40	860
	N.53	0.56	70.89	1.02	0.72	1.72	67.43	891.25
	Nashik Lal	0.63	69.36	0.93	0.73	1.62	66.08	952.61
	Panchganga	0.73	88.95	1.01	0.91	2.14	84.90	907.92
	Prema	0.81	100.04	1.16	1.04	1.80	96.03	900
Average		0.65	75.45	0.95	0.80	1.73	71.98	924.57
Medium	Chandwad	0.40	54.34	0.82	0.64	1.51	51.38	870
	Lonand	0.40	52.36	0.54	0.53	0.90	50.39	850
	Malav	1.01	122.24	2.21	1.67	3.61	114.76	960
	Nashik Lal	0.77	92.05	1.26	0.93	1.62	88.25	971
	Panchganga	1.16	144.70	1.50	1.51	2.74	138.97	952.5
Average		0.86	105.67	1.32	1.13	2.09	101.14	945.42
Large	Mahabij	1.62	176.06	2.28	2.04	3.68	168.06	875
	Panchganga	1.42	181.22	2.17	1.95	5.23	171.86	841.67
Average		1.47	179.93	2.20	1.97	4.84	170.91	850.00
Overall Average		0.74	87.10	1.09	0.93	1.98	83.11	923.85
Share in Production (%)								
Small	Baju 258	0.40	100.00	1.02	1.25	2.27	95.45	965.00
	Fursungi	0.74	100.00	1.11	1.16	1.79	95.94	823.75
	Malav	0.40	100.00	1.02	1.04	1.79	96.15	860.00
	N.53	0.56	100.00	1.44	1.01	2.43	95.12	891.25
	Nashik Lal	0.63	100.00	1.34	1.05	2.33	95.27	952.61
	Panchganga	0.73	100.00	1.13	1.02	2.40	95.44	907.92
	Prema	0.81	100.00	1.16	1.04	1.80	96.00	900.00
Average		0.65	100.00	1.26	1.05	2.29	95.41	924.57
Medium	Chandwad	0.40	100.00	1.50	1.18	2.77	94.55	870.00
	Lonand	0.40	100.00	1.04	1.02	1.72	96.23	850.00
	Malav	1.01	100.00	1.81	1.37	2.95	93.88	960.00
	Nashik Lal	0.77	100.00	1.37	1.01	1.75	95.87	971.00
	Panchganga	1.16	100.00	1.03	1.04	1.89	96.04	952.50
Average		0.86	100.00	1.25	1.07	1.98	95.71	945.42
Large	Mahabij	1.62	100.00	1.30	1.16	2.09	95.45	875.00
	Panchganga	1.42	100.00	1.20	1.08	2.89	94.84	841.67
Average		1.47	100.00	1.22	1.09	2.69	94.99	850.00
Overall Average		0.74	100.00	1.25	1.06	2.27	95.42	923.85

**Appendix 3 (a): Area, Production, consumption and Marketed Surplus for Kharif Onion – All Varieties
(Per farm)**

Category	Variety	Area (Ha)	Production (Qtls./Ha)	Consumption (Qtls./Ha)	Retained for Future Use (Qtls./Ha)	Wastage (Qtls./Ha)	Sold (Qtls/Ha.)	Price (Rs./Qtls.)
Small	Baju 258	0.40	108.63	1.11	1.36	2.47	103.74	965.00
	Fursungi	0.74	121.65	1.35	1.41	2.17	116.71	823.75
	Malav	0.40	128.44	1.31	1.33	2.30	123.50	860.00
	N.53	0.56	126.59	1.32	1.28	3.08	120.41	891.25
	Nashik Lal	0.63	110.09	1.48	1.16	2.57	104.89	952.61
	Panchganga	0.73	121.85	1.38	1.25	2.93	116.30	907.92
	Prema	0.81	123.50	1.43	1.28	2.22	118.56	900.00
Average		0.65	115.65	1.46	1.22	2.65	110.33	924.57
Medium	Chandwad	0.40	135.85	2.94	1.61	3.77	128.44	870.00
	Lenand	0.40	130.91	1.36	1.33	2.25	125.97	850.00
	Malav	1.01	121.03	2.19	1.65	3.57	113.62	960.00
	Nashik Lal	0.77	119.55	1.64	1.21	2.10	114.61	971.00
	Panchganga	1.16	124.74	1.29	1.30	2.36	119.80	952.50
Average		0.86	123.71	1.58	1.32	2.46	118.36	945.42
Large	Mahabij	1.62	108.68	1.41	1.26	2.27	103.74	875.00
	Panchganga	1.42	127.62	1.53	1.37	3.68	121.03	841.67
Average		1.47	122.89	1.50	1.34	3.33	116.71	850.00
Overall Average		0.74	117.53	1.48	1.25	2.66	112.15	923.85
Share in Production (%)								
Small	Baju 258	0.40	100.00	1.02	1.25	2.27	95.45	965.00
	Fursungi	0.74	100.00	1.11	1.16	1.79	95.94	823.75
	Malav	0.40	100.00	1.02	1.04	1.79	96.15	860.00
	N.53	0.56	100.00	1.44	1.01	2.43	95.12	891.25
	Nashik Lal	0.63	100.00	1.34	1.05	2.33	95.27	952.61
	Panchganga	0.73	100.00	1.13	1.02	2.40	95.44	907.92
	Prema	0.81	100.00	1.16	1.04	1.80	96.00	900.00
Average		0.65	100.00	1.26	1.05	2.29	95.40	924.57
Medium	Chandwad	0.40	100.00	1.50	1.18	2.77	94.55	870.00
	Lenand	0.40	100.00	1.04	1.02	1.72	96.23	850.00
	Malav	1.01	100.00	1.31	1.37	2.95	93.88	960.00
	Nashik Lal	0.77	100.00	1.37	1.01	1.75	95.87	971.00
	Panchganga	1.16	100.00	1.03	1.04	1.89	96.04	952.50
Average		0.86	100.00	1.28	1.07	1.99	95.67	945.42
Large	Mahabij	1.62	100.00	1.30	1.16	2.09	95.45	875.00
	Panchganga	1.42	100.00	1.20	1.08	2.89	94.84	841.67
Average		1.47	100.00	1.22	1.09	2.71	94.97	850.00
Overall Average		0.74	100.00	1.26	1.06	2.26	95.42	923.85

Appendix 4: Area, Production, consumption and Marketed Surplus for Rabi Onion – All Varieties
(Per farm)

Category	Variety	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	Bhagwa	0.61	109.99	1.29	1.71	3.03	103.96	1170.00
	Chandwad	0.51	100.78	1.76	2.01	1.26	95.74	1040.00
	Double Pati	0.57	84.47	1.76	2.39	1.48	78.84	1100.00
	Fursungi	0.78	146.05	3.50	2.24	4.30	136.01	1024.12
	Halwa	1.21	246.57	3.73	4.74	6.46	231.63	1053.75
	lasalgaoon	0.81	145.05	3.09	4.28	3.65	134.05	1012.50
	Mahabij	0.81	158.06	2.45	3.21	4.35	148.05	1280.50
	N.53	1.62	340.12	5.12	6.30	4.58	324.11	1075.00
	Nashik Lal	0.68	114.02	2.20	1.82	2.19	107.82	1041.50
	Panchganga	0.81	136.05	2.94	2.32	3.74	127.05	1085.00
	Sinnor Ghavti	0.56	93.37	3.14	2.78	2.73	84.72	1202.50
Average		0.76	137.87	3.07	2.29	3.62	128.89	1043.18
Medium	Fursungi	0.91	172.09	3.49	3.16	3.60	161.83	1062.97
	Nashik Lal	0.94	170.26	2.82	2.25	4.22	160.98	1133.33
	Sinnor Ghavti	0.61	113.00	1.94	2.45	1.64	106.98	1100.00
Average		0.90	168.86	3.32	2.99	3.60	158.96	1075.38
Large	Fursungi	1.80	356.24	7.79	8.78	5.65	334.01	1047.50
	Nashik Lal	0.81	140.05	2.51	3.30	4.19	130.05	1267.50
	Panchganga	4.05	780.27	19.89	16.12	14.05	730.26	1150.00
Average		1.92	377.02	8.47	8.97	6.35	353.24	1079.75
Overall Average		0.87	161.40	3.53	2.92	3.83	151.11	1051.07
Share in Production (%)								
Small	Bhagwa	0.61	100.00	1.17	1.55	2.75	94.52	1170.00
	Chandwad	0.51	100.00	1.75	2.00	1.25	95.00	1040.00
	Double Pati	0.57	100.00	2.08	2.83	1.75	93.33	1100.00
	Fursungi	0.78	100.00	2.40	1.53	2.94	93.13	1024.12
	Halwa	1.21	100.00	1.51	1.92	2.62	93.94	1053.75
	lasalgaoon	0.81	100.00	2.13	2.95	2.51	92.41	1012.50
	Mahabij	0.81	100.00	1.55	2.03	2.75	93.67	1280.50
	N.53	1.62	100.00	1.50	1.85	1.35	95.29	1075.00
	Nashik Lal	0.68	100.00	1.93	1.59	1.92	94.56	1041.50
	Panchganga	0.81	100.00	2.16	1.71	2.75	93.38	1085.00
	Sinnor Ghavti	0.56	100.00	3.36	2.97	2.92	90.74	1202.50
Average		0.76	100.00	2.23	1.66	2.63	93.48	1043.18
Medium	Fursungi	0.91	100.00	2.03	1.83	2.10	94.04	1062.97
	Nashik Lal	0.94	100.00	1.66	1.32	2.48	94.55	1133.33
	Sinnor Ghavti	0.61	100.00	1.72	2.17	1.45	94.67	1100.00
Average		0.90	100.00	1.96	1.77	2.13	94.14	1075.38
Large	Fursungi	1.80	100.00	2.19	2.46	1.59	93.76	1047.50
	Nashik Lal	0.81	100.00	1.80	2.36	2.99	92.86	1267.50
	Panchganga	4.05	100.00	2.55	2.06	1.80	93.59	1150.00
Average		1.92	100.00	2.25	2.38	1.68	93.69	1079.75
Overall Average		0.87	100.00	2.19	1.81	2.37	93.63	1051.07

Appendix 4 (a): Area, Production, consumption and Marketed Surplus for Rabi Onion – All Varieties

(Per farm)

Category	Variety	Area (Ha)	Production (Qtls./Ha)	Consumption (Qtls./Ha)	Retained for Future Use (Qtls./Ha)	Wastage (Qtls./Ha)	Sold (Qtls./Ha)	Price (Rs./Qtls.)
Small	Bhagwa	0.61	180.31	2.12	2.80	4.96	170.43	1170.00
	Chandwad	0.51	197.60	3.46	3.95	2.47	187.72	1040.00
	Double Pati	0.57	148.20	3.09	4.20	2.59	138.32	1100.00
	Fursungi	0.78	187.24	4.49	2.87	5.51	174.37	1024.12
	Halwa	1.21	203.78	3.08	3.92	5.34	191.43	1053.75
	lasalgaoon	0.81	179.08	3.81	5.28	4.50	165.49	1012.50
	Mahabij	0.81	195.13	3.02	3.96	5.37	182.78	1280.50
	N.53	1.62	209.95	3.16	3.89	2.83	200.07	1075.00
	Nashik Lal	0.68	167.68	3.23	2.67	3.22	158.56	1041.50
	Panchganga	0.81	167.95	3.63	2.87	4.62	156.85	1085.00
	Sinnor Ghavti	0.56	166.73	5.61	4.96	4.87	151.29	1202.50
Average		0.76	180.94	4.06	3.02	4.74	169.12	1043.18
Medium	Fursungi	0.91	189.11	3.84	3.47	3.96	177.84	1062.97
	Nashik Lal	0.94	181.13	3.00	2.39	4.49	171.25	1133.33
	Sinnor Ghavti	0.61	185.25	3.18	4.01	2.69	175.37	1100.00
Average		0.90	187.72	3.68	3.34	3.98	176.73	1075.38
Large	Fursungi	1.80	197.91	4.33	4.88	3.14	185.56	1047.50
	Nashik Lal	0.81	172.90	3.10	4.08	5.17	160.55	1267.50
	Panchganga	4.05	192.66	4.91	3.98	3.47	180.31	1150.00
Average		1.92	194.88	4.27	4.71	3.38	182.53	1079.75
Overall Average		0.87	183.09	4.02	3.20	4.51	171.36	1051.07
Share in Production (%)								
Small	Bhagwa	0.61	100.00	1.17	1.55	2.75	94.52	1170.00
	Chandwad	0.51	100.00	1.75	2.00	1.25	95.00	1040.00
	Double Pati	0.57	100.00	2.08	2.83	1.75	93.33	1100.00
	Fursungi	0.78	100.00	2.40	1.53	2.94	93.13	1024.12
	Halwa	1.21	100.00	1.51	1.92	2.62	93.94	1053.75
	lasalgaoon	0.81	100.00	2.13	2.95	2.51	92.41	1012.50
	Mahabij	0.81	100.00	1.55	2.03	2.75	93.67	1280.50
	N.53	1.62	100.00	1.50	1.85	1.35	95.29	1075.00
	Nashik Lal	0.68	100.00	1.93	1.59	1.92	94.56	1041.50
	Panchganga	0.81	100.00	2.16	1.71	2.75	93.38	1085.00
	Sinnor Ghavti	0.56	100.00	3.36	2.97	2.92	90.74	1202.50
Average		0.76	100.00	2.25	1.67	2.62	93.47	1043.18
Medium	Fursungi	0.91	100.00	2.03	1.83	2.10	94.04	1062.97
	Nashik Lal	0.94	100.00	1.66	1.32	2.48	94.55	1133.33
	Sinnor Ghavti	0.61	100.00	1.72	2.17	1.45	94.67	1100.00
Average		0.90	100.00	1.96	1.78	2.12	94.14	1075.38
Large	Fursungi	1.80	100.00	2.19	2.46	1.59	93.76	1047.50
	Nashik Lal	0.81	100.00	1.80	2.36	2.99	92.86	1267.50
	Panchganga	4.05	100.00	2.55	2.06	1.80	93.59	1150.00
Average		1.92	100.00	2.19	2.42	1.73	93.66	1079.75
Overall Average		0.87	100.00	2.20	1.75	2.47	93.59	1051.07

Appendix 5: Area, Production, consumption and Marketed Surplus for Grapes – All Varieties

(Per farm)

Category	Variety	Area (Ha)	Production (Qtls.)	Consumption (Qtls.)	Retained for Future Use (Qtls.)	Wastage (Qtls.)	Sold (Qtls.)	Price (Rs./Qtls.)
Small	Clone 2	0.45	49.28	0.28	0.12	1.27	47.61	4537.50
	Ganesh	0.61	75.34	0.42	0.52	1.95	72.44	2800.00
	Jumbo	0.81	176.06	0.68	0.58	2.84	171.96	5000.00
	Manik	0.46	58.63	0.26	0.12	0.99	57.27	3825.00
	Nanaheb Purple	0.61	105.47	0.54	0.57	2.05	102.30	2700.00
	Sharad	0.40	67.18	0.19	0.35	1.26	65.38	2958.33
	Sonaka	0.57	87.39	0.44	0.23	2.14	84.57	3427.24
	Thomson	0.64	102.32	0.49	0.37	1.95	99.49	3245.15
Average		0.60	93.84	0.45	0.33	1.89	91.17	3336.91
Medium	Clone 2	0.74	127.95	0.64	0.61	2.78	123.93	3693.33
	Ganesh	0.81	118.04	0.48	0.78	2.48	114.30	2300.00
	Manik	0.58	58.74	0.38	0.36	1.25	56.75	4052.50
	Sharad	0.40	73.11	0.33	0.31	1.28	71.19	3200.00
	Sonaka	0.56	65.01	0.49	0.17	1.39	62.96	4205.00
	Thomson	1.38	208.56	1.20	0.69	4.77	201.89	3699.06
Average		0.96	139.41	0.82	0.50	3.11	134.98	3788.68
Large	Manik	3.24	384.13	1.98	1.59	10.01	370.56	3300.00
	Sharad	1.52	230.90	1.08	1.41	5.02	223.39	3085.00
	Thomson	2.11	361.70	1.20	1.20	8.29	351.00	3370.00
Average		2.10	331.80	1.27	1.30	7.69	321.54	3290.00
Overall Average		0.73	111.92	0.55	0.40	2.35	108.61	3415.36
Share in Production (%)								
Small	Clone 2	0.45	100.00	0.56	0.24	2.57	96.62	4537.50
	Ganesh	0.61	100.00	0.56	0.70	2.58	96.16	2800.00
	Jumbo	0.81	100.00	0.39	0.33	1.61	97.67	5000.00
	Manik	0.46	100.00	0.44	0.19	1.69	97.67	3825.00
	Nanaheb Purple	0.61	100.00	0.51	0.54	1.94	97.00	2700.00
	Sharad	0.40	100.00	0.28	0.52	1.87	97.32	2958.33
	Sonaka	0.57	100.00	0.51	0.27	2.45	96.78	3427.24
	Thomson	0.64	100.00	0.48	0.36	1.91	97.25	3245.15
Average		0.60	100.00	0.48	0.35	2.02	97.15	3336.91
Medium	Clone 2	0.74	100.00	0.50	0.48	2.17	96.86	3693.33
	Ganesh	0.81	100.00	0.41	0.66	2.10	96.83	2300.00
	Manik	0.58	100.00	0.64	0.62	2.13	96.61	4052.50
	Sharad	0.40	100.00	0.45	0.42	1.76	97.37	3200.00
	Sonaka	0.56	100.00	0.76	0.27	2.14	96.84	4205.00
	Thomson	1.38	100.00	0.58	0.33	2.29	96.80	3699.06
Average		0.96	100.00	0.58	0.36	2.23	96.82	3788.68
Large	Manik	3.24	100.00	0.51	0.42	2.60	96.47	3300.00
	Sharad	1.52	100.00	0.47	0.61	2.17	96.75	3085.00
	Thomson	2.11	100.00	0.33	0.33	2.29	97.05	3370.00
Average		2.10	100.00	0.38	0.39	2.32	96.91	3290.00
Overall Average		0.73	100.00	0.49	0.36	2.10	97.05	3415.36

