

**PRODUCTION AND MARKETING OF POTATO IN KHED  
TALUKA, PUNE DISTRICT, MAHARASHTRA STATE  
( A REVIEW OF THE LITERATURE )**

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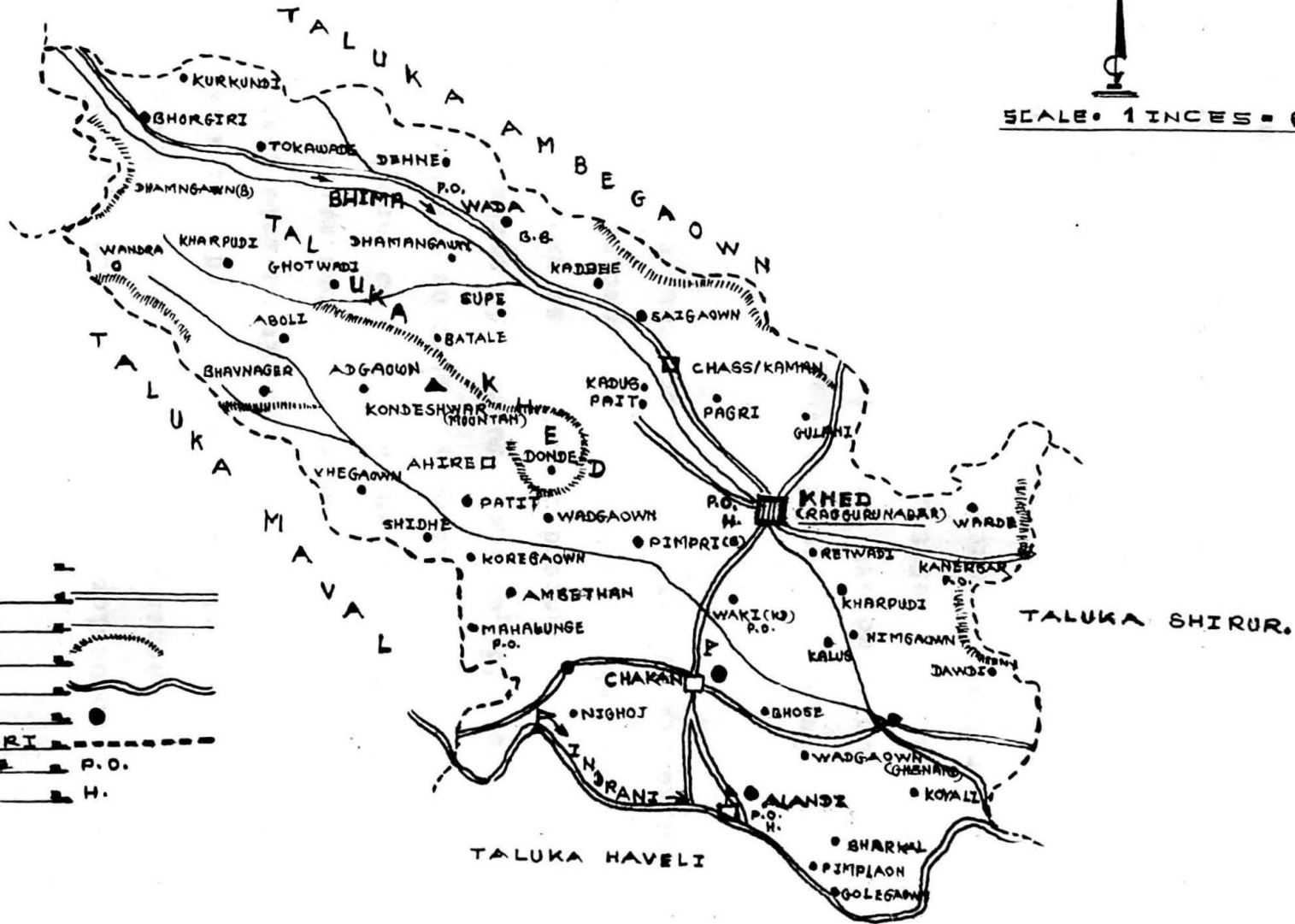


# MAP OF THE TALUKA KHED [RAJGURUNAGAR]

DIST. POONA.



SCALE: 1 INCHES = 6 MILES.



**NOTE:-**

- 13 MAIN ROAD
- 27 ROAD
- 37 MOUNTAIN
- 47 RIVER
- 57 VILLAGE
- 67 TALUKA BONDRI
- 77 P.O. OFFICE
- 87 HOSPITAL

## CHAPTER I

### INTRODUCTION

Production of any farm commodity is complete only when it reaches the ultimate consumer. The marketing process, therefore, has been regarded as a part and parcel of the production activity. It is said that the Indian farmer is a good producer but a bad marketeer. He does not know how to market and when to market his produce. As a result of this many a time he suffers from inadequate returns. The ultimate success in marketing of any commodity largely depend upon the ease and efficiency with which it is marketed. This assumes special significance in the marketing of agricultural products and particularly potato.

In specialized farming, the producers who are in a position to adjust their production to the demand, get the maximum benefit of market. If they are unable to adjust their production to the demand, there can be no appreciable improvement in their condition even if the output is better in quality and larger in quantity. Potato is one of the important commercial crops grown in the State of Maharashtra. In Maharashtra State, the crop is mainly grown in Khed, Ambegaon and Junnar talukas of Pune District, adjacent areas of Ahmednagar and Nashik

Districts and in Khatav, Koregaon, Wai Talukas of Satara District. A modest attempt has been made in the present dissertation, to study the problem of production of potato in the State of Maharashtra, Pune District and Khed Taluka during 1975-76 to 1987-88. An attempt has also been made to study potato marketing in Khed Taluka. Here we have reviewed marketing of potato in India and Maharashtra; and working of Agricultural Produce Market Committee at Khed.

### 1.1 Objectives of the Study

Not many studies are available about the agricultural marketing and specially in regard to potato marketing. There seems to be no attempt to make research inquiry. The present study, therefore, makes a modest beginning by inquiring into several aspects of Khed Agricultural Produce Market, the biggest potato marketing centre in Pune District.

This study was undertaken with the following objectives.

(i) To review the general situation regarding production and marketing of potato in India and Maharashtra.

(ii) To study the area and production of potato in Khed Taluka.

(iii) To study the working of Agricultural Produce Market Yard (Committee) at Khed.

(iv) To study the economics of marketing of potato at Khed.

(v) To study the trends in market arrivals and prices of potato and the relationship between the two.

## 1.2 Methodology and Collection of Data

The present study is based on primary and secondary sources of data. To collect the primary data, potato growers and middlemen engaged in potato trade were interviewed and relevant information was collected on the basis of pretested questionnaires.