Appendix 5 (a): Area, Production, consumption and Marketed Surplus for Grapes – All Varieties
(Per farm)

Category	Variety	Area (Ha)	Production (Qtls./Ha)	Consumption (Qtls./Ha)	Retained for Future Use (Qtls./Ha)	Wastage (Qtls./Ha)	Sold (Qtls./Ha)	Price (Rs./Qtls.)
Small	Clone 2	0.45	109.50	0.52	0.27	2.82	105.80	4537.50
	Ganesh	0.61	123.50	0.69	0.86	3.19	118.76	2800.00
	Jumbo	0.81	217.36	0.84	0.72	3.51	212.30	5000.00
	Manik	0.46	127.45	0.56	0.25	2.16	124.49	3825.00
	Nanasaheb Purple	0.61	172.90	0.39	0.94	3.36	167.71	2700.00
	Sharad	0.40	167.96	0.47	0.88	3.15	163.46	2958.33
	Sonaka	0.57	153.31	0.78	0.41	3.75	148.37	3427.24
	Thomson	0.64	159.87	0.77	0.58	3.05	155.46	3245.15
Average		0.60	155.95	0.74	0.55	3.16	151.50	3336.91
Medium	Clone 2	0.74	172.90	0.36	0.82	3.75	167.47	3693.33
	Ganesh	0.81	145.73	0.59	0.96	3.06	141.11	2300.00
	Manik	0.58	101.27	0.55	0.62	2.16	97.84	4052.50
	Sharad	0.40	182.78	0.33	0.77	3.21	177.98	3200.00
	Sonaka	0.56	116.09	0.38	0.31	2.48	112.43	4205.00
	Thomson	1.38	151.13	0.37	0.50	3.46	146.30	3699.06
Average		0.96	140.64	0.34	0.53	3.08	136.21	3788.68
Large	Manik	3.24	118.56	0.61	0.49	3.09	114.37	3300.00
	Sharad	1.52	151.91	0.71	0.93	3.30	146.97	3085.00
	Thomson	2.11	171.42	0.57	0.57	3.93	166.35	3370.00
Average		2.10	159.94	0.61	0.65	3.67	155.01	3290.00
Overall Average		0.73	153.39	0.75	0.55	3.17	148.92	3415.36
Share in Production (%)								
Small	Clone 2	0.45	100.00	0.56	0.24	2.57	96.62	4537.50
	Ganesh	0.61	100.00	0.56	0.70	2.58	96.16	2800.00
	Jumbo	0.81	100.00	0.39	0.33	1.61	97.67	5000.00
	Manik	0.46	100.00	0.44	0.19	1.69	97.67	3825.00
	Nanasaheb Purple	0.61	100.00	0.51	0.54	1.94	97.00	2700.00
	Sharad	0.40	100.00	0.28	0.52	1.87	97.32	2958.33
	Sonaka	0.57	100.00	0.51	0.27	2.45	96.78	3427.24
	Thomson	0.64	100.00	0.48	0.36	1.91	97.25	3245.15
Average		0.60	100.00	0.48	0.35	2.03	97.14	3336.91
Medium	Clone 2	0.74	100.00	0.50	0.48	2.17	96.86	3693.33
	Ganesh	0.81	100.00	0.41	0.66	2.10	96.83	2300.00
	Manik	0.58	100.00	0.54	0.62	2.13	96.61	4052.50
	Sharad	0.40	100.00	0.45	0.42	1.76	97.37	3200.00
	Sonaka	0.56	100.00	0.76	0.27	2.14	96.84	4205.00
	Thomson	1.38	100.00	0.58	0.33	2.29	96.80	3699.06
Average		0.96	100.00	0.59	0.37	2.19	96.85	3788.68
Large	Manik	3.24	100.00	0.51	0.42	2.60	96.47	3300.00
	Sharad	1.52	100.00	0.47	0.61	2.17	96.75	3085.00
	Thomson	2.11	100.00	0.33	0.33	2.29	97.05	3370.00
Average		2.10	100.00	0.38	0.41	2.29	96.92	3290.00
Overall Average		0.73	100.00	0.49	0.36	2.06	97.08	3415.36

Appendix 6: Cost of Cultivation of for Kharif Onion – All Varieties

(Rs./Ha)

Particulars	Small							
	Baju 258	Fursungi	Malav	N.53	Nashik Lal	Panchganga	Prema	Average
I) Input Costs								
Seed	12350 (23.81)	7682 (15.37)	7904 (13.73)	9644 (20.3)	6321 (16.46)	8233 (18.68)	11115 (23.56)	7383 (17.46)
Irrigation	2964 (5.71)	3952 (7.91)	3458 (6.01)	3705 (7.97)	3870 (10.08)	4487 (10.18)	2717 (5.76)	3968 (9.39)
Manure and fertilizer	11115 (21.43)	8645 (17.3)	11115 (19.31)	10065 (21.65)	8522 (22.19)	9139 (20.74)	8645 (18.32)	8902 (21.06)
Labour (bullock + human)	9880 (19.05)	11053 (22.12)	13338 (23.18)	9077 (19.53)	7534 (19.62)	7369 (16.72)	9880 (20.94)	8098 (19.16)
Machinery hire charges	8151 (15.71)	11239 (22.49)	14820 (25.75)	8645 (18.6)	8114 (21.13)	10312 (23.4)	8645 (18.32)	9237 (21.85)
Pesticides/weedicides	7410 (14.29)	7410 (14.83)	6916 (12.02)	5311 (11.43)	4045 (10.53)	4528 (10.28)	6175 (13.09)	4686 (11.08)
I) Total input cost	51870 (100)	49980 (100)	57551 (100)	46467 (100)	38404 (100)	44069 (100)	47177 (100)	42272 (100)
II) Storage, transportation and marketing cost								
Storage	-	-	-	-	-	-	-	-
Transportation cost	5977 (39.29)	5018 (39.76)	3853 (28.57)	5380 (24.91)	4423 (32.46)	5483 (30.35)	5311 (21.94)	4826 (31.21)
Marketing & other (market fee, cess, etc.)	6521 (42.86)	5018 (39.76)	7064 (52.38)	13893 (64.34)	6547 (48.05)	8286 (45.87)	16055 (66.33)	7552 (48.83)
Other cost (Bags & misc.)	2717 (17.86)	2585 (20.48)	2569 (19.05)	2321 (10.75)	2635 (19.49)	4295 (23.78)	2841 (11.73)	3087 (19.96)
II) Total storage, transportation and marketing cost	15215 (100)	12621 (100)	13486 (100)	21594 (100)	13625 (100)	18065 (100)	24206 (100)	15464 (100)
Percent share in total cost								
I) Total Input Cost	51870 (77.32)	49980 (79.84)	57551 (81.02)	46467 (68.27)	38404 (73.81)	44069 (70.93)	47177 (66.09)	42272 (73.22)
II) Total storage, transportation and marketing cost	15215 (22.68)	12621 (20.16)	13486 (18.98)	21594 (31.73)	13625 (26.19)	18065 (29.07)	24206 (33.91)	15464 (26.78)
Productivity (qtls./ha)	109	122	128	127	110	122	124	116
Total Cost (I + II)	67085 (100)	62601 (100)	71037 (100)	68061 (100)	52029 (100)	62134 (100)	71383 (100)	57737 (100)

Appendix 6: Cost of Cultivation of for Kharif Onion – All Varieties

(Rs./Ha)

Particulars	Medium					Average
	Chandwad	Lonand	Malav	Nashik Lal	Panchganga	
I) Input Costs						
Seed	8645 (16.51)	6175 (12.63)	8645 (17.24)	9831 (16.81)	9880 (16.05)	9345 (16.26)
Irrigation	2964 (5.66)	3705 (7.58)	3211 (6.4)	3952 (6.76)	4117 (6.69)	3817 (6.64)
Manure and fertilizer	8645 (15.51)	8645 (17.68)	9880 (19.7)	13881 (23.73)	15438 (25.08)	13194 (22.95)
Labour (bullock + human)	16055 (30.66)	16055 (32.83)	11115 (22.17)	12646 (21.62)	12041 (19.57)	12885 (22.42)
Machinery hire charges	9880 (18.87)	9880 (20.2)	12350 (24.63)	10473 (17.91)	11733 (19.06)	10950 (19.05)
Pesticides/weedicides	6175 (11.79)	4446 (9.09)	4940 (9.85)	7706 (13.18)	8336 (13.55)	7287 (12.68)
I) Total input cost	52364 (100)	48906 (100)	50141 (100)	58490 (100)	61544 (100)	57478 (100)
II) Storage, transportation and marketing cost						
Storage	-	-	-	-	-	-
Transportation cost	3396 (25)	5891 (26.47)	4236 (28)	5380 (37.19)	4054 (27.08)	4742 (30.88)
Marketing & other (market fee, cess, etc.)	7472 (55)	13091 (58.82)	7867 (52)	6336 (43.8)	7172 (47.92)	7371 (48)
Other cost (Bags & misc.)	2717 (20)	3273 (14.71)	3026 (20)	2750 (19.01)	3742 (25)	3244 (21.12)
II) Total storage, transportation and marketing cost	13585 (100)	22255 (100)	15129 (100)	14465 (100)	14968 (100)	15357 (100)
Percent share in total cost						
I) Total Input Cost	52364 (79.4)	48906 (68.73)	50141 (76.82)	58490 (80.17)	61544 (80.44)	57478 (78.92)
II) Total storage, transportation and marketing cost	13585 (20.5)	22255 (31.27)	15129 (23.18)	14465 (19.83)	14968 (19.56)	15357 (21.08)
Productivity (qtls./ha)	136	131	121	120	125	124
Total Cost (I + II)	65949 (100)	71161 (100)	65270 (100)	72955 (100)	76512 (100)	72835 (100)

Appendix 6: Cost of Cultivation of Kharif Onion – All Varieties

(Rs./Ha)

Particulars	Large			Overall Average
	Mahabij	Panchganga	Average	
I) Input Costs				
Seed	8645 (18.18)	8563 (16.1)	8583 (16.58)	7806 (17.11)
Irrigation	3088 (6.49)	3870 (7.28)	3674 (7.1)	3922 (8.6)
Manure and fertilizer	11115 (23.38)	9468 (17.8)	9380 (19.08)	9729 (21.33)
Labour (bullock + human)	11115 (23.38)	11527 (21.67)	11424 (22.06)	9154 (20.07)
Machinery hire charges	7410 (15.58)	12350 (23.22)	11115 (21.47)	9713 (21.29)
Pesticides/weedicides	6175 (12.99)	7410 (13.93)	7101 (13.71)	5296 (11.61)
I) Total input cost	47548 (100)	53187 (100)	51777 (100)	45619 (100)
II) Storage, transportation and marketing cost				
Storage	-	-	-	-
Transportation cost	3804 (31.82)	3616 (26.98)	3686 (28.24)	4750 (31.01)
Marketing & other (market fee, cess, etc.)	5434 (45.45)	6381 (47.62)	6144 (47.06)	7446 (48.61)
Other cost (Bags & misc.)	2717 (22.73)	3403 (25.4)	3226 (24.71)	3124 (20.39)
II) Total storage, transportation and marketing cost	11955 (100)	13400 (100)	13056 (100)	15320 (100)
Percent share in total cost (I + II)				
I) Total Input Cost	47548 (79.91)	53187 (79.88)	51777 (79.86)	45619 (74.86)
II) Total storage, transportation and marketing cost	11955 (20.09)	13400 (20.12)	13056 (20.14)	15320 (25.14)
Productivity (qtls./ha)	109	128	123	118
Total Cost (I + II)	59502 (100)	66587 (100)	64334 (100)	60939 (100)

Appendix 7: Cost of Cultivation of for Rabi Onion – All Varieties

(Rs./Ha)

Particulars	Small							
	Bhagwa	Chandwad	Double Pati	Fursungi	Halwa	Lasalgaon	Mahabij	N.53
I) Input Costs								
Seed	14905 (13.02)	14034 (13.59)	10292 (12.77)	10004 (10.83)	9880 (9.39)	10498 (12.06)	10374 (8.05)	10498 (25.18)
Irrigation	19164 (16.74)	14970 (14.49)	18868 (23.4)	8441 (9.14)	12350 (11.74)	11115 (12.77)	14820 (11.49)	21489 (18)
Manure and fertilizer	27170 (23.74)	20995 (20.33)	6861 (8.51)	23849 (25.82)	28405 (27)	21613 (24.82)	30875 (23.95)	20995 (17.59)
Labour (bullock + human)	31940 (27.9)	22230 (21.52)	29160 (36.17)	26260 (28.43)	28405 (27)	24700 (28.37)	37050 (28.74)	22230 (18.62)
Machinery hire charges	14905 (13.02)	18712 (18.12)	10292 (12.77)	15882 (17.19)	19760 (18.78)	11115 (12.77)	23465 (18.2)	14820 (12.41)
Pesticides/weedicides	6388 (5.58)	12350 (11.96)	5146 (6.38)	7930 (8.59)	6422 (6.1)	8028 (9.22)	12350 (9.58)	8596 (7.2)
I) Total input cost	114472 (100)	103291 (100)	80618 (100)	92365 (100)	105222 (100)	87068 (100)	128934 (100)	98629 (100)
II) Storage, transportation and marketing cost								
Storage	2705 (10.42)	3952 (14.71)	1482 (7.94)	4465 (17.88)	2547 (9.8)	2686 (9.4)	2927 (13.64)	2100 (8.2)
Transportation cost	7212 (27.78)	6916 (25.74)	5187 (27.78)	5935 (23.77)	7132 (27.45)	7611 (26.65)	5464 (25.45)	8398 (32.79)
Marketing & other (market fee, cess, etc.)	9737 (37.5)	9485 (35.29)	7114 (38.1)	7136 (28.58)	9679 (37.25)	11282 (39.5)	7805 (36.36)	8818 (34.43)
Other cost (Bags & misc.)	6311 (24.31)	6521 (24.26)	4891 (26.19)	7431 (29.76)	6623 (25.49)	6984 (24.45)	5269 (24.55)	6299 (24.59)
II) Total storage, transportation and marketing cost	25965 (100)	26874 (100)	18673 (100)	24968 (78.72)	25981 (80.2)	28562 (75.3)	21464 (85.73)	25614 (82.34)
Percent share in total cost								
I) Total Input Cost	114472 (81.51)	103291 (79.35)	80618 (81.19)	92365 (78.72)	105222 (80.2)	87068 (75.3)	128934 (85.73)	98629 (82.34)
II) Total storage, transportation and marketing cost	25965 (18.49)	26874 (20.65)	18673 (18.31)	24968 (21.28)	25981 (19.8)	28562 (24.7)	21464 (14.27)	25614 (17.66)
Productivity (qtls./ha)	180	198	148	187	204	179	195	210
Total Cost (I + II)	140436 (100)	130165 (100)	99291 (100)	117333 (100)	131203 (100)	115630 (100)	150398 (100)	124243 (100)

Appendix 7: Cost of Cultivation of for Rabi Onion – All Varieties

(Rs./Ha)

Particulars	Small				Medium			
	Nashik Lal	Panchganga	Ghavti	Average	Fursungi	Nashik Lal	Ghavti	Average
I) Input Costs								
Seed	9125 (12.15)	10004 (11.39)	9880 (10.42)	10088 (11.21)	11347 (12.39)	8810 (11.67)	11115 (12)	10954 (12.22)
Irrigation	8626 (11.49)	13585 (15.47)	13894 (14.65)	9433 (10.48)	9046 (9.88)	8233 (10.9)	9880 (10.67)	8966 (10)
Manure and fertilizer	19760 (26.32)	17908 (20.39)	23156 (24.41)	22536 (25.03)	23125 (25.26)	19760 (26.17)	19760 (21.33)	22452 (25.05)
Labour (bullock + human)	20748 (27.64)	23465 (26.72)	28714 (30.27)	24968 (27.74)	27556 (30.1)	17949 (23.77)	22230 (24)	25849 (28.84)
Machinery hire charges	10355 (13.79)	10498 (11.95)	13585 (14.32)	15486 (17.2)	12659 (13.83)	12350 (16.36)	17290 (18.67)	12844 (14.33)
Pesticides/weedicides	6460 (8.6)	6175 (14.06)	5619 (5.92)	7511 (8.34)	7827 (8.55)	8398 (11.12)	12350 (13.33)	8567 (9.56)
I) Total input cost	75074 (100)	81634 (100)	94848 (100)	90021 (100)	91560 (100)	75500 (100)	92625 (100)	89632 (100)
II) Storage, transportation and marketing cost								
Storage	4810 (20.53)	2519 (12.3)	2223 (8.56)	4130 (16.87)	5106 (16.23)	4830 (18.39)	6484 (21.88)	5866 (17.96)
Transportation cost	5856 (25)	5879 (28.69)	6877 (26.47)	6075 (24.82)	7860 (24.99)	7547 (28.74)	9263 (31.25)	8299 (25.42)
Marketing & other (market fee, cess, etc.)	6617 (28.25)	7474 (36.48)	10212 (39.3)	7378 (30.15)	10980 (34.91)	8151 (31.03)	6484 (21.88)	10858 (33.25)
Other cost (Bags & misc.)	6144 (26.23)	4619 (22.54)	6669 (25.67)	6892 (28.16)	7510 (23.87)	5736 (21.84)	7410 (25)	7630 (23.37)
II) Total storage, transportation and marketing cost	23426 (100)	20491 (100)	25981 (100)	24475 (100)	31456 (100)	26264 (100)	29640 (100)	32654 (100)
Percent share in total cost								
I) Total Input Cost	75074 (76.22)	81634 (81.08)	94848 (78.5)	90021 (78.62)	91560 (74.43)	75500 (74.19)	92625 (75.76)	89632 (73.3)
II) Total storage, transportation and marketing cost	23426 (23.78)	20491 (18.92)	25981 (21.5)	24475 (21.38)	31456 (25.57)	26264 (25.81)	29640 (24.24)	32654 (26.7)
Productivity (qtls./ha)	168	168	167	181	139	181	185	188
Total Cost (I + II)	98500 (100)	102125 (100)	120829 (100)	114496 (100)	123016 (100)	101764 (100)	122265 (100)	122286 (100)

Appendix 7: Cost of Cultivation of for Rabi Onion – All Varieties

(Rs./Ha)

Particulars	Large				Overall Average
	Fursungi	Nashik Lal	Panchganga	Average	
I) Input Costs					
Seed	10312 (9.77)	9880 (11.27)	9831 (10.81)	10226 (10.00)	10072 (11.23)
Irrigation	8182 (7.76)	7410 (8.45)	9830 (10.81)	8275 (8.09)	9269 (10.34)
Manure and fertilizer	26645 (25.26)	17290 (19.72)	17290 (18.92)	24774 (24.22)	22698 (25.31)
Labour (bullock + human)	32573 (30.87)	27170 (30.99)	23455 (25.68)	31122 (30.42)	25586 (28.54)
Machinery hire charges	17444 (16.53)	16055 (18.31)	18525 (20.27)	17414 (17.02)	14256 (15.90)
Pesticides/weedicides	10343 (9.8)	9880 (11.27)	12350 (13.51)	10498 (10.26)	7783 (8.68)
I) Total input cost	105500 (100)	87685 (100)	91390 (100)	102307 (100)	89664 (100)
II) Storage, transportation and marketing cost					
Storage	6135 (18.55)	3458 (14.93)	7706 (22.22)	5911 (18.42)	4468 (17.03)
Transportation cost	7298 (22.06)	4495 (19.4)	5730 (16.67)	6840 (21.32)	6471 (24.66)
Marketing & other (market fee, cess, etc.)	11726 (35.45)	10028 (43.28)	13436 (38.89)	11732 (36.57)	8238 (31.39)
Other cost (Bags & misc.)	7916 (23.93)	5187 (22.39)	7706 (22.22)	7600 (23.69)	7067 (26.93)
II) Total storage, transportation and marketing cost	33076 (100)	23169 (100)	34679 (100)	32084 (100)	26243 (100)
Percent share in total cost					
I) Total Input Cost	105500 (76.13)	87685 (79.1)	91390 (72.49)	102307 (76.13)	89664 (77.36)
II) Total storage, transportation and marketing cost	33076 (23.87)	23169 (20.9)	34679 (27.51)	32084 (23.87)	26243 (22.64)
Productivity (qtls./ha)	198	173	193	195	183
Total Cost (I + II)	138575 (100)	110854 (100)	126069 (100)	134392 (100)	115907 (100)

Appendix 8: Cost of Cultivation of for Grapes – All Varieties

(Rs./Ha)

Particulars	Small					
	Clone 2	Ganesh	Jumbo	Manik	Nanasaheb Purple	Sharad
I) Input Costs						
Seed	-	-	-	-	-	-
Irrigation	38697 (16.73)	38285 (22.63)	74100 (14.29)	19019 (8.34)	24700 (10.42)	19760 (8.24)
Manure and fertilizer	56398 (24.39)	40755 (24.09)	61750 (11.9)	51870 (22.75)	37050 (15.63)	64769 (27.01)
Labour (bullock + human)	31698 (13.71)	23465 (13.87)	74100 (14.29)	56316 (24.7)	39520 (16.67)	53517 (22.32)
Machinery hire charges	31287 (13.53)	27170 (16.06)	61750 (11.9)	22724 (9.97)	49400 (20.83)	34306 (14.31)
Pesticides/weedicides	44872 (19.4)	20995 (12.41)	111150 (21.43)	43966 (19.28)	49400 (20.83)	45832 (19.11)
Any other cost (specify)	28323 (12.25)	18525 (10.95)	135850 (26.19)	34086 (14.95)	37050 (15.63)	21613 (9.01)
I) Total input cost	231274 (100)	169195 (100)	518700 (100)	227981 (100)	237120 (100)	239796 (100)
II) Storage, transportation and marketing cost						
Storage	-	-	-	-	-	-
Transportation cost	4198 (100)	5249 (100)	10868 (100)	3441 (100)	3458 (100)	6299 (100)
Marketing & other (market fee, cess, etc.)	-	-	-	-	-	-
Other cost (Bags & misc.)	-	-	-	-	-	-
II) Total storage, transportation and marketing cost	4198 (100)	5249 (100)	10868 (100)	3441 (100)	3458 (100)	6299 (100)
Percent share in total cost						
I) Total Input Cost	231274 (98.22)	169195 (96.99)	518700 (97.95)	227981 (98.51)	237120 (98.56)	239796 (97.44)
II) Total storage, transportation and marketing cost	4198 (1.78)	5249 (3.01)	10868 (2.05)	3441 (1.49)	3458 (1.44)	6299 (2.56)
Productivity (qtls./ha)	109.5	123.5	217.36	127.45	172.9	167.96
Total Cost (I + II)	235472 (100)	174444 (100)	529568 (100)	231422 (100)	240578 (100)	246094 (100)

Note: (1) Any other cost includes cost of Gibberellic acid (GA3) for dipping grape bunches to increase berry size, and annual repair and maintenance charges for grape garden infrastructure.

(2) The cost of seed for grape orchards is not available

(3) Transportation cost includes cost of transportation of grapes from farm to road, including plucking expenses for grapes

(4) There is no storage cost for grapes. Marketing fee and other charges are borne by the buyer who brings trucks and crates for the collection of grapes

Appendix 8: Cost of Cultivation of for Grapes – All Varieties

(Rs./Ha)

Particulars	Small			Medium			
	Sonaka	Thomson	Average	Clone 2	Ganesh	Manik	Sharad
I) Input Costs							
Seed	-	-	-	-	-	-	-
Irrigation	31556 (12.8)	30292 (12.04)	30226 (12.12)	20172 (8.1)	12350 (8.77)	11424 (6.55)	16055 (6.5)
Manure and fertilizer	48719 (19.76)	46987 (18.67)	48889 (19.6)	49400 (19.83)	24700 (17.54)	33963 (19.47)	43225 (17.5)
Labour (bullock + human)	49144 (19.93)	55729 (22.14)	52948 (21.23)	61750 (24.79)	37050 (26.32)	38285 (21.95)	61750 (25)
Machinery hire charges	37646 (15.27)	42762 (16.99)	40084 (16.07)	43637 (17.52)	24700 (17.54)	30875 (17.7)	43225 (17.5)
Pesticides/weedicides	56640 (22.97)	48422 (19.24)	49632 (19.9)	49400 (19.83)	24700 (17.54)	32110 (18.41)	61750 (25)
Any other cost (specify)	22877 (9.23)	27497 (10.92)	27653 (11.09)	24700 (9.92)	17290 (12.28)	27788 (15.93)	20995 (8.5)
I) Total input cost	246582 (100)	251689 (100)	249431 (100)	249058 (100)	140790 (100)	174444 (100)	247000 (100)
II) Storage, transportation and marketing cost							
Storage	-	-	-	-	-	-	-
Transportation cost	4464 (100)	7472 (100)	6648 (100)	5763 (100)	5101 (100)	6709 (100)	10053 (100)
Marketing & other (market fee, cess, etc.)	-	-	-	-	-	-	-
Other cost (Bags & misc.)	-	-	-	-	-	-	-
II) Total storage, transportation and marketing cost	4464 (100)	7472 (100)	6648 (100)	5763 (100)	5101 (100)	6709 (100)	10053 (100)
Percent share in total cost							
I) Total Input Cost	246582 (98.22)	251689 (97.12)	249431 (97.4)	249058 (97.74)	140790 (96.5)	174444 (96.3)	247000 (96.09)
II) Total storage, transportation and marketing cost	4464 (1.73)	7472 (2.88)	6648 (2.6)	5763 (2.26)	5101 (3.5)	6709 (3.7)	10053 (3.91)
Productivity (qtls./ha)	153.31	159.87	155.95	172.9	145.73	101.27	182.78
Total Cost (I + II)	251046 (100)	259161 (100)	256079 (100)	254822 (100)	145891 (100)	181153 (100)	257053 (100)

Appendix 8: Cost of Cultivation of for Grapes – All Varieties

(Rs./Ha)

Particulars	Medium			Large			Overall Average
	Sonaka	Thomson	Average	Mank	Sharad	Thomson	
I) Input Costs							
Seed	-	-	-	-	-	-	-
Irrigation	14048 (5.93)	15129 (5.64)	14856 (6.15)	12350 (9.62)	14820 (8.33)	14573 (5.32)	14357 (6.25) 26825 (10.84)
Manure and fertilizer	59898 (25.27)	70241 (26.2)	58771 (24.33)	29540 (23.08)	55575 (31.25)	50388 (18.39)	49091 (21.39) 50657 (20.47)
Labour (bullock + human)	39983 (16.87)	52024 (19.4)	48565 (20.11)	19760 (15.38)	43225 (24.31)	68172 (24.89)	55884 (24.34) 52290 (21.13)
Machinery hire charges	39211 (16.54)	33654 (12.55)	35815 (14.83)	24700 (19.23)	14820 (8.33)	19760 (7.21)	19143 (8.34) 38447 (15.54)
Pesticides/weedicides	57119 (24.09)	70549 (26.31)	59135 (24.48)	29540 (23.08)	30875 (17.36)	64220 (23.44)	51561 (22.46) 51404 (20.77)
Any other cost (specify)	26817 (11.31)	26511 (9.89)	24409 (10.11)	12350 (9.62)	18525 (10.42)	56810 (20.74)	39520 (17.22) 27840 (11.25)
I) Total input cost	237076 (100)	263108 (100)	241551 (100)	128440 (100)	177840 (100)	273923 (100)	229556 (100) 247464 (100)
II) Storage, transportation and marketing cost							
Storage	-	-	-	-	-	-	-
Transportation cost	6288 (100)	8388 (100)	5750 (100)	4150 (100)	7975 (100)	7143 (100)	7064 (100) 6806 (100)
Marketing & other (market fee, cess, etc.)	-	-	-	-	-	-	-
Other cost (Bags & misc.)	-	-	-	-	-	-	-
II) Total storage, transportation and marketing cost	6288 (100)	8388 (100)	5750 (100)	4150 (100)	7975 (100)	7143 (100)	7064 (100) 6806 (100)
Percent share in total cost							
I) Total Input Cost	237076 (97.42)	263108 (96.97)	241551 (97.68)	128440 (96.87)	177840 (95.71)	273923 (97.46)	229556 (97.01) 247464 (97.32)
II) Total storage, transportation and marketing cost	6288 (2.58)	8388 (3.03)	5750 (2.32)	4150 (3.13)	7975 (4.29)	7143 (2.54)	7064 (2.99) 6806 (2.68)
Productivity (qtls./ha)	116.09	151.13	140.64	118.56	151.91	171.42	159.94 153.39
Total Cost (I + II)	243364 (100)	276496 (100)	247301 (100)	132590 (100)	185815 (100)	281066 (100)	236620 (100) 254270 (100)

Appendix 9: Profitability of Kharif Onion on Sampled Farms – All Varieties

(Rs./Ha)

Particulars	Small							
	Baju 258	Fursungi	Malav	N.53	Nashik Lal	Panchgan ga	Prema	Average
Area ha	0.40	2.95	0.40	2.23	17.57	8.73	0.81	33.10
Production (qtl)	44.00	358.29	52.00	281.88	1934.40	1064.37	100.00	3834.94
Price Received on Sale (Rs./qtl)	965	824	860	891	953	908	900	925
Returns (Rs.)								
Gross Return	42460	295144	44720	251221	1842723	966356	90000	3545666
Cost (Rs.)								
Input Cost	21000	147210	23300	103469	674787	384934	38200	1392900
Marketing cost	6160	37173	5460	48083	239402	157792	19600	513671
Total variable costs	27160	184383	28760	151552	914190	542726	57800	1906571
ROVC	15300	110762	15960	99669	928534	423630	32200	1639096
Total variable cost (Rs./ha)	67085	62601	71037	68061	52029	62134	71383	57605
Gross returns (Rs./ha)	104876	100209	110458	112823	104873	110630	111150	108009
ROVC (Rs./qtl)	37791	37606	39421	44761	52845	48499	39767	49130
Total variable cost (Rs./ qtl)	617	515	553	538	473	510	578	497
Gross returns (Rs./qtl)	965	824	860	891	953	908	900	925
ROVC (Rs./qtl)	348	309	307	354	480	398	322	428
Quantity sold (Qtls)	42	344	50	268	1843	1016	96	3652
Value of marketed surplus	40530	283165	43000	238961	1755661	922316	86400	3370033

Appendix 9: Profitability of Kharif Onion on Sampled Farms – All Varieties

(Rs./Ha)

Particulars	Medium					
	Chandwan	Lenand	Malav	Nashik Lal	Panchganga	Average
Area ha	0.40	0.40	1.01	3.85	4.64	10.32
Production (qtl)	54.34	52.36	122.24	460.26	578.77	1267.97
Price Received on Sale (Rs./qtl)	870	850	960	971	953	945
Returns (Rs.)						
Gross Return	47276	44509	117351	446912	551279	1198768
Cost (Rs.)						
Input Cost	20946	19562	50642	225185	285565	601900
Marketing cost	5434	8902	15280	55691	69452	154760
Total variable costs	26380	28464	65922	280876	355017	756660
ROVC	20896	16045	51428	166036	196261	442108
Total variable cost (Rs./ha)	65949	71161	65270	72955	76512	73320
Gross returns (Rs./ha)	118.90	111274	116189	116083	118815	116865
ROVC (Rs./ha)	52241	40113	50919	43126	42298	43669
Total variable cost (Rs./ qtl)	485	544	539	610	613	597
Gross returns (Rs./qtl)	870	850	960	971	953	945
ROVC (Rs./qtl)	385	306	421	361	339	348
Quantity sold (Qtls)	51	50	115	441	556	1221
Value of marketed surplus	44697	42830	110166	428452	529468	1155613

Appendix 9: Profitability of Kharif Onion on Sampled Farms – All Varieties

(Rs./Ha)