Secondary data and information were collected from the Agricultural Office, Shivajinagar, Pune, Directorate of Agricultural Marketing, Maharashtra State, Pune and Agricultural Produce Market Committee, Khed. Some information is also obtained from Khed Taluka Tahsil Office and Panchayat Samiti Office. Information is also collected from the commission agents and traders. Area and production data were obtained from Agricultural Statistical Department, Pune. The arrivals and price data were available at Khed. Also referred to are various books, articles, reports, etc.

## 1.3 Scope of the Study

In all, this study consists of six chapters. The present introductory chapter is followed by Chapter II, dealing

with some basic concepts in agricultural marketing. Broadly, it covers aspects like significance of market, marketable and marketed surplus, cost of marketing, price spread, marketing margins, efficiency and channels of distribution. In Chapter III, we have made an attempt to review some of the important studies on production and marketing of potato in India and Maharashtra. In order to provide the necessary background, several aspects of agro-climatic feature, infrastructure, cultivation and production of potato in Khed Taluka, are broadly mentioned in Chapter IV. The Chapter V brings into focus the main aspects of marketing of potato in Khed Taluka. Included within its purview are the relevant information on regulated market facilities, general patterns of potato trading and supportive market functionaries and market arrivals, prices and seasonality affecting potato marketing. Finally, the Chapter VI concludes the study by summing up the highlights of the preceding chapters along with main conclusions and suggestions.

#### 1.4 Historical Background

The potato (*Solanum tubersum*) is believed to be a native of Peru (South America). It was introduced into the United States of America in the latter half of the sixteenth century and was brought to India at a much later date. Originally it seems to have come to India through Cape of Good Hope. A century and a half ago it was comparatively

unknown in India but today it is common and is considered to be an important cash crop in certain areas where it is grown on a fairly large scale.<sup>1</sup>

### 1.5 Importance of Potato

The potato crop occupies an important place in the world agriculture. It is an important crop both as a general food and as a vegetable. In terms of energy value, one hectare of potato provides nearly twice the number of calories produced by one hectare of rice or wheat and three times that of cabbage. With respect to nutritive value, potato compares well with most of the important vegetables. It is a rich source of carbohydrates (22.1 per cent) proteins (1.6 per cent), nicotinic acid (1.2 mg. per 100 g.) and vitamins, particularly Vitamin B (100 mg. per 100 g.).

Potato dominates the vegetables throughout the year as an all-weather vegetable. It is extensively used in preparing fried food of good taste. Apart from human consumption, it is often used as a cattle feed in some countries. In Poland, West Germany and the Netherlands 60, 44 and 20 per cent respectively of the potato crop is used for feeding the livestock. Potato is also used in producing starch, dextrin, glucose, etc., and thus is important for some agro-industries. In Netherlands, about 48 per cent of the produce is put to industrial uses.<sup>2</sup> Thus, potato is a commercially important crop throughout the world.

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## CHAPTER II

### SOME BASIC CONCEPTS IN MARKETING

This chapter deals with meaning and definition of marketing, importance of marketing, concepts of price spread, cost of marketing, marketing efficiency and channels of distribution of potatoes.

#### 2.1 Meaning of Market

Originally a market was a public place in a town where provisions and other objects were exposed for sale but the word has been generalized so as to mean anybody or persons who are in intimate business relations and carry on extensive transactions in any commodity. A great city may contain as many markets as their locations, the central point of market is a public exchange place where the traders agree to meet and transact business.

Depending on the way it is used, the term market has several meanings. According to American Marketing Association the term market has the following meanings.

1. The place or area in which buyers and sellers function.
2. The aggregate of forces or conditions within which buyers and sellers make decisions that result in the transfer of goods and services.



3. The aggregate demand of the potential buyers of a commodity or service.<sup>1</sup>

## 2.2 Definition of Marketing

"Marketing is the performance of business activities that direct the flow of goods and services from producer to consumer."<sup>2</sup> "Marketing is a total system of interacting business activities designed to play, price, promote and distribute want satisfying products and services to present and potential customers".<sup>3</sup> "Marketing is the process of discovering and translating consumer needs and wants into product and service specifications, creating demand for these products and services and they in turn expanding this demand."<sup>4</sup>

These definitions are inadequate as they do not emphasize after-sales service, that is to say customer-satisfaction.

"Marketing is the analysis, planning, implementation and control of programmes designed to bring about desired exchanges with target audiences for the purpose of personal and mutual gain. It relies heavily on the adaptation and coordination of product, price, promotion and place for achieving effective response".<sup>5</sup>

This definition covers a good deal of marketing functions.

### 2.3 Modern Concept of Marketing

"The marketing concept is a philosophy, an attitude, or a course of business thinking, while marketing is a process or a course of business action. Naturally the way of thinking determines the course of action."<sup>6</sup>

In its fullest sense, the marketing concept is a philosophy of business which states that the customers want satisfaction, is the economic and social justification of a company's existence.<sup>7</sup>

Marketing is a fundamental philosophy. In marketing the fundamental thing is the recognition and acceptance of a customer-oriented way of doing business. Under marketing the customer becomes the fulcrum, the first point about which the business moves in operating for the balanced best interests of all concerned.<sup>8</sup>

### 2.4 Significance of Agricultural Marketing

The product actually marketed depends upon the marketable surplus, immediate need for cash price trends, availability of storage facilities, etc. The marketable surplus in its turn, depends upon the production on the one hand and the growers, household and farm requirements on the other. Unlike in the case of manufacturing products the entire production of different agricultural commodities

does not go to the market.

Thus, while marketable surplus is the residual left with the producer after meeting his requirement for family consumption, farm needs and payment in kind to labour, the landlord, artisans and others, marketed surplus is the quantity of produce actually sold irrespective of the requirements for the grower.<sup>9</sup> The grower's marketed surplus can be either more or less or the same as his marketable surplus. It is more when the grower retains less of the produce than is required by his family and his farm under the pressure of immediate cash needs. He may subsequently repurchase the produce to satisfy his needs. The marketed surplus will be less than the marketable surplus when a grower holds some of his surplus produce on the farm or consumes more than normal amounts of it in substitution for other commodities. It is worth noting that marketed surplus of small subsistence farmers increases with a price fall because more quantity has to be sold to meet the minimum cash needs.<sup>10</sup>

Thus, the two basic elements of an agricultural system, are production and marketing. And marketing of agricultural produce is as important as the production itself.<sup>11</sup> As a link between producers and consumers, marketing plays a very important role not only in stimulating production and consumption but also increasing the pace of economic

development. "It's dynamic functions are thus of primary importance in promoting economic activities and for this reason, it has been described as the most important multiplier of agricultural development."<sup>12</sup><sup>12</sup>

The problem of marketing of agricultural produce has assumed added significance, particularly after the advent of modernization of agriculture. The call to "Produce More" without providing an efficient marketing machinery which could assure a fair return to the producer-seller carries no conviction with the farmer.<sup>13</sup> According to the marketing committee of the United Nations conference of Food and Agriculture, held in October, 1945, at Quebec "Marketing is the crux of the whole food and agricultural problems. It would be useless to increase the output of food and would be equally futile to set up optimum standards of nutrition unless means could be found to move food from the producer to consumer at a price which is remunerative to the producer and is within the consumer's ability to pay."<sup>14</sup>

The success of any agricultural development programme rests ultimately on the efficiency of the marketing system.<sup>15</sup> The welfare of the agricultural producer is influenced by the conditions prevalent in the marketing sector. The marketing sector in fact plays an active role under certain circumstances by changing the demand and cost functions in agriculture in such a way as to encourage its expansion.<sup>16</sup>

According to the National Commission on Agriculture "agricultural marketing is a process which starts with a decision to produce a saleable farm commodity and it involves all aspects of market structure or system both functional and institutional based on technical and academic consideration and includes post-harvest operations like assembling, grading storage, transportation and distribution".<sup>17</sup>

The experience of advanced countries also has shown that economic progress and market development are interdependent.