Particulars	Large			Overall Average
	Mahabij	Panchganga	Average	
Area ha	1.62	4.26	5.87	49.29
Production (qtl)	176.06	543.65	719.71	5822.62
Price Received on Sale (Rs./qtl)	875	842	850	924
Returns (Rs.)				
Gross Return	154054	457571	611625	5372656
Cost (Rs.)				
Input Cost	77027	226578	303605	2298405
Marketing cost	19367	57083	76450	744880
Total variable costs	96394	283661	380055	3043285
ROVC	57660	173910	231571	2329370
Total variable cost (Rs./ha)	59502	66587	64745	61746
Gross returns (Rs./ha)	95095	107414	101001	109006
ROVC (Rs./ha)	35593	40824	39450	46834
Total variable cost (Rs./ qtl)	548	522	528	523
Gross returns (Rs./qtl)	875	842	850	924
ROVC (Rs./qtl)	328	320	322	401
Quantity sold (Qtls)	168	516	685	5558
Value of marketed surplus	147051	433955	581006	5106653

Appendix 10: Profitability of Rabi Onion on Sampled Farms – All Varieties

(Rs./Ha)

Particulars	Small						
	Bhagwa	Chandwad	Double Pati	fursungi	halwa	lasalgao	Mahabij
Area ha	0.61	0.51	0.57	44.67	2.43	1.62	0.81
Production (qtl)	109.99	100.78	84.47	8364.16	495.17	290.10	158.06
Price Received on Sale (Rs./qtl)	1170	1040	1100	1024	1054	1013	1281
Returns (Rs.)							
Gross Return	128687	104807	92921	8565903	521789	293728	202390
Cost (Rs.)							
Input Cost	69828	52678	45952	4125945	255689	141049	104437
Marketing cost	15838	13706	10644	1115308	63135	46271	17386
Total variable costs	85666	66384	56596	5241253	318824	187321	121823
ROVC	43021	38423	36325	3324650	202965	106407	80567
Total variable cost (Rs./ha)	140436	130165	99291	117333	131203	115630	150398
Gross returns (Rs./ha)	210963	205504	163020	191756	214733	181319	249864
ROVC (Rs./ha)	70526	75339	63729	74427	83525	65683	99466
Total variable cost (Rs./ qtl)	779	659	670	627	644	646	771
Gross returns (Rs./qtl)	1170	1040	1100	1024	1054	1013	1281
ROVC (Rs./qtl)	391	381	430	397	410	367	510
Quantity sold (Qtls)	104	96	79	7789	465	268	148
Value of marketed surplus	121636	99567	86727	7976981	490178	271445	189580

Appendix 10: Profitability of Rabi Onion on Sampled Farms – All Varieties

(Rs./Ha)

Particulars	Small				
	N.53	Nashik Lal	Panchganga	Sinnor Ghvati	Average
Area ha	1.62	17.56	1.62	2.24	74.23
Production (qtl)	340.12	2944.37	272.10	373.46	13532.78
Price Received on Sale (Rs./qtl)	1075	1042	1085	1203	1043
Returns (Rs.)					
Gross Return	365628	3066564	295223	449090	14117126
Cost (Rs.)					
Input Cost	159779	1318295	132246	212460	6618358
Marketing cost	41495	411363	33196	58198	1826540
Total variable costs	201274	1729658	165442	270658	8444898
ROVC	164354	1336906	129781	178433	5672228
Total variable cost (Rs./ha)	124243	98500	102125	120829	113767
Gross returns (Rs./ha)	225696	174639	182237	200493	204074
ROVC (Rs./ha)	101453	76134	80112	79658	76005
Total variable cost (Rs./ qtl)	592	587	608	725	624
Gross returns (Rs./qtl)	1075	1042	1085	1203	1043
ROVC (Rs./qtl)	483	454	477	478	419
Quantity sold (Qtls)	324	2784	254	339	12650
Value of marketed surplus	348422	2899863	275695	407515	13167608

Appendix 10: Profitability of Rabi Onion on Sampled Farms – All Varieties

(Rs./Ha)

Particulars	Medium			
	Fursungi	Nashik Lal	Gavati	Average
Area ha	14.57	2.83	0.61	18.02
Production (qtl)	2755.32	512.61	113.00	3380.93
Price Received on Sale (Rs./qtl)	1063	1133	1100	1075
Returns (Rs.)				
Gross Return	2928826	580953	124303	3634082
Cost (Rs.)				
Input Cost	1334026	213664	56501	1604192
Marketing cost	458319	74328	18080	550727
Total variable costs	1792345	287992	74582	2154919
ROVC	1136481	292961	49721	1479164
Total variable cost (Rs./ha)	123016	101764	122265	119585
Gross returns (Rs./ha)	201018	205280	203775	203442
ROVC (Rs./ha)	78001	103520	81510	82085
Total variable cost (Rs./ qtl)	651	562	660	637
Gross returns (Rs./qtl)	1063	1133	1100	1075
ROVC (Rs./qtl)	412	572	440	438
Quantity sold (Qtls)	2591	485	107	3183
Value of marketed surplus	2754292	549254	117673	3421220

Appendix 10: Profitability of Rabi Onion on Sampled Farms – All Varieties

Particulars	Large				(Rs./Ha) Overall Average
	Fursungi	Nashik Lal	Panchganga	Average	
Area ha	14.37	0.81	4.05	19.23	111.48
Production (qtl)	2843.95	140.05	780.27	3764.27	20677.93
Price Received on Sale (Rs./qtl)	1048	1268	1150	1080	1051
Returns (Rs.)					
Gross Return	2979036	177512	897314	4064471	21734009
Cost (Rs.)					
Input Cost	1516033	71025	370130	1957187	10179738
Marketing cost	475295	18767	140449	634511	3011777
Total variable costs	1991328	89791	510579	2591698	13191515
ROVC	987708	87721	386735	1472773	8625870
Total variable cost (Rs./ha)	138575	110854	126069	134774	118331
Gross returns (Rs./ha)	207311	219151	221559	211361	194959
ROVC (Rs./ha)	68734	108297	95490	76587	77376
Total variable cost (Rs./ qtl)	700	641	654	688	638
Gross returns (Rs./qtl)	1048	1267	1150	1080	1051
ROVC (Rs./qtl)	347	626	496	391	417
Quantity sold (Qtls)	2667	130	730	3527	19360
Value of marketed surplus	2793156	164833	839794	3808060	20348635

Appendix 11: Profitability of Grapes on Sampled Farms – All Varieties

Particulars	Small							(Rs./Ha)
	Clone2	Ganesh	Jumbo	Manik	Nansheb Purple	Sharad	Sonaka	
Area ha	2.7	1.22	0.81	2.28	0.61	3.56	16.45	
Production (qtl)	295.65	150.67	176.06	290.59	105.47	597.94	2521.95	
Price Received on Sale (Rs./qtl)	4538	2800	5000	3825	2700	2958	3427	
Returns (Rs.)								
Gross Return	1341512	421876	880308	1111491	284766	1768897	8643326	
Cost (Rs.)								
Input Cost	624441	206418	420147	519797	144643	853673	4056278	
Marketing cost	11333	6403	8803	7846	2109	22423	73433	
Total variable costs	635774	212821	428950	527643	146753	876096	4129711	
ROVC	705738	209055	451358	583849	138014	892801	4513615	
Total variable cost (Rs./ha)	235472	174444	529568	231422	240578	246094	251046	
Gross returns (Rs./ha)	496856	345300	1086800	487496	466830	496881	525430	
ROVC (Rs./ha)	261384	171356	557232	256074	226252	250787	274384	
Total variable cost (Rs./ qtl)	2150	1413	2436	1816	1391	1465	1638	
Gross returns (Rs./qtl)	4538	2300	5000	3825	2700	2958	3427	
ROVC (Rs./qtl)	2387	1388	2564	2009	1309	1493	1790	
Quantity sold (Qtls)	285.66	14.89	171.96	233.84	102.30	581.92	2440.69	
Value of marketed surplus	1296182	405584	859815	1035677	276218	1721504	8364818	

Appendix 11: Profitability of Grapes on Sampled Farms – All Varieties

(Rs./Ha)

Particulars	Small			Medium			
	Thomson	Average	Clone2	Ganesh	Manik	Sharad	
Area ha	62.08	89.70	2.23	0.81	2.33	0.81	4.66
Production (qtl)	9924.73	13990.27	385.57	118.04	235.96	148.05	540.98
Price Received on Sale (Rs./qtl)	3245	3337	3693	2300	4053	3200	4205
Returns (Rs.)							
Gross Return	32207236	46684287	1424026	271495	956224	473766	2274818
Cost (Rs.)							
Input Cost	15624850	22376477	555400	114040	406454	200070	1104774
Marketing cost	463851	596400	12852	4131	15632	8143	29303
Total variable costs	1608870	22972877	568252	118171	422086	208213	1134077
ROVC	16118533	23711410	855774	153324	534138	265553	1140742
Total variable cost (Rs./ha)	259161	256079	254822	145891	181153	257053	243364
Gross returns (Rs./ha)	518802	520391	638577	335179	410397	584896	488158
ROVC (Rs./ha)	259641	264312	383755	189288	229244	327843	244794
Total variable cost (Rs./ qtl)	1621	1642	1474	1001	1789	1406	2096
Gross returns (Rs./qtl)	3245	3337	3693	2300	4053	3200	4205
ROVC (Rs./qtl)	1624	1695	2220	1299	2264	1794	2109
Quantity sold (Qtls)	9650.96	13583.12	373.46	114.30	227.97	144.16	523.92
Value of marketed surplus	31318802	45325649	1379304	262888	923837	461324	2203100

Appendix 11: Profitability of Grapes on Sampled Farms – All Varieties

(Rs./Ha)

Particulars	Medium			Large			Overall Average
	Thomson	Average	Manik	Sharad	Thomson	Average	
Area ha	22.16	32.99	3.24	3.04	12.15	18.42	141.12
Production (qtl)	3349.04	4639.71	384.13	461.81	2082.75	2946.09	21576
Price Received on Sale (Rs./qtl)	3699	3789	3300	3085	3370	3290	3415
Returns (Rs.)							
Gross Return	12388303	17578390	1267644	1424673	7018878	9692652	73955329
Cost (Rs.)							
Input Cost	5941278	7968733	416146	540634	3328164	4228415	34573675
Marketing cost	185872	189682	13445	24245	86781	130119	916201
Total variable costs	6127150	8158465	429590	564878	3414946	4358534	35489876
ROVC	6261153	9419925	838053	859794	3603932	5334118	38465453
Total variable cost (Rs./ha)	276496	247301	132590	185815	281066	236620	251487
Gross returns (Rs./ha)	539039	532840	391248	468642	577685	526203	524060
ROVC (Rs./ha)	282543	285539	258658	282827	296620	289583	272573
Total variable cost (Rs./ qtl)	1830	1758	1118	1223	1640	1479	1645
Gross returns (Rs./qtl)	3699	3789	3300	3085	3370	3290	3428
ROVC (Rs./qtl)	1870	2030	2182	1862	1730	1811	1783
Quantity sold (Qtls)	3242.01	4493.57	370.56	446.79	2021.15	2855.28	20932
Value of marketed surplus	11992382	17024691	1222844	1378343	6811284	9393885	71490220

Appendix 12: Disposal Pattern of Marketed Surplus of Kharif Onion – All Varieties

Category	Variety	Village market	Commission agent	Regulated market	Govt. agencies	Others	Total
Small	Baju 258	-	-	1 (100)	-	-	1 (100)
	Fursungi	-	-	4 (100)	-	-	4 (100)
	Malav	-	-	1 (100)	-	-	1 (100)
	N.53	-	-	4 (100)	-	-	4 (100)
	Nashik Lal	-	-	28 (100)	-	-	28 (100)
	Panchganga	-	-	12 (100)	-	-	12 (100)
	Prema	-	-	1 (100)	-	-	1 (100)
	Total	-	-	51 (100)	-	-	51 (100)
Medium	Chandwad	-	-	1 (100)	-	-	1 (100)
	Lonand	-	-	1 (100)	-	-	1 (100)
	Malav	-	-	1 (100)	-	-	1 (100)
	Nashik Lal	-	-	5 (100)	-	-	5 (100)
	Panchganga	-	-	4 (100)	-	-	4 (100)
	Total	-	-	12 (100)	-	-	12 (100)
Large	Mahabij	-	-	1 (100)	-	-	1 (100)
	Panchganga	-	-	3 (100)	-	-	3 (100)
	Total	-	-	4 (100)	-	-	4 (100)
Grand Total		-	-	67 (100)	-	-	67 (100)

Appendix 13: Disposal Pattern of Marketed Surplus of Rabi Onion – All Varieties

Category	Variety	Village market	Commission agent	Regulated market	Govt. agencies	Others	Total
Small	Bhagwa	-	-	1 (100)	-	-	1 (100)
	Chandwad	-	-	1 (100)	-	-	1 (100)
	Double Pati	-	-	1 (100)	-	-	1 (100)
	Fursungi	-	-	57 (100)	-	-	57 (100)
	Halwa	-	-	2 (100)	-	-	2 (100)
	lasalgaon	-	-	2 (100)	-	-	2 (100)
	Mahabij	-	-	1 (100)	-	-	1 (100)
	N.53	-	-	1 (100)	-	-	1 (100)
	Nashik Lal	-	-	26 (100)	-	-	26 (100)
	Panchganga	-	-	2 (100)	-	-	2 (100)
Medium	Sinnor Ghavti	-	-	4 (100)	-	-	4 (100)
	Total	-	-	98 (100)	-	-	98 (100)
	Fursungi	-	-	16 (100)	-	-	16 (100)
	Nashik Lal	-	-	3 (100)	-	-	3 (100)
Large	Sinnor Ghavti	-	-	1 (100)	-	-	1 (100)
	Total	-	-	20 (100)	-	-	20 (100)
	Fursungi	-	-	8 (100)	-	-	8 (100)
	Nashik Lal	-	-	1 (100)	-	-	1 (100)
	Panchganga	-	-	1 (100)	-	-	1 (100)
Total		-	-	10 (100)	-	-	10 (100)
Grand Total		-	-	128 (100)	-	-	128 (100)

Appendix 14: Disposal Pattern of Marketed Surplus of Grapes – All Varieties

Category	Variety	Village market	Commission agent	Regulated market	Govt. agencies	On farm sale	Total
Small	Clone 2	-	-	-	-	6 (100)	6 (100)
	Ganesh	-	-	-	-	2 (100)	2 (100)
	Jumbo	-	-	-	-	1 (100)	1 (100)
	Manik	-	-	-	-	5 (100)	5 (100)
\	NanaSaheb Purple	-	-	-	-	1 (100)	1 (100)
	Sharad	-	-	-	-	9 (100)	9 (100)
	Sonaka	-	-	-	-	29 (100)	29 (100)
	Thomson	-	-	-	-	96 (100)	96 (100)
	Total	-	-	-	-	149 (100)	149 (100)
Medium	Clone 2	-	-	-	-	3 (100)	3 (100)
	Ganesh	-	-	-	-	1 (100)	1 (100)
	Manik	-	-	-	-	4 (100)	4 (100)
	Sharad	-	-	-	-	2 (100)	2 (100)
	Sonaka	-	-	-	-	8 (100)	8 (100)
	Thomson	-	-	-	-	16 (100)	16 (100)
	Total	-	-	-	-	34 (100)	34 (100)
Large	Manik	-	-	-	-	1 (100)	1 (100)
	Sharad	-	-	-	-	2 (100)	2 (100)
	Thomson	-	-	-	-	5 (100)	5 (100)
	Total	-	-	-	-	8 (100)	8 (100)
	Grand Total	-	-	-	-	191 (100)	191 (100)

Appendix 15: Quantity Sold through Various Channels and Prices Received for Kharif Onion – All Varieties
 (Quantity in Qtls.; Price in Rs./Qtls.)

Category	Variety	Village market		Commission agent		Regulated market		Other		Total	
		Qty sold	Price	Qty sold	Price	Qty sold	Price	Qty sold	Price	Qty sold	Price
Small	Baju 258	-	-	-	-	42.00 (42.00)	965.00	-	-	42.00 (42.00)	965.00
	Fursungi	-	-	-	-	343.75 (86.37)	823.75	-	-	343.75 (86.37)	823.75
	Malav	-	-	-	-	50.00 (50.00)	860.00	-	-	50.00 (50.00)	860.00
	N.53	-	-	-	-	268.12 (67.43)	891.25	-	-	268.12 (67.43)	891.25
	Nashik Lal	-	-	-	-	1843.01 (66.08)	952.61	-	-	1843.01 (66.08)	952.61
	Panchganga	-	-	-	-	1015.86 (84.9)	907.92	-	-	1015.86 (84.9)	907.92
	Prema	-	-	-	-	96.00 (96.00)	900.00	-	-	96.00 (96.00)	900.00
	Total	-	-	-	-	3651.61 (71.98)	924.57	-	-	3651.61 (71.98)	924.57
Medium	Chandwad	-	-	-	-	51.38 (51.38)	870.00	-	-	51.38 (51.38)	870.00
	Lonand	-	-	-	-	50.39 (50.39)	850.00	-	-	50.39 (50.39)	850.00
	Malav	-	-	-	-	114.76 (114.76)	960.00	-	-	114.76 (114.76)	960.00
	Nashik Lal	-	-	-	-	441.25 (88.25)	971.00	-	-	441.25 (88.25)	971.00
	Panchganga	-	-	-	-	555.87 (138.97)	952.50	-	-	555.87 (138.97)	952.50
	Total	-	-	-	-	1221.43 (101.14)	945.42	-	-	1221.43 (101.14)	945.42
Large	Mahabij	-	-	-	-	168.06 (168.05)	875.00	-	-	168.06 (168.06)	875.00
	Panchganga	-	-	-	-	515.59 (171.85)	841.67	-	-	515.59 (171.86)	841.67
	Total	-	-	-	-	685.09 (170.91)	850.00	-	-	685.09 (170.91)	850.00
	Grand Total	-	-	-	-	5556.02 (83.11)	923.85	-	-	5556.02 (83.11)	923.85

Note: Figures in parentheses denote quantity sold per farm; Prices are weighted average

Appendix 16: Quantity Sold through Various Channels and Prices Received for Rabi Onion – All Varieties
 (Quantity in Qtls.; Price in Rs./Qtls.)

Category	Variety	Village market		Commission agent		Regulated market		Other		Total	
		Qty sold	Price	Qty sold	Price	Qty sold	Price	Qty sold	Price	Qty sold	Price
Small	Bhagwa	-	-	-	-	103.96 (103.96)	1170.00	-	-	103.96 (103.96)	1170.00
	Chandwad	-	-	-	-	95.74 (95.74)	1040.00	-	-	95.74 (95.74)	1040.00
	Double Pati	-	-	-	-	78.84 (78.84)	1100.00	-	-	78.84 (78.84)	1100.00
	Fursungi	-	-	-	-	7789.11 (136.01)	1024.12	-	-	7789.11 (136.01)	1024.12
	Halwa	-	-	-	-	465.17 (231.63)	1053.58	-	-	465.17 (231.63)	1053.58
	lasalgaon	-	-	-	-	268.09 (134.05)	1012.50	-	-	268.09 (134.05)	1012.50
	Mahabij	-	-	-	-	148.05 (148.05)	1280.50	-	-	148.05 (148.05)	1280.50
	N.53	-	-	-	-	324.11 (324.11)	1075.00	-	-	324.11 (324.11)	1075.00
	Nashik Lal	-	-	-	-	2784.31 (107.82)	1041.50	-	-	2784.31 (107.82)	1041.50
Medium	Panchganga	-	-	-	-	254.1 (127.05)	1085.00	-	-	254.1 (127.05)	1085.00
	Sinnor Ghavti	-	-	-	-	338.89 (84.72)	1202.50	-	-	338.89 (84.72)	1202.50
	Total	-	-	-	-	12650.38 (128.89)	1043.18	-	-	12650.38 (128.89)	1043.18
	Fursungi	-	-	-	-	2591.13 (161.83)	1062.97	-	-	2591.13 (161.83)	1062.97
	Nashik Lal	-	-	-	-	484.64 (160.98)	1133.33	-	-	484.64 (160.98)	1133.33
Large	Sinnor Ghavti	-	-	-	-	106.98 (106.98)	1100.00	-	-	106.98 (106.98)	1100.00
	Total	-	-	-	-	3182.74 (158.96)	1075.38	-	-	3182.74 (158.96)	1075.38
	Fursungi	-	-	-	-	2666.5 (334.01)	1047.50	-	-	2666.5 (334.01)	1047.50
	Nashik Lal	-	-	-	-	130.05 (130.05)	1267.50	-	-	130.05 (130.05)	1267.50
	Panchganga	-	-	-	-	730.26 (730.26)	1150.00	-	-	730.26 (730.26)	1150.00
	Total	-	-	-	-	3526.8 (353.24)	1079.75	-	-	3526.8 (353.24)	1079.75
	Grand Total	-	-	-	-	19359.92 (151.11)	1051.07	-	-	19359.92 (151.11)	1051.07

Note: Figures in parentheses denote quantity sold per farm; Prices are weighted average

Appendix 17: Quantity Sold through Various Channels and Prices Received for Grapes – All Varieties
 (Quantity in Qtls.; Price in Rs./Qtls.)

Category	Variety	Village market		Commission agent		Regulated market		On farm sale		Total	
		Qty sold	Price	Qty sold	Price	Qty sold	Price	Qty sold	Price	Qty sold	Price
Small	Clone2	-	-	-	-	-	-	285.66 (47.61)	4538	285.66 (47.61)	4538
	Ganesh	-	-	-	-	-	-	144.89 (72.44)	2800	144.89 (72.44)	2800
	Jumbo	-	-	-	-	-	-	171.96 (171.96)	5000	171.96 (171.96)	5000
	Manik	-	-	-	-	-	-	283.84 (57.27)	3825	283.84 (57.27)	3825
	Nansaheb Purple	-	-	-	-	-	-	102.30 (102.30)	2700	102.30 (102.30)	2700
	Sharad	-	-	-	-	-	-	581.92 (65.38)	2958	581.92 (65.38)	2958
	Sonaka	-	-	-	-	-	-	2440.69 (84.57)	3427	2440.69 (84.57)	3427
	Thomson	-	-	-	-	-	-	9650.96 (99.49)	3245	9650.96 (99.49)	3245
	Total	-	-	-	-	-	-	13583.12 (91.17)	3337	13583.12 (91.17)	3337
Medium	Clone2	-	-	-	-	-	-	373.46 (123.93)	3693	373.46 (123.93)	3693
	Ganesh	-	-	-	-	-	-	114.30 (114.30)	2300	114.30 (114.30)	2300
	Manik	-	-	-	-	-	-	227.97 (56.30)	4053	227.97 (56.30)	4053
	Sharad	-	-	-	-	-	-	144.16 (71.19)	3200	144.16 (71.19)	3200
	Sonaka	-	-	-	-	-	-	523.92 (62.96)	4205	523.92 (62.96)	4205
	Thomson	-	-	-	-	-	-	3242.01 (201.89)	3699	3242.01 (201.89)	3699
	Total	-	-	-	-	-	-	4493.57 (134.98)	3789	4493.57 (134.98)	3789
Large	Manik	-	-	-	-	-	-	370.56 (370.56)	3300	370.56 (370.56)	3300
	Sharad	-	-	-	-	-	-	446.79 (223.39)	3085	446.79 (223.39)	3085
	Thomson	-	-	-	-	-	-	2021.15 (351.00)	3370	2021.15 (351.00)	3370
	Total	-	-	-	-	-	-	2855.28 (321.54)	3290	2855.28 (321.54)	3290
	Grand Total	-	-	-	-	-	-	20931.97 (109.59)	3415	20931.97 (109.59)	3415

Note: Figures in parentheses denote quantity sold per farm; Prices are weighted average

Appendix 18: Month-wise and Market-wise Sales of Kharif Onion – All Varieties (Through Regulated Market Only) (Quantity in qtl; Price in Rs./qtl)

Category	Variety	Apr		July		October		November		December		January		February		March		Total	
		Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price
Small	Baju 258	-	-	-	-	-	-	42 (100)	965 (0)	-	-	-	-	-	-	-	42 (100)	965 (100)	
	Fursungi	-	-	-	-	-	-	187 (34.4)	912 (10.77)	76.33 (22.2)	1050 (27.47)	80.43 (23.4)	420 (-49.01)	-	-	-	343.76 (100)	824 (100)	
	Malav	-	-	-	-	50 (100)	860 (0)	-	-	-	-	-	-	-	-	-	50 (100)	860 (100)	
	N 53	-	-	-	-	145.5 (54.27)	775 (-13.04)	122.62 (45.73)	930 (4.35)	-	-	-	-	-	-	-	268.12 (100)	891 (100)	
	Nashik Lal	-	-	10 (0.54)	480 (- 49.61)	428.5 (23.25)	1039 (9.02)	584 (31.69)	1065 (11.8)	451.6 (24.5)	711 (-25.34)	368.91 (20.02)	922 (- 3.25)	-	-	-	1843.01 (100)	953 (100)	
	Panchganga	-	-	-	-	208 (20.48)	888 (-2.16)	579.48 (57.04)	926 (2.02)	48 (4.73)	895 (- 1.42)	24.75 (2.44)	865 (-4.73)	-	-	155.63 (15.32)	875 (- 3.63)	1015.86 (100)	
	Prema	-	-	-	-	-	-	-	-	-	-	-	96 (100)	900 (0)	-	-	96 (100)	900 (100)	
	Total (Avg.)	-	-	10 (0.27)	480 (- 48.08)	832 (22.78)	964 (4.28)	1515.1 (41.49)	981 (6.16)	575.93 (15.77)	775 (-16.13)	474.09 (12.98)	842 (- 8.95)	96 (2.63)	900 (- 2.66)	155.63 (4.26)	875 (- 5.36)	3651.61 (100)	924.57 (100)
Medium	Chandwad	-	-	-	-	-	-	51.37 (100)	870 (0)	-	-	-	-	-	-	-	51.37 (100)	870 (100)	
	Lonand	-	-	-	-	-	-	50.39 (100)	850 (0)	-	-	-	-	-	-	-	50.39 (100)	850 (100)	
	Malav	-	-	-	-	-	-	114.76 (100)	960 (0)	-	-	-	-	-	-	-	114.76 (100)	960 (100)	
	Nashik Lal	-	-	-	-	-	-	384.25 (87.08)	989 (1.83)	-	-	57 (12.92)	900 (-7.31)	-	-	-	441.25 (100)	971 (100)	
	Panchganga	-	-	-	-	-	-	276.87 (49.81)	1030 (8.14)	-	-	-	-	279 (50.19)	875 (-8.14)	-	-	555.87 (100)	952 (100)
	Total (Avg.)	-	-	-	-	-	-	877.64 (71.85)	966 (2.19)	-	-	57 (4.67)	900 (-4.8)	279 (22.84)	875 (-7.45)	-	-	1221.48 (100)	945 (100)
Large	Mahabij	-	-	-	-	168 (100)	875 (0)	-	-	-	-	-	-	-	-	-	168 (100)	875 (100)	
	Panchganga	210 (40.73)	750 (-10.89)	-	-	-	-	183.09 (35.51)	925 (9.9)	-	-	-	-	122.5 (23.76)	850 (0.99)	-	-	515.59 (100)	842 (100)
	Total (Avg.)	210 (30.65)	750 (-11.76)	-	-	168 (24.52)	875 (2.94)	183.09 (26.72)	925 (8.82)	-	-	-	-	122.5 (17.88)	850 (0)	-	-	685.09 (100)	850 (100)
	Grand Total (Avg.)	210 (3.78)	750 (-18.82)	10 (0.18)	480 (- 48.04)	1000 (17.99)	957 (3.62)	2575.83 (46.34)	976 (5.6)	575.93 (10.36)	775 (-16.06)	531.09 (9.56)	849 (-8.09)	497.5 (8.95)	875 (-5.29)	155.63 (2.8)	875 (-5.29)	5558.18 (100)	924 (100)

Note: Figures in parentheses are percentages to the total quantity sold and percent change (increase or decrease) over average annual price (weighted average price)

Appendix 19: Month-wise and Market-wise Sales of Rabi Onion – All Varieties (Through Regulated Market Only) (Quantity in qtl; Price in Rs./qtl)

Category	Variety	Apr		May		June		July		November		January		February		March		Total		
		Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	
Small	Bhagwa	-	-	104 (100)	1170 (0)	-	-	-	-	-	-	-	-	-	-	-	104 (100)	1170 (0)		
	Chandwad	96 (100)	1040 (0)	-	-	-	-	-	-	-	-	-	-	-	-	-	96 (100)	1040 (0)		
	Double Pati													79 (100)	1100 (0)	-	-	79 (100)	1100 (0)	
	Fursungi	1580 (20.28)	995 (-3)	731 (9.38)	1139 (11)	752.75 (9.66)	1129 (10)	286 (3.67)	1183 (15)	80.85 (1.04)	715 (-30)	1133.45 (14.55)	969 (-5)	2158 (27.71)	998 (-3)	1067 (13.7)	998 (-3)	7789 (100)	1024 (100)	
	Halwa	-	-	-	-	-	-	-	-	-	345 (74.15)	1054 (0)	120.25 (25.85)	1008 (-4)	-	-	465 (100)	1054 (100)		
	lasalgao	-	-	-	-	-	-	-	-	-	208 (77.61)	1013 (0)	60 (22.39)	1050 (4)	-	-	268 (100)	1013 (100)		
	Mahabij	-	-	88 (59.46)	1281 (0)	60 (40.54)	1281 (0)	-	-	-	-	-	-	96 (100)	900 (0)	-	-	148 (100)	1281 (100)	
	N 53	-	-	324 (100)	1075 (0)	-	-	-	-	-	-	-	-	-	-	-	324 (100)	1075 (100)		
	Nashik Lal	472.88 (16.98)	793 (-24)	584 (20.97)	930 (-11)	762 (27.37)	1127 (8)	461.2 (16.56)	1352 (30)	-	-	245 (8.8)	1040 (0)	62 (-23)	975 (-6)	197.25 (7.08)	943 (-10)	2784 (100)	1042 (100)	
	Panchganga	158 (62.2)	1170 (8)	-	-	-	-	-	-	-	-	-	96 (37.8)	1000 (-8)	-	-	254 (100)	1085 (100)		
	Sinnor Ghavti	-	-	120 (35.4)	975 (-19)	219 (64.6)	1430 (19)	-	-	-	-	-	-	-	-	-	339 (100)	1203 (100)		
	Total (Avg.)	2306.88 (18.24)	969 (-7)	1951 (15.42)	1057 (1)	1793.75 (14.18)	1178 (13)	747.2 (5.91)	1304 (25)	80.85 (0.64)	715 (-31)	1931.45 (15.27)	994 (-5)	2575.25 (20.36)	1004 (-4)	1264.25 (9.99)	981 (-6)	12651 (100)	1043 (100)	
Medium	Fursungi	544 (20.99)	1087 (2)	120 (4.63)	993 (-7)	344 (13.27)	980 (-8)	-	-	-	-	436 (16.82)	1027 (-3)	465 (17.94)	1037 (-2)	682.5 (26.34)	1128 (6)	2592 (100)	1063 (100)	
	Nashik Lal	130 (26.8)	1175 (4)	158 (32.58)	1160 (-3)	-	-	-	-	-	-	-	-	-	197 (40.62)	1125 (-1)	463 (100)	1133 (100)		
	Sinnor Ghavti	-	-	106.5 (100)	1100 (0)	-	-	-	-	-	-	-	-	-	-	-	107 (100)	1100 (100)		
	Total (Avg.)	674 (21.17)	1109 (3)	384.5 (12.08)	1046 (-3)	344 (10.81)	980 (-9)	-	-	-	-	436 (13.7)	1027 (-5)	465 (14.61)	1037 (-4)	879.5 (27.63)	1127 (5)	3183 (100)	1075 (100)	
Large	Fursungi										-	-	632 (23.7)	1137 (9)	1292.5 (48.47)	903 (-14)	596 (22.35)	1040 (-1)	2667 (100)	1048 (100)
	Nashik Lal	146 (5.48)	1100 (5)	-	-	-	-	-	-	-	-	-	-	-	-	-	130 (100)	1268 (100)		
	Panchganga										-	-	500 (68.49)	1150 (0)	230 (31.51)	1150 (0)	730 (100)	1150 (100)		
	Total (Avg.)	146 (4.14)	1100 (2)	60 (1.7)	1000 (-7)	70 (1.98)	1535 (42)	-	-	-	632 (17.92)	1137 (5)	1792.5 (50.83)	952 (-12)	826 (23.42)	1077 (0)	3527 (100)	1080 (100)		
	Grand Total (Avg.)	3126.88 (16.15)	994 (-5)	2395.5 (12.37)	1053 (0)	2207.75 (11.4)	1176 (12)	747.2 (3.86)	1304 (24)	80.85 (0.42)	715 (-32)	2999.45 (15.49)	1022 (-3)	4832.75 (24.96)	1000 (-5)	2969.75 (15.34)	1029 (-2)	19360 (100)	1051 (100)	

Note: Figures in parentheses are percentages to the total quantity sold and percent change (increase or decrease) over average annual price (weighted average price)

Appendix 20: Month-wise and Market-wise Sales of Grapes – All Varieties (Through On-Farm Sale Only)
(Quantity in qtl; Price in Rs./qtl)