The advanced countries took advantages of continuously improving technology in agriculture, production and marketing along with the accompanying services of transportation, storage and packing to facilitate handling and distribution of agricultural commodities for promotion of economic progress.<sup>18</sup>

The study of marketing is important to both the individual and to society. To the individual, understanding of marketing is important primarily because of the economic gains that understanding can bring. To society, benefits accruing to a better informed public include costs, more output per dollar of expenditure or, a better quality product.<sup>19</sup>

## 2.5 Marketable Surplus and Marketed Surplus

Marketable surplus represents the theoretical part of the produce for disposal left with the producer after allowing for his genuine requirements of family consumption, payment of wages in kind, feed, seed and wastage. Marketed surplus, on the other hand, represents only that portion of the marketable surplus which is actually marketed and is placed at the disposal of the non-farm rural and urban population. In the case of commercial agriculture the farmer, as he is motivated by profit considerations, takes his whole produce to the market and purchases his requirements from the market. But in subsistence agriculture, the farmer generally produces for his own subsistence and it is only the remainder left after meeting his own requirements, which is taken to market for sale. To the extent that the farmer's retention is a matter of subjective guess, the concept of "marketable surplus" is subjective. "Marketed surplus", on the other hand, refers to the actual quantity which enters the market and as such it is objective.

In most cases, marketed surplus may be less than marketable surplus because farmers may not be ready to sell the whole of his marketable surplus. He may hoard a part of it in anticipation of rising prices or for some other reasons. In certain cases, marketed surplus may be greater than marketable surplus. This happens when farmers are driven to

distress sales. There may be a subsistence farmer who has produced just to meet his family consumption requirement; but he may take some portion of his produce to the market to meet his immediate cash obligations. In such a case the marketed surplus released by the farmer will not be a real one.<sup>20</sup>

## 2.6 Meaning of "Cost of Marketing"

The difference between the price received by the grower of a commodity and the price paid for it by the final consumer roughly measures the cost and profits of marketing that commodity. Since net profits constitute such a small part of this spread or differential, and since a certain amount of net profit is necessary to induce middlemen to stay in business, it is at least approximately correct to refer to this spread as the cost of marketing.

In reality, marketing costs begin when the commodities leave the farm, or in the case of some products, when they are packed or prepared for marketing on the farm. But these first costs are usually impossible to measure accurately and the price paid to the farmer at his local shopping point furnishes a definite and convenient starting point for the purpose of considering the factors affecting the cost of marketing. In general, marketing costs include handlings at local points; transportation, handling by the various classes of wholesalers, including, in many instances, repacking,



storage, drriage and delivery to retailers, and handling through retail stores including delivery to consumers. Financing, credit and collection selling and buying costs are also involved.<sup>21</sup>

Marketing costs are the actual expenses required in bringing goods and services from the producer to the consumer. Accordingly, costs in case of field crop begin when they leave the farm or when they are prepared for marketing on the farm and end at a point where they are finally purchased by the consumers.

The difference between the final price paid by the consumer for a commodity or a product and the price received by grower of crops or a primary producer may be taken roughly to represent the costs and profits of marketing of that commodity. These costs are paid for by producers, marketing agencies and consumers.<sup>22</sup>

## 2.7 Concept of Price Spread

Price spreads are a direct outcome of the existence of different stages in the marketing system, each step necessarily entailing a different price level in the marketing of the same product or commodity. Thus, as long as different stages in the marketing channels exist, the existence of price spread is imperative, whether the marketing system is efficient or otherwise.



The term "Price spread" has been variously defined and understood according to its usage. Commonly, the term means the difference between the two prices, i.e. as paid by the consumer and the one received by the producer. The study of price spread involves not only the ascertainment of actual prices at various stages of marketing channel, but also the costs incurred in the process of movement of the produce from the farm to consumer and the margins of various intermediaries.

The definition of price spread has an element of vagueness in so far as the final consumer is concerned. The problem of such a definition is not very difficult in the case of perishable commodities like fruits and vegetables which are consumed directly in our country. The difficulties arise in the case of commodities like rice, oilseeds, cotton, etc., which have to undergo processing and preparation for the market before they are ultimately consumed. In such commodities it has to be decided as to who should be the consumer for the purpose of the study and whether a study should be limited between the producer and the first processor or between the producer and the ultimate consumer of the final product. In the case of processed products, the by-products for which the consumers differ and which pass through altogether different channels before they reach the consumers further complicate the problem.

Even in the agriculturally advanced countries like

U.S.A. and Canada, where the Government agencies have calculated the price spread from the producer to the final consumer of the product, this has been a controversial issue. In fact, the U.S. Department of Agriculture has defined 'Marketing' thus "Marketing is getting the product to the consumer. And it is the product too. The bread from the wheat, the cloth from the cotton. ... etc."<sup>23</sup>

## 2.8 Marketing Margins and Producer's Share

There is firmly implanted in the public mind a belief that marketing costs too much. There is and indeed there must be a margin between what the producer receives for a product and what the consumer pays for it. Costs of processing, distributing, and selling must, beyond question, be provided for. But since the public has so little knowledge of what these services include there has grown up the feeling that much of the cost is unnecessary.

The marketing and processing margin is the difference between the price per unit that the consumer pays and the price received by the farmer. The size of magnitude of this margin varies with the nature of the product. For example, average dressed yield for cattle is 53.2 per cent of the weighten food for hogs; and for sheep, 47.3 per cent. Clearly the farmer must sell 1.88 pounds of live weight for the packer to produce one pound of beef, but only 1.37 pounds for hogs.<sup>24</sup>

The study of marketing margin of agricultural products is very important to ascertain the producer's share in the consumer's rupee and also to know the margins of various functionaries involved in the marketing process.