Category	Variety	Jan		Feb		Mar		Apr		May		Total		
		Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	
Small	Clone 2	169 (39.27)	4400 (-3.03)	66 (23.1)	4950 (9.09)	21 (7.23)	4125 (-9.09)	-	-	30 (10.4)	4950 (9.09)	286 (100)	4538 (100)	
	Ganesh	-	-	145 (100)	2800 (0)	-	-	-	-	-	-	145 (100)	2800 (100)	
	Jumbo	-	-	172 (100)	5000 (0)	-	-	-	-	-	-	172 (100)	5000 (100)	
	Manik	55 (-9.47)	4785 (25.1)	-	-	229 (80.53)	3185 (-16.73)	-	-	-	-	284 (100)	3825 (100)	
	NanaSaheb Purple	-	-	-	-	102 (100)	2700 (0)	-	-	-	-	102 (100)	2700 (100)	
	Sharad	16 (3.13)	3000 (1.41)	69 (13.67)	2800 (-5.35)	325 (64.71)	3102 (4.86)	26 (5.17)	1815 (-38.65)	67 (13.31)	3500 (18.31)	503 (100)	2958 (100)	
	Sonaka	408 (-6.73)	3277 (-4.39)	661 (27.08)	3798 (10.8)	382 (15.65)	3690 (7.67)	705 (28.86)	2930 (-14.51)	285 (11.68)	2760 (-19.47)	2441 (100)	3427 (100)	
	Thomson	2303 (23.86)	3226 (0.59)	2149 (22.27)	3433 (5.79)	1702 (17.63)	3273 (0.85)	1503 (15.57)	2950 (9.08)	1995 (20.67)	3189 (1.72)	9651 (100)	3245 (100)	
	Total (Avg.)	2951 (21.73)	3413 (2.27)	3262 (24.02)	3550 (6.39)	2760 (20.32)	3337 (0)	2233 (16.44)	2871 (-13.97)	2376 (17.5)	3204 (-3.98)	13583 (100)	3337 (100)	
Medium	Clone 2	70 (29.18)	4290 (16.16)	-	-	171 (70.82)	2500 (-32.31)	-	-	-	-	241 (100)	3693 (100)	
	Ganesh	-	-	114 (100)	2300 (0)	-	-	-	-	-	-	114 (100)	2300 (100)	
	Manik	187 (81.99)	4083 (0.76)	-	-	41 (18.01)	3960 (-2.28)	-	-	-	-	228 (100)	4053 (100)	
	Sharad	-	-	-	-	70 (48.41)	3200 (0)	-	-	74 (51.59)	3200 (0)	144 (100)	3200 (100)	
	Sonaka	149 (28.37)	3475 (-17.36)	138 (26.24)	3990 (-5.11)	160 (30.45)	4290 (2.02)	78 (14.94)	5065 (20.45)	-	-	524 (100)	4205 (100)	
	Thomson	725 (22.37)	3717 (0.48)	1165 (35.93)	3568 (-3.54)	593 (18.28)	4357 (17.78)	-	-	759 (23.42)	3230 (12.68)	322 (100)	3699 (100)	
	Total (Avg.)	1131 (25.17)	3864 (1.98)	1417 (31.53)	3515 (-7.22)	1034 (23.01)	3914 (3.3)	78 (1.74)	5065 (33.69)	834 (18.55)	3223 (-14.94)	4494 (100)	3789 (100)	
Large	Manik	-	-	-	-	-	-	-	371 (100)	3300 (0)	-	-	371 (100)	3300 (100)
	Sharad	-	-	-	-	193 (35.19)	3200 (3.73)	254 (64.81)	2970 (-3.73)	-	-	447 (100)	3085 (100)	
	Thomson	-	-	1283 (63.45)	2800 (16.91)	100 (4.95)	4950 (46.88)	164 (8.13)	3300 (-2.08)	474 (23.47)	2900 (-13.95)	2021 (100)	3370 (100)	
	Total (Avg.)	-	-	2800 (14.89)	293 (9.95)	4075 (23.86)	806 (30.27)	3190 (-3.04)	474 (16.14)	2900 (-11.85)	2855 (100)	3290 (100)		
	Grand Total (Avg.)	4082 (-9.51)	3525 (3.22)	5961 (28.47)	3527 (3.26)	4087 (19.52)	3461 (1.34)	3117 (14.91)	3138 (-8.12)	3684 (17.59)	3186 (-6.71)	20932 (100)	3415 (100)	

Note: Figures in parentheses are percentages to the total quantity sold and percent change (increase or decrease) over average annual price (weighted average price)

Appendix 21: Variety-wise Proportion of Profit for Kharif Onion – All Varieties

Category	Variety	Value of Main Product (Rs/qt)	Variable Cost (Rs./qt)	ROVC (Rs./qt)	% Profit* (ROVC/VC)*(100)
Small	Baju 258	965	617	348	56.33
	Fursungi	824	515	309	60.07
	Malav	860	553	307	55.49
	N.53	891	538	354	65.77
	Nashik Lal	953	473	480	101.57
	Panchganga	908	510	398	78.06
	Prema	900	578	322	55.71
	Average	925	497	427	85.97
Medium	Chandwad	870	485	385	79.21
	Lonand	850	544	306	56.37
	Malav	960	539	421	78.01
	Nashik Lal	971	610	361	59.11
	Panchganga	953	613	339	55.28
	Average	945	597	349	58.43
Large	Mahabij	875	548	328	59.82
	Panchganga	842	522	320	61.31
	Average	850	528	322	60.96
	Overall Average	924	523	401	76.54

Note: VC – Variable Cost; ROVC – Returns over Variable Cost; * - For computing farmer's percentage profit, only variable costs have been considered

Appendix 22: Variety-wise Proportion of Profit for Rabi Onion – All Varieties

Category	Variety	Value of Main Product (Rs/qt)	Variable Cost (Rs./qt)	ROVC (Rs./qt)	% Profit* (ROVC/VC)*(100)
Small	Bhagwa	1170	779	391	50.22
	Chandwad	1040	659	381	57.88
	Double pati	1100	670	430	64.18
	Fursungi	1024	627	397	63.43
	Halwa	1054	644	410	63.66
	Lasalgaon	1013	646	367	56.80
	Mahabij	1281	771	510	66.13
	N.53	1075	592	483	81.66
	Nashik lal	1042	587	454	77.29
	Panchganga	1085	608	477	78.45
	Sinnor ghvati	1203	725	478	65.93
	Average	1043	624	419	67.17
Medium	Fursungi	1063	651	412	63.41
	Nashik lal	1133	562	572	101.73
	Gavati	1100	660	440	66.67
	Average	1075	637	438	68.72
Large	Fursungi	1048	700	347	49.60
	Nashik Lal	1268	641	626	97.69
	Panchganga	1150	654	496	75.74
	Average	1080	689	391	56.83
	Overall Average	1051	638	417	65.36

Note: VC – Variable Cost; ROVC – Returns over Variable Cost; * - For computing farmer's percentage profit, only variable costs have been considered

Appendix 23: Variety-wise Proportion of Profit for Grapes – All Varieties

Category	Variety	Value of Main Product (Rs./qtl)	Variable Cost (Rs./qtl)	ROVC (Rs./qtl)	(Rs./Qtls)
					% Profit* (ROVC/VC)*(100)
Small	Clone2	4538	2150	2387	111.00
	Ganesh	2800	1413	1388	98.23
	Jumbo	5000	2436	2564	105.22
	Manik	3825	1816	2009	110.65
	Nansaheb Purple	2700	1391	1309	94.05
	Sharad	2958	1465	1493	101.91
	Sonaka	3427	1638	1790	109.30
	Thomson	3245	1621	1624	100.19
Average		3337	1642	1695	103.21
Medium	Clone2	3693	1474	2220	150.60
	Ganesh	2300	1001	1299	129.75
	Manik	4053	1789	2264	126.55
	Sharad	3200	1406	1794	127.54
	Sonaka	4205	2096	2109	100.59
	Thomson	3699	1830	1870	102.19
	Average	3789	1758	2030	115.46
	Overall Average	3415	1645	1783	108.38

Note: VC -- Variable Cost; ROVC – Returns over Variable Cost; * - For computing farmer's percentage profit, only variable costs have been considered

Appendix 24: Variety-wise Wholesale Trade Details of Onion: 2013-14

Month	Average price (Rs/qtl) at which Purchased (PP)	Average Qty Sold (Qtl.) Per Wholesaler	Average Sale Price (Rs/qtl) (SP)	Mark - up (Rs/qtl) (SP-PP)	Percentage Mark-up [SP-PP]/PP*100 (Rs/qtl of Onion)
Bhagwa Variety					
January	700	84.00	910	210	30.00
February	600	72.00	732	132	22.00
March	-	-	-	-	-
April	700	84.00	840	140	20.00
May	-	-	-	-	-
June	-	-	-	-	-
July	-	-	-	-	-
August	-	-	-	-	-
September	1400	168.00	1890	490	35.00
October	1150	138.00	1392	242	21.00
November	1250	150.00	1625	375	30.00
December	1400	168.00	1680	280	20.00
Average	1029	123.43	1296	267	25.95
Fursungi Variety					
January	1050	161.67	1355	305	29.08
February	-	-	-	-	-
March	1250	996.50	1584	334	26.72
April	1300	1215.00	1613	313	24.06
May	-	-	-	-	-
June	1133	1020.00	1371	238	21.00
July	1125	550.00	1378	253	22.49
August	-	-	-	-	-
September	-	-	-	-	-
October	1200	140.00	1440	240	20.00
November	1300	160.00	1707	407	31.33
December	-	-	-	-	-
Average	1207	719.41	1518	310	25.72
Gavti Variety					
January	-	-	-	-	-
February	1300	156.00	1690	390	30.00
March	-	-	-	-	-
April	-	-	-	-	-
May	-	-	-	-	-
June	1115	133.80	1348	233	20.89
July	1083	130.00	1316	232	21.43
August	1267	152.00	1627	360	28.42
September	-	-	-	-	-
October	-	-	-	-	-
November	-	-	-	-	-
December	1450	174.00	1900	450	31.00
Average	1183	141.92	1474	291	24.59
Halwa Variety					
January	1000	120.00	1250	250	25.00
February	800	96.00	1055	255	31.88
March	800	96.00	1000	200	25.00
April	800	96.00	1000	200	25.00
May	1125	135.00	1413	288	25.56
June	-	-	-	-	-
July	-	-	-	-	-
August	1375	165.00	1655	280	20.36
September	1200	144.00	1500	300	25.00
October	1100	132.00	1342	242	22.00
November	1175	141.00	1410	235	20.00

December	1600	192.00	2121	521	32.56
Average	1164	139.69	1456	292	25.10
Lasalgaon Variety					
January	-	-	-	-	-
February	600	72.00	726	126	21.00
March		0.00			
April	700	84.00	840	140	20.00
May	1150	138.00	1472	322	28.00
June	1125	135.00	1418	293	26.00
July	1225	147.00	1474	249	20.29
August	-	-	-	-	-
September	-	-	-	-	-
October	-	-	-	-	-
November	-	-	-	-	-
December	1100	132.00	1476	376	34.18
Average	993	119.10	1256	263	26.51
Nasik Lal Variety					
January	1233	526.67	1583	350	28.38
February	1250	2050.00	1585	335	26.76
March	1450	205.00	1920	470	32.41
April	1250	2100.00	1581	331	26.44
May	1083	1153.33	1322	239	22.06
June	1000	95.00	1203	203	20.25
July	1200	1140.00	1424	224	18.63
August	1100	1420.00	1389	289	26.24
September	1115	1615.00	1402	287	25.70
October	1700	577.50	2072	372	21.88
November	1700	533.33	2207	507	29.80
December	1525	1850.00	1983	458	30.00
Average	1277	1129.69	1608	331	25.91
Panchganga Variety					
January	-	-	-	-	-
February	-	-	-	-	-
March	-	-	-	-	-
April	-	-	-	-	-
May	-	-	-	-	-
June	-	-	-	-	-
July	-	-	-	-	-
August	-	-	-	-	-
September	1200	146.67	1516	316	26.36
October	1270	1926.00	1575	305	24.02
November	1113	2700.00	1436	323	29.05
December	1033	2566.67	1322	288	27.90
Average	1167	1904.67	1475	309	26.47
Overall (All Varieties)					
January	1069	892.33	1372	303	28.37
February	900	2446.00	1144	244	27.15
March	1244	1297.50	1595	351	28.24
April	1100	3579.00	1366	266	24.16
May	1108	1426.33	1377	269	24.27
June	1100	1383.80	1334	234	21.29
July	1155	1967.00	1392	237	20.52
August	1260	1737.00	1567	307	24.33
September	1178	2073.67	1495	317	26.93
October	1320	2913.50	1619	299	22.67
November	1323	3684.33	1710	387	29.26
December	1292	5082.67	1682	390	30.19
Average	1183	4277.90	1487	304	25.73

Note: SP – Sale Price; FP – Purchase Price

Appendix 25: Variety-wise Wholesale Trade Details of Grapes: 2013-14

(Rs/qtl of Onion)

Month	Average price (Rs/qtl) at which Purchased (PP)	Average Qty Sold (Qtl.) Per Wholesaler	Average Sale Price (Rs/qtl) (SP)	Mark - up (Rs/qtl) (SP-PP)	Percentage Mark-up [SP-PP]/PP*100
Sharad Variety					
January	3100	60.00	3875	775	25.00
February	3733	111.67	4594	861	23.05
March	-	-	-	-	-
April	3250	120.00	4043	793	24.38
May	3175	85.00	3922	747	23.51
June	-	-	-	-	-
July	-	-	-	-	-
August	-	-	-	-	-
September	-	-	-	-	-
October	-	-	-	-	-
November	-	-	-	-	-
December	3500	160.00	4060	560	16.00
Average	3406	107.22	4183	777	22.82
Sonaka Variety					
January	3855	113.00	4800	945	24.51
February	3500	120.00	4375	875	25.00
March	3950	89.00	4782	832	21.05
April	4750	110.00	5863	1113	23.42
May	4250	58.33	5285	1035	24.35
June	-	-	-	-	-
July	-	-	-	-	-
August	-	-	-	-	-
September	-	-	-	-	-
October	-	-	-	-	-
November	4050	100.00	5168	1418	35.00
December	3500	120.00	4375	875	25.00
Average	4018	96.94	4984	966	24.03
Thomson Variety					
January	4050	84.25	5034	984	24.30
February	4083	92.50	5091	1008	24.67
March	3800	124.00	4638	838	22.05
April	3983	95.00	4899	916	22.99
May	4250	65.00	5223	973	22.88
June	-	-	-	-	-
July	-	-	-	-	-
August	-	-	-	-	-
September	-	-	-	-	-
October	-	-	-	-	-
November	3200	140.00	3904	704	22.00
December	3833	120.00	4675	842	21.96
Average	3956	100.44	4876	920	23.26
Overall (All Varieties)					
January	3858	257.25	4801	944	24.46
February	3920	324.17	4870	950	24.24
March	3875	213.00	4710	835	21.54
April	3990	325.00	4921	931	23.32
May	3943	208.33	4878	935	23.71
June	-	-	-	-	-
July	-	-	-	-	-
August	-	-	-	-	-
September	-	-	-	-	-
October	-	-	-	-	-
November	3625	240.00	4686	1061	29.26
December	3700	400.00	4192	792	21.41
Average	3885	304.61	4796	911	23.46

Note: SP – Sale Price; PP – Purchase Price

Appendix 26: Variety-wise Retail Trade Details of Onion: 2013-14

Month	Average price (Rs/qtl) at which Purchased (PP)	Average Qty Sold (Qtl.) Per Retailer	Average Sale Price (Rs/qtl) (SP)	Mark - up (Rs/qtl) (SP-PP)	(Rs/qtl of Onion)	
					Percentage Mark-up [SP- PP]/PP*100	
Bhagwa Variety						
January	-	-	-	-	-	
February	-	-	-	-	-	
March	-	-	-	-	-	
April	-	-	-	-	-	
May	-	-	-	-	-	
June	-	-	-	-	-	
July	-	-	-	-	-	
August	-	-	-	-	-	
September	3500	12.00	4464	864	24.00	
October	-	-	-	-	-	
November	-	-	-	-	-	
December	-	-	-	-	-	
Average	3600	12.00	4464	864	24.00	
Chandwad Variety						
January	900	2.80	1161	261	29.00	
February	700	2.40	882	182	26.00	
March	600	2.20	738	138	23.00	
April	-	-	-	-	-	
May	700	3.00	952	252	36.00	
June	1200	2.60	1512	312	26.00	
July	1600	2.80	2144	544	34.00	
August	-	-	-	-	-	
September	3500	2.50	4410	910	26.00	
October	5000	3.20	6250	1250	25.00	
November	4000	4.00	4880	880	22.00	
December	2500	3.20	3075	575	23.00	
Average	2070	2.87	2600	530	25.62	
Fursungi Variety						
January	1463	4.90	1960	497	33.99	
February	1550	3.93	2022	472	30.43	
March	1583	4.30	1965	381	24.03	
April	1670	6.98	2102	432	25.86	
May	1408	4.67	1868	460	32.63	
June	1650	4.00	2041	391	23.72	
July	1483	4.60	1933	449	30.28	
August	1850	6.00	2250	400	21.62	
September	1600	4.00	1994	394	24.63	
October	1500	7.00	1980	480	32.00	
November	1475	5.90	1792	317	21.47	
December	1513	5.45	1882	370	24.44	
Average	1568	5.16	1983	415	26.44	
Gavati Variety						
January	-	-	-	-	-	
February	-	-	-	-	-	
March	-	-	-	-	-	
April	-	-	-	-	-	
May	-	-	-	-	-	
June	-	-	-	-	-	
July	-	-	-	-	-	
August	3800	3.00	4712	912	24.00	
September	-	-	-	-	-	