It also helps us to know the different components of marketing margins and their influence on the final price which the consumer pays. Such a study for different commodities at different times helps us to know the variations in marketing margins. This is essential for the formulation of an appropriate price policy for agricultural commodities. Marketing margin studies also assume importance because they have to help ensure reasonable returns to the producers and also make available the commodities to consumers at reasonable price. Both from the point of producer and consumer, such studies should help to identify the areas where the market charges can be minimized. It is very difficult to measure exactly the cost of marketing. Many official and non-official studies made in many countries have confirmed the contention that distribution costs are relatively higher in agriculture.

It is often said that the farmer's share in the consumer's rupee is relatively small as compared to that of several intermediaries in the market channel. The merchants are said to absorb an alarmingly large share of this price. Even in England, where agriculture has been fully commercialised and the farmer does not lack business capacity, the

spread between producer's and consumers prices, according to the Linlithgow committee, is unjustifiably wide. Taken as a whole, distributive costs are a far heavier burden than society will permanently consent to bear."

In United States, the farmer gets only half the price paid by the consumer for food stuffs and in Germany about two-fifths. In U.S.A., according to a study conducted by U.S.D.A., over the period of about fifty years (1915-1964) farmers have received an average of 42 per cent of the consumer's food dollar, while the marketing agencies have received 57 per cent of the food dollar.<sup>25</sup>

Details of marketing costs and margins in India for a few selected commodities are presented below as indicators of marketing efficiency and to illustrate the policy implications arising from it.

Marketing costs and margins would vary depending upon the nature of the commodity, services rendered, the type of marketing channel, the structure of the market and the level of its infrastructure development. It has been observed that the farmer's share of the consumers' price was the highest (76.78 per cent) for wheat and lowest for fruits (33.98 per cent), it was 53 per cent for rice, 38 per cent for vegetables and 74 per cent for eggs. Further, a break up of the marketing costs and margins indicates that careful analysis

of the dealer's margin is necessary for reduction of marketing costs and margins as it accounts for nearly 31 per cent of consumer's price in the private marketing channel.<sup>26</sup>

## 2.9 Marketing Efficiency

Efficient marketing as defined by Kohls means "Minimum input of various economic resources which will result in the satisfaction in goods and services which the consumer desires. Anything which reduces the costs of marketing while maintaining or increasing the desired levels of consumer satisfaction would then meet the requirements of increasing marketing efficiency. On the other hand, increased costs because of the adding of new and more costly services, if they are demanded by consumers may also represent increased efficiency." Kohls further sub-divides marketing efficiency into two different categories : (i) technological efficiency and (ii) economic efficiency. According to him, "Economic efficiency is concerned with maintaining the competitive aspects of marketing. The best measure of satisfaction output is probably what the consumer will pay in the market place."

Mr. Clark has defined efficiency as having the following three components.

1. Effectiveness with which the marketing service is being performed.
2. The cost of which this service is performed.
3. Effect of this cost and the methods of performing the services on production and consumption.<sup>27</sup>

## 2.10 Channels of Distribution of Potatoes

Normally the agencies engaged in distribution of potatoes are :

- i) Producers
- ii) Village Merchants
- iii) Commission Agents
- iv) Wholesale Merchants
- v) Retailers.

(i) Producers : Except for some occasional sales by agriculturists to consumers in the weekly bazars, the producer and the consumer normally do not have direct negotiations for sale and purchase of potatoes.

(ii) Village Merchants : The village merchants including local well-to-do agriculturists, normally operate in some villages and make purchases, either directly from the producers in villages on any day during marketing season, or in the local weekly markets. The produce so purchased by them is generally sold in the assembling markets through local Adatyas consigned to commission agents in the consuming markets.

(iii) Commission Agents : At present the commission agent is the most important agency for distribution of potatoes, some of them also make advances to agriculturists on condition that the produce shall be sold through them only. They also employ agents who induce the villagers to sell their goods through their firms. Some of the commission agents also act as wholesale buyers and supply potatoes on order to merchants in other markets. The commission agents may also arrange and pay in the first instance, for transport, hamali, oct4oi, weighment charges, etc.

on behalf of the seller. They are, therefore, more popular among the producers and a major portion of the produce in the consuming markets is sold through them.

The transactions through commission agents at a place like Bombay which is one of the biggest consuming markets have certain defects such as sales under cover of cloth, granting of "Vatav" or rebate to buyers and unnecessary deductions for charity and "Kadta" which are not liked by the sellers. Such practices have become more pronounced of late.

(iv) Wholesale Merchants : There are two classes of wholesale merchants, viz., (a) those who restrict their buying and selling operations to the same market, and (b) those who buy in one market and sell in another market. Sometimes they act as commission agents to buyers from distant markets.

(v) Retailers : Retailers form the last but the most important link in the distribution of potatoes from the growers to the consumers. They consist of stall-holders, hawkers, provision merchants, etc.<sup>28</sup>



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## CHAPTER III

### REVIEW OF THE LITERATURE

This chapter takes a review of some of the studies of production and marketing of potato in India and Maharashtra.

#### 3.1 Situation in India

The potato is one of the most important vegetable crops grown in India. Its production has many advantages over that of other crops. It produces more calories than wheat, rice or cabbage per unit area. It provides better nutrition, and many industrial products can be manufactured from it, thus providing the country with an industrial base. Its cultivation creates more employment and has a potential for good returns during a year of a normal production and marketing.<sup>1</sup>

The distribution of area and production of potato in the major producing countries during the triennium 1976-77 to 1978-79 is given in Table 3.1. USSR is the foremost potato producing country, with 38 per cent of the total world area under potato and contributing 32 per cent of the world's production. Poland comes next with a share of 17 per cent in world's production. India has 3.5 per cent of the total world area under potato and its production is just 2.8 per cent of the world total. Much smaller countries like France,

**Table 3.1 : Area, production and yield of potato in major producing countries of the world (Average for 1976, 1977 and 1978)**

Countries	Area (000 ha.)	Percentage to world	Production (000 tonnes)	Percentage to world total	Yield per hectare (in tonnes)
Czechoslovakia	231.00	1.26	3937.00	1.48	170.33
France	282.67	1.54	6529.00	2.45	231.00
German Democratic Republic	582.00	3.17	9076.33	3.40	156.67
Federal Republic of Germany	390.00	2.12	10562.00	3.95	272.00
Italy	177.33	0.96	2992.67	1.12	168.67
Poland	2393.67	13.02	45899.67	17.20	192.33
Romania	305.67	1.66	4481.67	1.68	146.67
Spain	385.67	2.10	5618.67	2.11	145.67
United Kingdom	222.00	1.21	6160.67	2.30	278.33
Yugoslavia	307.33	1.67	2787.33	1.04	89.33
U.S.S.R.	7065.33	38.44	84884.67	31.81	120.00
Peru	252.67	1.37	1632.33	0.61	64.67
India	635.33	3.46	7543.33	2.83	118.67
Japan	132.33	0.72	3522.33	1.32	266.00
Turkey	182.00	0.99	2816.67	1.06	155.00
Others	4835.67	26.31	68427.66	25.64	-
<b>World Total</b>	<b>18380.67</b>	<b>100.00</b>	<b>266882.33</b>	<b>100.00</b>	<b>147.00</b>

**Source :** Bulletin on Commercial Crops Statistics, Directorate of Economics and Statistics, Ministry of Agriculture, Government of India.

Germany, Spain and U.K. also produce 2 to 3 per cent of the world's production. India's yield level is quite low (119 quintals per hectare) compared to those of Japan, U.K., France and Federal Republic of Germany (266, 278, 231 and 272 quintals per hectare respectively) and the world average of 147 quintals per hectare.

Table 3.2 shows the statewide distribution of area and production of potato in India. Uttar Pradesh, West Bengal and Bihar are the major potato producing states with 32, 19 and 21 per cent respectively of the total area under potato in India and with share of 38, 14 and 24 per cent in total production. So about three-fourths of the production come from these three states. Punjab comes next with a contribution of 8 per cent to All India production. So far as yield rates are concerned, Gujarat ranks first with 246 quintals per hectare followed by Punjab (205 quintals per hectare). The yield rates in Uttar Pradesh and West Bengal are lower (144 and 149 quintals per hectare respectively) and that of Bihar (85 quintals per hectare) is even lower than the national average (122 quintals per hectare).<sup>2</sup>

The all-India final estimate of 1984-85 placed the production of potato at 12,642.0 thousand tonnes as compared to the revised estimate of 12,151.8 thousand tonnes in 1983-84. During the same period the area under the crops were estimated at 853.3 and 794.3 thousand hectares respectively. (Thus,

Table 3.2 : Area, production and yield of potato statewise position in India

State	Area (000 ha.)	Per cent to all-India total	Production (000 tonnes)	Per cent to all-India total	Yield at 15/ha.
Assam	32.70	4.73	152.37	1.80	46.58
Bihar	143.33	20.72	1227.37	14.48	84.97
Gujarat	8.27	1.20	197.40	2.33	246.44
Haryana	11.47	1.66	213.03	2.51	186.62
Himachal Pradesh	13.80	1.99	70.37	0.83	51.00
Karnataka	10.30	1.49	96.37	1.14	93.51
Madhya Pradesh	20.10	2.91	218.73	2.58	108.77
Maharashtra	10.73	1.55	49.63	0.59	46.24
Meghalaya	17.73	2.56	97.70	1.15	55.00
Orissa	7.33	1.06	51.40	0.60	69.94
Punjab	33.27	4.81	680.13	8.02	204.79
Tamil Nadu	12.07	1.74	111.57	1.32	93.70
Uttar Pradesh	221.90	32.08	3237.73	38.19	144.14
West Bengal	134.87	19.40	2003.97	23.64	148.98
Other States	14.53	2.10	69.20	0.82	N.A.
All-India	691.73	100.00	8477.17	100.00	122.04

Source : Bulletin on Commercial Crops Statistics, Directorate of Economics and Statistics, Ministry of Agriculture, Government of India.

over the year, production of the crops increased by 4.0 and 7.4 per cent respectively.) However, the average yield declined from 15,298 kg. per hectare in 1983-84 to 14,815 kg. per hectare in 1984-85.<sup>3</sup>

The Agricultural Prices Commission presents its views on the price policy for potatoes for the 1976-77 season. Despite the steep fall in the prices of potato in 1974-75 consequent to the bumper harvest of around 62 lakhs tonnes, the acreages under the crop registered a further increase in 1975-76. As a result of an anticipated good crop, prices of potato generally ruled at low levels during the earlier part of the current marketing year. In the subsequent months, however, they registered such sharp increases that the spread between the index number of wholesale prices of potato in February 1976 and that in October 1976 was as large as 127 per cent. While the rise during the months of March and April 1976 reflected the salutary effect on these prices of purchases made by the National Agricultural Cooperative Federation (NACF) and the presence of the Food Corporation of India (FCI) in the market, the present increase thereafter are of the character of an off season phenomenon.

An examination of the seasonal variation in potato prices in the different markets of the producing states shows that the absolute order of this variation during the current year, ranging between Rs. 50 and Rs. 72 per quintal is higher

than the costs that need to be currently incurred for carrying the potatoes through the season. While analysing the temporal variation in potato prices, it is of course important to remember that the data base in respect of this commodity, particularly of its prices is rather inadequate and weak. The limitation of data apart, the wide intraseasonal spread in potato prices essentially derives from the semi-perishable nature of the commodity and the inadequacy of cold storage capacity in relation to its output. These two factors have the effect of overselling the stream of availability of potatoes in the months immediately following harvest and of overdrying it in the lean months, thereby accentuating the intraseasonal, spread in the prices of this commodity. (The potato month-end wholesale prices are noted in Table 3.3).

In order to bring down the cost of marketing by reducing the incidence of spoilage involved in transporting potatoes over longer distance, the number of ventilated C.A. type wagons be considerably increased. Given the need for stepping up the marketing efficiency in respect of this commodity, state government not only accord appropriate priority to the programme for the statutory regulation of markets for potatoes but also enforce the market legislation already enacted so that the benefits of regulation percolate to the growers.<sup>4</sup>

It is reported that potato production has increased in



Table 3.1 : Potato : Month-end wholesale prices

(Rs. per quintal)