October	-	-	-	-	-
November	-	-	-	-	-
December	-	-	-	-	-
Average	3800	3.00	4712	912	24.00
Halwa Variety					
January	1100	11.50	1446	346	31.45
February	600	11.10	765	165	27.50
March	750	11.75	950	200	26.60
April	733	7.43	922	189	25.77
May	950	11.00	1222	272	28.63
June	1100	10.50	1447	347	31.55
July	1650	10.25	2097	447	27.09
August	3400	11.25	4116	716	21.06
September	3500	10.83	4561	1061	30.30
October	3100	11.75	3927	827	26.68
November	3800	10.00	4930	1130	29.74
December	1750	10.25	2180	430	24.57
Average	1888	10.52	2408	520	27.51
Lasalgaoon Variety					
January	700	2.00	924	224	32.00
February	500	2.50	630	130	26.00
March	550	3.00	682	132	24.00
April	-	-	-	-	-
May	700	3.50	924	224	32.00
June	900	2.00	1125	225	25.00
July	1200	2.20	1584	384	32.00
August	3500	11.50	4410	910	26.00
September	-	-	-	-	-
October	4000	3.00	5160	1160	29.00
November	2500	3.50	3075	575	23.00
December	1000	3.00	1230	230	23.00
Average	1555	3.62	1974	419	26.97
Nasik Lal Variety					
January	1492	8.93	1884	393	26.31
February	1717	8.13	2249	532	30.99
March	1517	10.73	1920	404	26.62
April	1500	9.25	1831	331	22.03
May	1717	12.33	2292	575	33.51
June	1367	8.20	1741	374	27.35
July	1517	6.93	2036	519	34.24
August	1550	4.75	1914	364	23.48
September	1550	3.60	1958	408	26.34
October	1750	9.73	2258	508	29.05
November	1483	10.67	1770	286	19.30
December	1475	9.73	1834	359	24.33
Average	1555	8.83	1980	426	27.40
Panchganga Varieties					
January	1400	2.00	1778	378	27.00
February	-	-	-	-	-
March	-	-	-	-	-
April	-	-	-	-	-
May	-	-	-	-	-
June	-	-	-	-	-
July	-	-	-	-	-
August	-	-	-	-	-
September	1200	8.00	1608	408	34.00
October	1800	3.00	2322	522	29.00
November	1400	3.50	1630	280	20.00

December	1400	3.00	1806	406	29.00
Average	1440	3.90	1839	399	27.69
Overall (All Varieties)					
January	1260	32.13	1633	373	29.58
February	1220	28.07	1585	365	29.94
March	1195	31.98	1497	302	25.31
April	1355	23.66	1694	339	25.00
May	1268	34.50	1680	412	32.54
June	1335	27.30	1688	353	26.42
July	1510	26.78	1983	473	31.31
August	2613	36.50	3347	735	28.13
September	2510	40.93	3207	697	27.76
October	2525	37.68	3232	707	28.00
November	2290	37.57	2839	549	23.96
December	1585	34.63	1974	389	24.52
Average	1707	49.90	2167	460	26.95

Note: SP – Sale Price; PP – Purchase Price

Appendix 27: Variety-wise Retail Trade Details of Grapes: 2013-14

(Rs/qtL of Onion)

Month	Average price (Rs/qtL) at which Purchased (PP)	Average Qty Sold (QtL.) Per Retailer	Average Sale Price (Rs/qtL) (SP)	Mark - up (Rs/qtL) (SP-PP)	Percentage Mark-up [SP-PP]/PP*100
Sharad Variety					
January	3613	0.35	4797	1185	32.80
February	3725	0.40	4959	1234	33.12
March	3275	0.45	4308	1033	31.54
April	3350	0.55	4287	937	27.96
May	3500	0.20	4550	1050	30.00
June	-	-	-	-	-
July	-	-	-	-	-
August	-	-	-	-	-
September	-	-	-	-	-
October	-	-	-	-	-
November	-	-	-	-	-
December	-	-	-	-	-
Average	3514	0.40	4622	1109	31.55
Sonaka Variety					
January	5775	1.50	7394	1619	28.04
February	6111	3.37	7360	1749	28.62
March	6000	2.83	7770	1770	29.49
April	6113	2.39	8152	2040	33.37
May	5950	0.40	7903	1953	32.82
June	-	-	-	-	-
July	-	-	-	-	-
August	-	-	-	-	-
September	-	-	-	-	-
October	-	-	-	-	-
November	5975	1.40	7387	1912	32.00
December	6000	3.10	7681	1681	28.02
Average	6035	2.59	7363	1827	30.27
Thomson Variety					
January	6163	6.25	8104	1942	31.51
February	5842	2.37	7682	1841	31.51
March	5731	3.53	7598	1867	32.57
April	6300	3.83	7981	1681	26.69
May	-	-	-	-	-
June	-	-	-	-	-
July	-	-	-	-	-
August	-	-	-	-	-
September	-	-	-	-	-
October	-	-	-	-	-
November	6188	1.25	7374	1686	27.25
December	5642	4.33	7108	1467	26.00
Average	5963	3.85	7730	1767	29.63
Overall (All Varieties)					
January	5065	8.10	6540	1575	31.09
February	5646	6.14	7332	1686	29.86
March	5456	6.81	7135	1679	30.78
April	5731	6.77	7318	1787	31.19
May	5133	0.60	6785	1652	32.18
June	-	-	-	-	-
July	-	-	-	-	-
August	-	-	-	-	-
September	-	-	-	-	-
October	-	-	-	-	-
November	6117	2.65	7378	1762	28.80
December	5866	7.43	7466	1601	27.29
Average	5558	6.85	7237	1679	30.20

Note: SP – Sale Price; PP – Purchase Price

Appendix 28: Variety-wise Export Trade Details of Onion: 2013-14

(Rs/qtl of Onion)

Month	Average price (Rs/qtl) at which Purchased (PP)	Average Qty Sold (Qtl.) Per Exporter	Average Sale Price (Rs/qtl) (SP)	Mark - up (Rs/qtl) (SP-PP)	Percentage Mark-up [SP-PP]/PP*100
Bhagwa Variety					
January	-	-	-	-	-
February	-	-	-	-	-
March	-	-	-	-	-
April	-	-	-	-	-
May	-	-	-	-	-
June	-	-	-	-	-
July	-	-	-	-	-
August	-	-	-	-	-
September	-	-	-	-	-
October	4100	300.00	5945	1845	45.00
November	-	-	-	-	-
December	-	-	-	-	-
Average	4100	300.00	5945	1845	45.00
Fursungi Variety					
January	1200	150.00	1980	780	65.00
February	2100	597.50	3236	1136	54.08
March	2133	773.33	3190	1057	49.53
April	1733	316.67	2555	822	47.40
May	2233	333.33	3106	873	39.09
June	1733	233.33	2586	853	49.19
July	2167	216.67	3264	1098	50.66
August	-	-	-	-	-
September	-	-	-	-	-
October	-	-	-	-	-
November	-	-	-	-	-
December	-	-	-	-	-
Average	1980	408.00	2951	971	49.06
Gavati Variety					
January	-	-	-	-	-
February	750	1350.00	1088	338	45.00
March	817	1258.33	1220	403	49.39
April	1000	1309.00	1522	522	52.24
May	1210	1447.00	1829	619	51.19
June	1430	1320.00	2292	862	60.29
July	2060	1229.00	3087	1027	49.83
August	3283	915.00	4808	1525	46.43
September	3300	1325.00	4871	1571	47.59
October	3300	1333.33	4877	1577	47.78
November	3200	1450.00	4928	1728	54.00
December	-	-	-	-	-
Average	2045	1260.26	3060	1015	49.66
Lasalgaon Variety					
January	-	-	-	-	-
February	-	-	-	-	-
March	-	-	-	-	-
April	-	-	-	-	-
May	-	-	-	-	-
June	-	-	-	-	-
July	-	-	-	-	-
August	3700	600.00	5328	1628	44.00
September	-	-	-	-	-

October	-	-	-	-	-
November	-	-	-	-	-
December	-	-	-	-	-
Average	3700	600.00	5328	1628	44.00
Nasik Lal Variety					
January	1325	1123.33	2073	748	56.47
February	2000	872.50	3049	1049	52.46
March	1931	637.50	3044	1113	57.63
April	1875	550.00	2960	1085	57.88
May	2125	510.00	3464	1339	63.01
June	1750	440.00	2459	709	40.51
July	2100	420.00	3444	1344	64.00
August	2525	895.00	3916	1391	55.10
September	2220	447.50	3561	1341	60.39
October	2717	830.00	4234	1518	55.86
November	2084	873.75	3222	1138	54.57
December	1889	1028.57	2853	964	51.00
Average	1991	790.10	3097	1106	55.54
Panchganga Variety					
January	1100	625.00	1733	633	57.50
February	-	-	-	-	-
March	-	-	-	-	-
April	-	-	-	-	-
May	-	-	-	-	-
June	-	-	-	-	-
July	-	-	-	-	-
August	-	-	-	-	-
September	-	-	-	-	-
October	2950	650.00	4815	1865	63.22
November	-	-	-	-	-
December	1750	650.00	2668	918	52.43
Average	1933	641.67	3072	1138	58.88
Overall (All Varieties)					
January	1261	1898.33	1987	726	57.57
February	1906	2820.00	2914	1009	52.93
March	1658	2669.17	2541	883	53.28
April	1395	2175.67	2120	725	51.95
May	1700	2290.33	2539	839	49.38
June	1585	1993.33	2414	829	52.28
July	2100	1855.67	3211	1111	52.92
August	3161	2410.00	4668	1506	47.65
September	2700	1772.50	4143	1443	53.44
October	3117	3163.33	4768	1651	52.97
November	2208	2323.75	3411	1203	54.48
December	1858	1678.57	2812	953	51.30
Average	2038	4000.03	3102	1065	52.24

Note: SP – Sale Price; PP – Purchase Price

Appendix 29: Variety-wise Export Trade Details of Grapes: 2013-14

Month	Average price (Rs/qlt) at which Purchased (PP)	Average Qty Sold (Qtl.) Per Exporter	Average Sale Price (Rs/qlt) (SP)	Mark - up (Rs/qlt) (SP-PP)	(Rs/qlt of Onion)
					Percentage Mark-up [SP- PP]/PP*100
Flame Variety					
January	-	-			
February	-	-			
March	4500	25.00	13050	8550	190.00
April	-	-			
May	-	-			
June	-	-			
July	-	-			
August	-	-			
September	-	-			
October	-	-			
November	-	-			
December	-	-			
Average	4500	25.00	13050	8550	190.00
Ganesh Variety					
January	-	-			
February	3500	80.00	10675	7175	205.00
March	-	-			
April	-	-			
May	-	-			
June	-	-			
July	-	-			
August	-	-			
September	-	-			
October	-	-			
November	-	-			
December	-	-			
Average	3500	80.00	10675	7175	205.00
Jambo Variety					
January	-	-			
February	4000	50.00	11800	7800	195.00
March	6750	945.00	14000	7250	107.41
April	-	-			
May	-	-			
June	-	-			
July	-	-			
August	-	-			
September	-	-			
October	-	-			
November	-	-			
December	-	-			
Average	5833	646.67	13267	7433	127.43
Purple Variety					
January	-	-			
February	-	-			
March	6500	50.00	13975	7475	115.00
April	-	-			
May	-	-			
June	-	-			
July	-	-			
August	-	-			
September	-	-			
October	-	-			

November	-	-			
December	-	-			
Average	6500	50.00	13975	7475	115.00
Sharad Variety					
January					
February	5000	107.50	11525	6525	130.50
March	-	-			
April	-	-			
May	-	-			
June	-	-			
July	-	-			
August	-	-			
September	-	-			
October	-	-			
November	-	-			
December	-	-			
Average	5000	107.50	11525	6525	130.50
Sonaka Variety					
January	4000	15.00	12600	8600	215.00
February		-			
March	4350	40.00	13050	8700	200.00
April		-			
May		-			
June		-			
July		-			
August		-			
September		-			
October		-			
November	4200	50.00	11130	6930	165.00
December	4000	40.00	11400	7400	185.00
Average	4138	36.25	12045	7908	191.12
Thomson Variety					
January	3667	216.67	10458	6792	185.23
February	4100	395.33	11348	7748	188.96
March	4200	325.00	11625	7425	176.79
April		-			
May		-			
June		-			
July		-			
August		-			
September		-			
October		-			
November		-			
December	3500	500.00	10325	6825	195.00
Average	4007	343.13	11394	7387	184.38
Overall (All Varieties)					
January	3750	231.67	10994	7244	193.17
February	4210	632.83	11661	7451	176.98
March	4985	1385.00	12620	7635	153.16
April		-			
May		-			
June		-			
July		-			
August		-			
September		-			
October		-			
November	4200	50.00	11130	6930	165.00
December	3750	540.00	10353	7113	189.67
Average	4394	1288.55	11839	7444	169.40

Note: SP – Sale Price; PP – Purchase Price

**Appendix 30: Major Problems Faced by Sampled Farmers in Cultivation of Onion Crop – Small Cat.
(Multiple responses)**

Problem	Severity of problem			
	Low	Moderate	High	Severe
1) Lower Yield	16	56	34	7
2) Unstable yield	14	51	34	14
3) Lack of remunerative price	4	61	42	6
4) Poor road network for transportation	37	51	21	4
5) Poor refrigeration facilities/ Eradiation	25	14	7	14
6) Other infrastructure problems	30	59	19	5
7) Erratic electricity supply	1	24	58	30
8) Labour problem	5	19	48	41
9) Poor quality of underground water	1	45	59	8
10) Non-availability of good quality of seed	49	49	14	1
11) Lack of/poor extension services /lack of technical know how	33	44	17	19
12) Price fluctuations	1	19	53	40
13) Lack of MSP/government procurement	2	9	30	22
14) Lack of market information	42	47	21	3
15) Collusion among traders/trade malpractices	27	52	23	11
16) Distance market	35	65	12	1
17) Diseases	-	-	-	-
18) Insects/pests	-	-	-	-
19) Weeds	-	-	-	-
Total responses	322	665	492	226
Percentage to total farmers in the size group				
1) Lower Yield	4.97	8.42	6.91	3.10
2) Unstable yield	4.35	7.67	6.91	6.19
3) Lack of remunerative price	1.24	9.17	8.54	2.65
4) Poor road network for transportation	11.49	7.67	4.27	1.77
5) Poor refrigeration facilities/ Eradiation	7.76	2.11	1.42	6.19
6) Other infrastructure problems	9.32	8.87	3.86	2.21
7) Erratic electricity supply	0.31	3.61	11.79	13.27
8) Labour problem	1.55	2.86	9.76	18.14
9) Poor quality of underground water	0.31	6.77	11.99	3.54
10) Non-availability of good quality of seed	15.22	7.37	2.85	0.44
11) Lack of/poor extension services /lack of technical know how	10.25	6.62	3.46	8.41
12) Price fluctuations	0.31	2.86	10.77	17.70
13) Lack of MSP/government procurement	0.62	1.35	6.10	9.73
14) Lack of market information	13.04	7.07	4.27	1.33
15) Collusion among traders/trade malpractices	8.39	7.82	4.67	4.87
16) Distance market	10.87	9.77	2.44	0.44
17) Diseases	-	-	-	-
18) Insects/pests	-	-	-	-
19) Weeds	-	-	-	-
Total responses	100.00	100.00	100.00	100.00