State/Centre/Variety	1970	1971	1972	1973	1974	1975	1976
<b>Bihar</b>							
<b>Patna (Deshi)</b>							
January	28.00	40.00	35.00	36.00	70.00	60.00	38.00
February	30.00	37.00	30.00	45.00	50.00	40.00	30.00
March	45.00	35.00	42.00	52.00	70.00	40.00	35.00
April	55.00	38.00	45.00	67.00	60.00	40.00	60.00
May	70.00	38.00	52.00	67.00	62.00	50.00	69.00
June	70.00	51.00	67.00	80.00	95.00	70.00	82.00
July	70.00	50.00	70.00	80.00	95.00	65.00	85.00
August	75.00	65.00	67.00	85.00	107.00	68.00	95.00
September	75.00	60.00	57.00	80.00	95.00	70.00	102.00
October	82.00	65.00	60.00	100.00	98.00	70.00	75.00
November	82.00	65.00	58.00	105.00	98.00	75.00	
December	N.A.	55.00	45.00	N.A.	N.A.	60.00	
<b>Gujarat</b>							
<b>Deesa</b>							
January	65.00	75.00	90.00	90.00	135.00	100.00	50.00
February	65.00	75.00	50.00	100.00	135.00	100.00	50.00
March	42.00	75.00	45.00	90.00	50.00	50.00	55.00
April	43.00	30.00	50.00	60.00	70.00	40.00	55.00
May	70.00	55.00	55.00	60.00	80.00	50.00	55.00
June	70.00	67.00	60.00	60.00	100.00	50.00	55.00
July	70.00	70.00	60.00	60.00	100.00	50.00	55.00
August	70.00	70.00	60.00	60.00	100.00	50.00	55.00
September	72.00	70.00	90.00	100.00	100.00	50.00	100.00
October	72.00	70.00	90.00	135.00	100.00	50.00	115.00
November	75.00	110.00	85.00	135.00	100.00	50.00	
December	75.00	90.00	90.00	135.00	100.00	50.00	
<b>Haryana</b>							
<b>Karnal</b>							
January	-	-	26.00	35.00	45.00	36.00	30.00
February	-	-	25.00	35.00	55.00	30.00	30.00
March	-	-	32.00	50.00	70.00	28.00	40.00
April	-	-	55.00	60.00	75.00	32.00	72.00
May	-	-	65.00	65.00	90.00	30.00	70.00
June	-	-	60.00	70.00	80.00	55.00	80.00
July	-	-	75.00	75.00	96.00	60.00	80.00
August	-	-	65.00	65.00	85.00	55.00	80.00
September	-	-	60.00	75.00	85.00	-	80.00
October	-	-	40.00	95.00	75.00	65.00	70.00
November	-	-	75.00	65.00	80.00	70.00	
December	-	25.00	35.00	50.00	45.00	30.00	
<b>Himachal Pradesh</b>							
<b>(Mandi (Lower Hills Plains))</b>							
January	45.00	45.00	37.00	40.00	-	70.00	46.00
February	45.00	57.00	38.00	36.00	-	60.00	35.00
March	60.00	50.00	38.00	47.00	70.00	50.00	40.00
April	60.00	40.00	45.00	53.00	70.00	40.00	70.00
May	63.00	38.00	38.00	62.00	60.00	30.00	82.00
June	68.00	42.00	62.00	60.00	80.00	65.00	82.00
July	65.00	43.00	60.00	57.00	75.00	63.00	85.00
August	75.00	56.00	60.00	75.00	75.00	60.00	90.00
September	70.00	63.00	65.00	-	-	65.00	90.00
October	100.00	58.00	60.00	-	-	-	87.00 *
November	92.00	57.00	40.00	-	-	-	
December	62.00	58.00	40.00	-	-	85.00	

(contd.)

Table 3.3 : (contd.)

State/Centre/Variety	1970	1971	1972	1973	1974	1975	1976
<b>Karnataka</b>							
<b>Bangalore (Cleaning)</b>							
January	80.00	94.00	72.00	-	-	115.00	100.00
February	70.00	74.00	68.00	-	-	-	90.00
March	62.00	60.00	64.00	-	-	-	70.00
April	64.00	56.00	62.00	-	-	-	70.00
		to					
		75.00					
May	88.00	67.00	59.50	92.00	94.00	-	100.00
		to					
		84.00					
June	100.00	70.00	80.00	100.00	110.00	-	120.00
		to					
		105.00					
July	62.00	66.00	80.00	-	104.00	-	120.00
August	68.00	36.00	68.00	-	94.00	-	100.00
September	80.00	37.00	73.00	-	88.00	-	100.00
October	84.00	27.00	82.00	-	95.00	-	124.00
		to					
		100.20					
November	110.00	70.00	106.00	-	105.00	-	
December	105.00	76.00	108.00	-	88.00	-	
					to		
					118.00		
<b>Maharashtra</b>							
<b>Bombay (Talagaon No.1)</b>							
January	67.00	87.50	61.20	N.A.	75.00	73.70	68.70
February	61.20	58.70	61.20	N.A.	82.50	73.70	63.70
March	63.70	58.70	43.70	73.70	76.20	73.70	67.50
April	71.20	65.00	67.50	81.20	92.50	71.20	87.50
May	91.20	67.50	81.20	101.20	103.70	92.50	112.50
June	115.00	74.00	91.20	127.50	116.20	107.50	145.00
July	92.15	77.00	107.50	123.70	121.20	127.50	175.00
August	127.50	81.20	87.50	N.A.	123.70	92.50	150.00
September	67.50	46.00	60.00	90.00	87.50	73.70	107.50
October	111.20	55.50	92.50	123.70	107.50	102.50	137.00
November	111.20	58.70	92.50	138.70	117.50	97.50	
December	127.50	53.70	97.50	145.00	107.50	125.00	
<b>Meghalaya</b>							
<b>Shillong</b>							
January	68.00	69.00	65.00	50.00	100.00	90.00	-
February	80.00	85.00	88.00	50.00	90.00	75.00	-
March	64.00	55.00	63.00	78.00	100.00	80.00	73.00 to
April	95.00	65.00	65.00	90.00	95.00	90.00	75.00 to
May	84.00	40.00	60.00	95.00	80.00	85.00	87.00 to
June	68.00	58.00	78.00	60.00	80.00	85.00	95.00 to
		to		to	to		110.00
		68.00		70.00	90.00		95.00
July	106.00	62.00	80.00	68.00	100.00	-	to
		to					105.00
		69.00					to
August	93.00	72.00	75.00	72.00	105.00	-	110.00
		to					115.00
		75.00					
September	104.00	104.00	72.00	90.00	140.00	-	118.00
October	81.00	102.00	65.00	102.00	140.00	-	118.00 *
November	140.00	65.80	70.00	100.00	125.00	101.00	
		to					
		145.00					
December	145.00	73.00	80.00	130.00	45.00		

(contd.)

Table 3.3 : (contd.)

State/Centre/Variety	1970	1971	1972	1973	1974	1975	1976
<b>Punjab</b>							
<b>Jullundhur (Safed)</b>							
January	39.50	42.00	31.50	31.00	48.00	47.00	34.00
February	42.00	44.00	30.00	37.00	55.00	39.00	42.00
March	50.00	48.00	30.00	48.00	65.00	30.00	40.00
April	58.00	43.00	52.00	49.00	64.00	23.00	70.00
May	58.00	41.00	56.00	53.00	65.00	35.00	75.00
June	80.00	42.00	68.50	80.00	80.00	64.00	85.00
July	80.00	54.00	65.00	72.50	78.00	60.00	90.00
August	80.00	54.00	62.00	70.00	75.00	58.00	80.00
September	80.00	59.00	60.00	83.00	75.00	65.00	85.00
October	87.00	56.50	56.00	98.00	78.00	65.00	84.00 *
November	75.00	52.50	46.00	90.00	80.00	53.00	
December	43.00	28.50	38.00	52.00	51.00	32.00	
<b>Tamil Nadu</b>							
<b>Mettupoalayam (Rasi)</b>							
January	95.55	93.88	69.33	95.56	93.48	116.67	99.44
February	82.22	73.33	72.22	94.89	94.44	107.78	88.88
March	78.45	66.66	64.44	80.45	81.44	100.00	80.00
April	71.11	77.77	61.11	71.73	88.89	97.77	80.00
May	86.66	74.44	70.00	106.52	91.11	104.44	108.88
June	91.11	70.00	90.75	86.95	87.78	133.33	111.11
July	71.11	62.22	81.12	76.08	84.44	73.33	111.11
August	75.55	58.88	66.67	71.73	73.33	66.66	103.33
September	85.55	55.55	80.00	76.08	73.33	78.88	100.00
October	94.44	73.33	77.78	93.47	88.88	98.33	106.66
November	98.33	72.22	80.00	104.34	95.55	93.33	
December	90.55	66.67	89.71	102.17	115.55	N.A.	
<b>Uttar Pradesh</b>							
<b>Farrukhabad(military Special)</b>							
January	31.50	42.50	26.25	27.25	51.00	36.00	32.00
February	40.00	32.50	25.00	36.75	50.00	38.00	26.50
March	36.25	25.00	30.00	46.25	48.00	25.00	33.00
April	62.50	27.50	42.50	45.00	48.00	18.50	43.00
May	55.00	36.25	50.00	60.00	50.00	40.00	60.00
June	70.00	50.00	75.00	75.00	95.00	70.00	85.00
July	80.00	50.00	75.00	80.00	85.00	72.50	90.00
August	82.50	52.50	72.50	80.00	90.00	68.00	75.00
September	85.00	60.00	70.00	86.50	90.00	60.00	92.00
October	95.00	67.50	65.00	100.00	95.00	65.00	85.00
November	80.62	42.50	51.50	64.40	95.00	76.00	
December	44.00	25.25	36.25	47.00	44.50	33.50	
<b>Uttar Pradesh</b>							
<b>Kanpur (Pahari)</b>							
January	N.A.	N.A.	N.A.	N.A.	N.A.	65.00	63.00
February	42.50	42.50	N.A.	N.A.	N.A.	N.A.	58.00
March	50.00	45.00	44.00	56.25	74.00	N.A.	44.00
April	67.50	37.50	49.00	57.50	65.00	45.00	68.00
May	75.00	42.50	58.00	60.00	70.00	52.00	85.00
June	85.00	55.00	71.50	90.00	88.00	80.00	98.00
July	87.50	60.00	75.00	100.00	93.00	92.00	112.00
August	95.00	70.00	77.50	96.00	99.00	100.00	115.00
September	97.50	99.00	59.00	80.00	102.00	92.00	105.00
October	112.50	115.00	56.00	94.00	96.00	105.00	105.00
November	95.00	69.00	65.00	70.00	85.00	80.00	
December	80.00	60.00	65.00	72.00	72.00	65.00	

(contd.)

Table 3.3 : (contd.)

State/Centre/Variety	1970	1971	1972	1973	1974	1975	1976
<b>West Bengal</b>							
Calcutta (Desi Mainital)							
January	40.00	52.50	50.00	47.50	70.00	55.00	50.00
February	55.00	57.50	52.50	60.00	77.50	60.00	55.00
March	67.50	60.00	47.50	75.00	92.50	55.00	75.00
April	77.50	53.75	55.00	82.50	92.50	61.25	85.00
May	102.50	60.00	82.50	97.50	112.50	90.00	102.50
June	97.50	80.00	83.75	97.50	115.00	92.50	105.00
July	97.50	72.50	85.00	102.50	117.50	87.50	107.50
August	97.50	80.00	87.50	95.00	115.00	88.75	107.50
September	110.00	80.00	87.50	98.25	117.50	92.50	125.00
October	122.50	82.50	90.00	122.50	122.50	110.00	120.00
November	105.00	75.00	85.00	105.00	95.00	117.50	
December	110.00	82.50	45.00	92.50	85.00	90.00	
<b>Delhi</b>							
(Punjab Special)							
January	43.75	47.50	40.00	41.25	60.00	48.75	37.50
February	50.00	50.00	40.00	46.25	62.50	45.00	42.50
March	55.00	48.75	40.00	62.50	70.00	36.25	52.50
April	60.00	50.00	67.50	67.50	85.00	42.50	67.50
May	67.50	50.00	62.50	70.00	62.50	52.50	87.50
June	87.50	57.50	73.75	82.50	88.50	75.00	85.00
July	87.50	57.50	71.25	82.50	90.00	67.50	90.00
August	80.00	62.50	70.00	83.75	90.00	67.50	85.00
September	87.50	70.00	70.00	92.50	95.00	72.50	85.50
October	100.00	73.75	67.50	107.50	98.75	72.50	90.00
November	77.50	47.50	55.00	58.75	81.25	55.00	
December	45.00	35.00	40.00	70.00	58.75	37.50	

\* Third week of October 1976

- Information not received

N.A. Quotations for the concerned variety were not available

Source : Directorate of Economics and Statistics, Ministry of Agriculture and Irrigation.

the past few years, but, the cold storage capacity has not kept pace with the demand for storage space. Consequently, a very large proportion of the potatoes produced in the country has to be stored in farm stores under adverse conditions resulting in severe losses of food material due to transpiration and sprouting. In view of high costs and paucity of cold storages in the country, there is an imperative need for : (i) devising improvised country stores with thatched ceiling, ventilation and insulation, on the pattern development of the Patna station of the CPRI in mid-fifties, and (ii) augmenting the cold storage capacity in the country. Moreover, in certain years, and in certain areas of the country, large production results in gluts and the farmers do not get remunerative prices. To cope with these situations and to minimize losses to the farmers and of a nutritive food, it is necessary to convert potato in such forms as can be stored at ambient temperatures for extended periods. Keeping in view the limited purchasing power, it is desirable to evolve such processes which are simple and cheap so that the cost of the produce does not discourage its utilization.

At the Central Potato Research Institute, experiments were carried out to sun-dry potatoes in the plains at harvest time. To prevent blackening during sun drying the potato slices can be dipped in 0.5 per cent solution of potassium metabisulphate for one hour. Sun dried slices can either be used for direct frying or can be powdered and used to partially

replace 'maida' in the preparation of biscuits, the process does not require machinery except hand slicers.

In the prevailing circumstances, when our average per capita consumption of only about 7 kg. is much below than in many developed countries, it is necessary to concentrate on uses of the potato as human food. However, the potato can be used for production of high quality alcohol etc., and as a by-product high quality protein and fodder.<sup>5</sup>

The trend in potato prices, though upward, was not significant. There were violent year to year price fluctuations in the absence of a regular and effective price support policy. Thus, under the uncertain price situation, the farmers suffered during the years of slump in potato prices. Effective price support programmes might avoid such situations.

The seasonal fluctuations also need to be smoothened to ensure a reasonable income to the producer-sellers. This object can be achieved by prolonging the sowing and the harvesting periods of the main crop, by increasing the cold storage capacity and by establishing processing units for potatoes.