**Appendix 30: Major Problems Faced by Sampled Farmers in Cultivation of Onion Crop – Medium
(Multiple responses)**

Problem	Severity of problem			
	Low	Moderate	High	Severe
1) Lower Yield	3	15	4	3
2) Unstable yield	3	14	6	2
3) Lack of remunerative price	1	15	8	1
4) Poor road network for transportation	11	12	2	
5) Poor refrigeration facilities/ Eradication	5	3	2	1
6) Other infrastructure problems	7	15	3	
7) Erratic electricity supply		9	9	7
8) Labour problem	1	4	7	13
9) Poor quality of underground water	1	4	18	2
10) Non-availability of good quality of seed	7	13	3	2
11) Lack of/poor extension services /lack of technical know how	9	9	3	4
12) Price fluctuations		8	8	9
13) Lack of MSP/government procurement	1		7	5
14) Lack of market information	9	11	4	1
15) Collusion among traders/trade malpractices	2	17	5	1
16) Distance market	8	14	2	1
17) Diseases	-	-	-	-
18) Insects/pests	-	-	-	-
19) Weeds	-	-	-	-
Total responses	68	163	91	52
Percentage to total farmers in the size group				
1) Lower Yield	4.41	9.20	4.40	5.77
2) Unstable yield	4.41	8.59	6.59	3.85
3) Lack of remunerative price	1.47	9.20	8.79	1.92
4) Poor road network for transportation	16.18	7.36	2.20	0.00
5) Poor refrigeration facilities/ Eradication	7.35	1.84	2.20	1.92
6) Other infrastructure problems	10.29	9.20	3.30	0.00
7) Erratic electricity supply	-	5.52	9.89	13.46
8) Labour problem	1.47	2.45	7.69	25.00
9) Poor quality of underground water	1.47	2.45	19.78	3.85
10) Non-availability of good quality of seed	10.29	7.98	3.30	3.85
11) Lack of/poor extension services /lack of technical know how	13.24	5.52	3.30	7.69
12) Price fluctuations	0.00	4.91	8.79	17.31
13) Lack of MSP/government procurement	1.47	0.00	7.69	9.62
14) Lack of market information	13.24	6.75	4.40	1.92
15) Collusion among traders/trade malpractices	2.94	10.43	5.49	1.92
16) Distance market	11.76	8.59	2.20	1.92
17) Diseases	-	-	-	-
18) Insects/pests	-	-	-	-
19) Weeds	-	-	-	-
Total responses	100.00	100.00	100.00	100.00

Appendix 30: Major Problems Faced by Sampled Farmers in Cultivation of Onion Crop – Large Cat
(Multiple responses)

Problem	Severity of problem			
	Low	Moderate	High	Severe
1) Lower Yield	1	6	4	1
2) Unstable yield		7	3	2
3) Lack of remunerative price		5	7	
4) Poor road network for transportation	5	5	1	1
5) Poor refrigeration facilities/ Eradiation	1	2		2
6) Other infrastructure problems	4	3	4	1
7) Erratic electricity supply		3	4	5
8) Labour problem		6	6	
9) Poor quality of underground water		5	5	2
10) Non-availability of good quality of seed	3	5	3	1
11) Lack of/poor extension services /lack of technical know how	2	8	2	
12) Price fluctuations		3	1	8
13) Lack of MSP/government procurement	1	1	2	2
14) Lack of market information	3	6	3	
15) Collusion among traders/trade malpractices	1	5	3	3
16) Distance market		6	5	1
17) Diseases	-	-	-	-
18) Insects/pests	-	-	-	-
19) Weeds	-	-	-	-
Total responses	21	76	53	29
Percentage to total farmers in the size group				
1) Lower Yield	4.76	7.89	7.55	3.45
2) Unstable yield	0.00	9.21	5.66	6.90
3) Lack of remunerative price	0.00	6.58	13.21	0.00
4) Poor road network for transportation	23.81	6.58	1.89	3.45
5) Poor refrigeration facilities/ Eradiation	4.76	2.63	0.00	6.90
6) Other infrastructure problems	19.05	3.95	7.55	3.45
7) Erratic electricity supply	0.00	3.95	7.55	17.24
8) Labour problem	0.00	7.89	11.32	0.00
9) Poor quality of underground water	0.00	6.58	9.43	6.90
10) Non-availability of good quality of seed	14.29	6.58	5.66	3.45
11) Lack of/poor extension services /lack of technical know how	9.52	10.53	3.77	0.00
12) Price fluctuations	0.00	3.95	1.89	27.59
13) Lack of MSP/government procurement	4.76	1.32	3.77	6.90
14) Lack of market information	14.29	7.89	5.66	0.00
15) Collusion among traders/trade malpractices	4.76	6.58	5.66	10.34
16) Distance market	0.00	7.89	9.43	3.45
17) Diseases	-	-	-	-
18) Insects/pests	-	-	-	-
19) Weeds	-	-	-	-
Total responses	100.00	100.00	100.00	100.00

**Appendix 31: Major Problems Faced by Sampled Farmers in Cultivation of Grape Crop – Small Cat
(Multiple responses)**

Problem	Severity of problem			
	Low	Moderate	High	Severe
1) Lower Yield	35	64	21	1
2) Unstable yield	28	61	28	4
3) Lack of remunerative price	11	82	20	8
4) Poor road network for transportation	64	44	10	3
5) Poor refrigeration facilities/ Eradiation	54	47	6	14
6) Other infrastructure problems	59	45	13	4
7) Erratic electricity supply	3	46	51	21
8) Labour problem	5	43	47	26
9) Poor quality of underground water	17	56	38	10
10) Non-availability of good quality of seed	89	29		3
11) Lack of/poor extension services /lack of technical know how	56	36	8	21
12) Price fluctuations	2	62	51	6
13) Lack of MSP/government procurement	18	38	29	36
14) Lack of market information	73	42	6	
15) Collusion among traders/trade malpractices	34	69	16	2
16) Distance market	-	-	-	-
17) Diseases*	66	49	5	1
18) Insects/pests	-	-	-	-
19) Weeds	-	-	-	-
Total responses	614	813	349	160
Percentage to total farmers in the size group				
1) Lower Yield	5.70	7.87	6.02	0.63
2) Unstable yield	4.56	7.50	8.02	2.50
3) Lack of remunerative price	1.79	10.09	5.73	5.00
4) Poor road network for transportation	10.42	5.41	2.87	1.88
5) Poor refrigeration facilities/ Eradiation	8.79	5.78	1.72	8.75
6) Other infrastructure problems	9.61	5.54	3.72	2.50
7) Erratic electricity supply	0.49	5.66	14.61	13.13
8) Labour problem	0.81	5.29	13.47	16.25
9) Poor quality of underground water	2.77	6.89	10.89	6.25
10) Non-availability of good quality of seed	14.50	3.57	0.00	1.88
11) Lack of/poor extension services /lack of technical know how	9.12	4.43	2.29	13.13
12) Price fluctuations	0.33	7.63	14.61	3.75
13) Lack of MSP/government procurement	2.93	4.67	8.31	22.50
14) Lack of market information	11.89	5.17	1.72	0.00
15) Collusion among traders/trade malpractices	5.54	8.49	4.58	1.25
16) Distance market	-	-	-	-
17) Diseases*	10.75	6.03	1.43	0.63
18) Insects/pests	-	-	-	-
19) Weeds	-	-	-	-
Total responses	100.00	100.00	100.00	100.00

Note: * - Shortage of insecticides and pesticides in the market to control diseases affecting grape crop during the period of cultivation

**Appendix 31: Major Problems Faced by Sampled Farmers in Cultivation of Grape Crop – Medium
(Multiple responses)**

Problem	Severity of problem			
	Low	Moderate	High	Severe
1) Lower Yield	5	14	4	-
2) Unstable yield	4	14	5	-
3) Lack of remunerative price	-	17	6	-
4) Poor road network for transportation	10	8	4	1
5) Poor refrigeration facilities/ Eradiation	6	5	7	5
6) Other infrastructure problems	8	7	4	4
7) Erratic electricity supply	-	8	10	5
8) Labour problem	1	8	8	6
9) Poor quality of underground water	4	10	9	-
10) Non-availability of good quality of seed	16	7	-	-
11) Lack of/poor extension services /lack of technical know how	3	8	5	7
12) Price fluctuations	3	8	8	4
13) Lack of MSP/government procurement	5	5	10	3
14) Lack of market information	16	6	1	-
15) Collusion among traders/trade malpractices	8	12	3	-
16) Distance market	-	-	-	-
17) Diseases *	14	8	1	-
18) Insects/pests	-	-	-	-
19) Weeds	-	-	-	-
Total responses	103	145	85	35
Percentage to total farmers in the size group				
1) Lower Yield	4.35	9.66	4.71	-
2) Unstable yield	3.88	9.66	5.88	-
3) Lack of remunerative price	-	11.72	7.06	-
4) Poor road network for transportation	9.71	5.52	4.71	2.86
5) Poor refrigeration facilities/ Eradiation	5.83	3.45	8.24	14.29
6) Other infrastructure problems	7.77	4.83	4.71	11.43
7) Erratic electricity supply	-	5.52	11.76	14.29
8) Labour problem	0.97	5.52	9.41	17.14
9) Poor quality of underground water	3.88	6.90	10.59	-
10) Non-availability of good quality of seed	15.53	4.83	0.00	-
11) Lack of/poor extension services /lack of technical know how	2.91	5.52	5.88	20.00
12) Price fluctuations	2.91	5.52	9.41	11.43
13) Lack of MSP/government procurement	4.85	3.45	11.76	8.57
14) Lack of market information	15.53	4.14	1.18	-
15) Collusion among traders/trade malpractices	7.77	8.28	3.53	-
16) Distance market	-	-	-	-
17) Diseases *	13.59	5.52	1.18	-
18) Insects/pests	-	-	-	-
19) Weeds	-	-	-	-
Total responses	100.00	100.00	100.00	100.00

Note: * - Shortage of insecticides and pesticides in the market to control diseases affecting grape crop during the period of cultivation

**Appendix 31: Major Problems Faced by Sampled Farmers in Cultivation of Grape Crop – Large Cat
(Multiple responses)**

Problem	Severity of problem			
	Low	Moderate	High	Severe
1) Lower Yield	1	5	-	-
2) Unstable yield	-	4	2	-
3) Lack of remunerative price	-	3	3	-
4) Poor road network for transportation	3		1	2
5) Poor refrigeration facilities/ Eradiation	2	1	1	2
6) Other infrastructure problems	4	2	-	-
7) Erratic electricity supply	-	3	2	1
8) Labour problem	-	5		1
9) Poor quality of underground water	-	4	2	-
10) Non-availability of good quality of seed	3	3		-
11) Lack of/poor extension services /lack of technical know how		3	3	-
12) Price fluctuations	-	3	2	1
13) Lack of MSP/government procurement	1	2	1	2
14) Lack of market information	3	3	-	-
15) Collusion among traders/trade malpractices	2	4	-	-
16) Distance market	-	-	-	-
17) Diseases*	5	1	-	-
18) Insects/pests	-	-	-	-
19) Weeds	-	-	-	-
Total responses	24	46	17	9
Percentage to total farmers in the size group				
1) Lower Yield	4.17	10.87	-	-
2) Unstable yield	-	8.70	11.76	-
3) Lack of remunerative price	-	6.52	17.65	-
4) Poor road network for transportation	12.50	0.00	5.88	22.22
5) Poor refrigeration facilities/ Eradiation	8.33	2.17	5.88	22.22
6) Other infrastructure problems	16.67	4.35	-	-
7) Erratic electricity supply	-	6.52	-	11.11
8) Labour problem	-	10.87	-	11.11
9) Poor quality of underground water	-	8.70	-	-
10) Non-availability of good quality of seed	12.50	6.52	-	-
11) Lack of/poor extension services /lack of technical know how	0.00	6.52	17.65	-
12) Price fluctuations	0.00	6.52	11.76	11.11
13) Lack of MSP/government procurement	4.17	4.35	5.88	22.22
14) Lack of market information	12.50	6.52	-	0.00
15) Collusion among traders/trade malpractices	8.33	8.70	-	0.00
16) Distance market	-	-	-	-
17) Diseases*	20.83	2.17	-	-
18) Insects/pests	-	-	-	-
19) Weeds	-	-	-	-
Total responses	100.00	100.00	100.00	100.00

Note: * - Shortage of insecticides and pesticides in the market to control diseases affecting grape crop during the period of cultivation

**ANNEXURE I: COMMENTS ON DRAFT REPORT BY DESIGNATED AERC
UNIT, INSTITUTE OF ECONOMIC GROWTH, NEW DELHI**

**TITLE OF THE STUDY REPORT: RELATIONSHIP BETWEEN WHOLESALE PRICES,
RETAIL PRICES, EXPORT PRICES (FOB), PRICE
REALIZED BY FARMERS AND DETAILS OF
CONTRIBUTING FACTORS FOR THE PRICE
DIFFERENCE FOR ONION AND GRAPES FOR
MAHARASHTRA**

AUTHOR: DEEPAK SHAH

**ORGANISATION: AGRO-ECONOMIC RESEARCH CENTRE, GOKHALE INSTITUTE OF
POLITICS AND ECONOMICS, PUNE**

DATE OF RECEIPT OF DRAFT REPORT FOR COMMENTS: 06-10-2015

DATE OF RECEIPT OF COMMENTS BY THE DESIGNATED CENTRE: 22-12-2015

Comments by AERU, IEG, Delhi

This is a very well-written report. The author and the study team deserve to be complimented on a very good report. They may consider publication at a later stage. At the stage of submitting the final report, please submit tables in excel format and raw data in excel format. These are essential for the consolidated report.

The main comments/suggestions on the draft report are as follows.

1. Page No. 25, Table 2.6 - Caste composition of Grape growing farmers - the total in the last column is not matching with sample size, second column. Please check and correct as it is likely to affect almost all the calculations in which sample size is involved. Also correct the % distribution in Table 2.6 (a).
2. Page No, 30, second paragraph, 5th line from above, this should be Table 2.9 (a), not as Table 2.9 (b). Please correct.
3. Table 3.1.1 to Table 3.1.9, season-wise and variety wise area, production, consumption etc. details for study crops area reported in 'per farm' terms. It is also needed in actual terms. This is needed for the sake of combining tables from different AERC reports at the stage of preparing the consolidated report. Similarly Table 3.2.1 to Table 3.2.9 may also be reported in Rs (presently it is in Rs/Ha). This is also important because the number of sample households is not given variety-wise and by season. For example, in Table 2.13 area under Nashik Lal variety for kharif season for small farmer group is reported as 17.57 Hectare. The number of households for small farmers is 113. So the per farm area will be about 0.155 Ha/farm if we divide by 113. But reported figure is 0.63 in Table no. 3.1.1. This shows that not all small farmer households are growing Nashik-lal variety in Kharif season. Similarly for production, consumption and other figures in economics of cultivation tables. Therefore, it is important to give the absolute numbers alongwith standardized ones such as per farm, per ha etc. Similarly figures for percentages (which are presently given in parentheses below the absolute figure) needs to be provided in separate table.

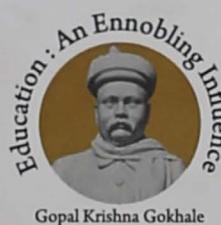
4. In this context kindly note that tabulation format provided mentions that the input costs and storage costs, reported in the schedule in ‘per-hectare’ and ‘per-quintal’ terms, should be multiplied with area and production figures, respectively to derive the total costs.
5. Although, variety-wise area under study crop – onion is reported for kharif and rabi seasons in Table 2.13 & Table 2.14, respectively, but variety-wise area for the combined season and its % distribution is not reported. It is desired for uniformity purpose among the various study reports.
6. Table 4.2.1(a) & (b) to Table 4.2.9 (a) & (b) and Table 4.3.1 to Table 4.3.3 – Please give the percentages in the parentheses as a separate table.
7. There are few typing errors such as in Tables 3.24 and 3.2.5 (it should be ‘rabi’ instead of ‘kharif’). Please check and correct the typos before final submission.

**ANNEXURE II: ACTION TAKEN BY THE AUTHOR ON THE COMMENTS OF
THE DESIGNATED CENTRE FOR THE STUDY ENTITLED**

**"RELATIONSHIP BETWEEN WHOLESALE PRICES, RETAIL PRICES,
EXPORT PRICES (FOB), PRICE REALIZED BY FARMERS AND
DETAILS OF CONTRIBUTING FACTORS FOR THE PRICE
DIFFERENCE FOR ONION AND GRAPES
FOR MAHARASHTRA"**

The author is thankful to the reviewer for the keen interest taken and the suggestions made by him on the report. The comments have been taken care of at length and replies to these comments are given as follows:

1. Corrections have been incorporated in Table 2.6 and Table 2.6 (a) and text has been revised accordingly.
2. Correction has been incorporated at appropriate place.
3. Necessary modifications have been made in Table 3.1.1 to Table 3.1.9, and computations in 'Actual' terms are also incorporated. Similarly, necessary modifications have been made in Table 3.2.1 to Table 3.2.9, and figures are also reported in 'Rupees' terms. Figures in parentheses are now reported as separate tables and incorporated at appropriate places.
4. Necessary modifications have been incorporated at the appropriate places.
5. Variety-wise area under kharif and rabi season for onion crop has been combined, and the combined table is given in page 36 of revised report.
6. The figures in parenthesis are now given as separate tables for Table 4.2.1 (a) and (b) to Table 4.2.9 (a) and (b), and Table 4.3.1 to Table 4.3.3, and incorporated at appropriate places of the report.
7. Corrections have been incorporated as suggested.



Gopal Krishna Gokhale

Gokhale Institute of Politics and Economics

(Deemed to be University)
Pune - 411 004

846, Shivajinagar, BMCC Road, Deccan Gymkhana, Pune 411 004.

Ph. No. : 020-25650287, 25675008, 25654288, 25654289, 25661369

Fax : 020-25652579

Website : www.gipe.ac.in