The quantities marketed by the farmers in the big consuming markets were relatively small owing to the constraints, such as the lack of market information, lack of capital, lack of timely transport facilities, cumbersome procedure in

dispatching the produce, price uncertainty, and the risk of damage.

The decision by the farmers how to sell and where to sell should be taken keeping in view the economics of each decision. The constraints, on account of which the producers-sellers suffer for selling their produce in the big consuming markets referred to above need to be removed.

The Government should implement the price support policy on a regular basis and ensure some minimum price to the producers. The minimum support price should be fixed, keeping in view, both the economic and non-economic considerations, so that this crop does not get undue price advantage, which may lead to instability in the area under this crop. However, the procurement price could be decided, keeping in view the demand and supply position during each year.

Potato is a perishable commodity and cannot be stored in ordinary godown and for long even in cold stores, its buffer stocks cannot be maintained and the control over its supply and distribution over a period is not feasible, as in the case of foodgrains. Hence, to make the price support policy effective along with procurement, exports are essential. The Government, therefore, needs to take up regular export programme on a long term basis to the Middle East and Gulf countries where there is a greater scope. Even in the absence



of export demand, the government should not play a passive role in the market. The study has also shown that the disposal of the procured produce in the country markets during the peak season failed to improve the price situation and, this was not of any help to the average producer. This alternative by the government should, therefore, be taken up only as the last resort when the private trade is functioning to the detriment of the producers. Primarily, the government should procure to dispose of the produce in foreign markets and alternatively they should cold store the procured produce to sell during the lean period.<sup>6</sup>

The area and production of potato have increased appreciably over the last two decades in India, apparently due to larger and higher relative profitability of the crop. The compound growth rate of area under potato during the period 1960-61 to 1978-79 was the highest (3.94 per cent) of all crops and the growth rate of its production (6.89 per cent) next only to that of wheat (7.54 per cent).<sup>7</sup>

The percentage share of potato in gross cropped area is, however, still low in India (less than 1 per cent) since it is considered more as a vegetable than as a staple food crop. In many countries of Europe and America it ranges from 50 to 75 kgs. per annum, whereas in India, it is only around 7 kg. per annum. With the rise in per capita income and standard



of living of the people, we can expect a sharp increase in the demand for potato leading to a shift in acreage in favour of potato, as it happened in the past. This will be a desirable development in view of the fact that it is a very nutritive crop and a cheap source of protein which can correct some of the present nutritional imbalances.

One main problem with regard to the production of a perishable commodity like potato is the high fluctuation in prices which dip to numerative levels for the farmer during periods of glut and rise to high levels during periods of short supply, which hurt the interest of the consumer.

Thus, there is a negative relationship between market arrivals and prices. Existence of adequate storage facilities can, to a certain extent, smoothen out the fluctuations in supply from season to season and thereby reduce price fluctuations also.

Use of cold storage facilities however, depends on the retentive capacity of farmers, which is likely to vary directly with the size groups of holdings. Distress sales at low post-harvest prices are likely to be more common among small farmers than others, even where storage facilities exist.

It will be worth while to consider whether the average prices received by different size-classes of farmers over the

cost of cultivation and marketing of potato and leave a reasonable margin of profit. It will also be instructive to analyse the price spread from the producer to the consumer via the middlemen (wholeseller and retailer) and estimate the producers share in the consumer's rupee.

A study recommended that farmers should be provided with the necessary infrastructural facilities relating to marketing and cold storage. Increase in cold storage facilities within easy reach of the farmer will go a long way in reducing seasonal fluctuations in prices and stabilizing the profits of the farmer. To mitigate the hardship of the farmers caused by annual fluctuations in prices, an effective price support policy is needed. This may be in the form of a guaranteed minimum price. There is an evidence of inter-district movements of potato within the state as well as outside the state to better prices prevailing in the outside markets. This advantage was largely availed by the efficient farmers. Measures such as cooperative marketing and cheap transport facility should be strengthened so that small farmers can benefit from such measures and get better prices for their produce.<sup>8</sup>

There are considerable spatial and temporal variations in the prices of potato. A general idea may be obtained from Table 3.4 which gives the wholesale market prices for potatoes over the last few years in one of the producing markets and one consumer market of the country. The data indicate that

Table 3.4 : Prices of potatoes in a producer and a consumer market in India - 1980-81 through 1985-86

Year	Producer Market Jalandhar		Consumer Market Calcutta	
	October	December	October	December
1980-81	100.0	65.00	220.0	105.0
1981-82	45.0	40.0	120.0	115.0
1982-83	80.0	65.0	145.0	82.5
1983-84	140.0	90.0	225.0	162.5
1984-85	75.0	50.0	177.5	122.5
1985-86	75.0	80.0	157.5	150.0

Source?

these price differences in different markets are much more than the corresponding transportation and related handling costs, which work out to Rs. 60 per quintal for trucks and Rs. 15 per quintal by rail as at present. These data demonstrate that potato market is quite segmented and elements of imperfection are quite strong.

Second aspect of the problem is that the prices vary a great deal between the post-harvest season and the lean months. Corresponding to these seasonal difference, it would be relevant to examine the storage and related costs which work out as follows for the producing market of Jalandhar.

	<u>Cost Per Quintal (Rs.)</u>
Storage charges (January to September)	16.25
Handling, hauling, etc.	2.50
	<u>18.75</u>

When drriage and interest are added, cost works out to Rs. 27 per quintal. The difference in seasonal prices is often, but not always, more than the related costs of storage. This again indicates high degree of rigidity of potato market on the one hand and uncertainty on the other. Storage can result in huge losses sometimes.

In regard to the general price trend, throughout 1985-86 the wholesale prices of potato ruled much higher than in the corresponding months of 1984-85. The Economic Adviser's (monthly average) index numbers of wholesale prices of potato, which stood at 194.2 in July 1985, maintained a steady rising trend till it touched 221.2 in October 1985. With the arrival of the 1985-86 crop, between November, 1985 and February, 1986, the price index fell from 219.5 to 169.7. However, the index firmed upto 216.3 in March 1986 and continued to rise in the subsequent months to touch 382.6 in June 1986. While in 1984-85 the monthly average price index ranged between 188.2 and 223.8, during 1985-86 the index remained persistently higher and fluctuated between 168.4 and 382.6.

The prices of potato are generally volatile in nature and sensitive to changes in the level of production as well as short-time factors, such as market arrivals, transport bottlenecks and prices of other vegetables. Hence, they tend to display wide temporal and spatial variations. Considerable and general rise in the prices of potato during the 1985-86 season was mainly due to failure of the crop in Punjab and Uttar Pradesh caused by late blight. Table 3.5 gives the Economic Adviser's index numbers of wholesale prices of potato (monthly average) from July 1985 to June 1986.

Table 3.5 : Index numbers of wholesale prices of potato

Year	July	August	September	October	November	December
1985	194.2	218.7	216.6	221.2	219.5	210.2
	January	February	March	April	May	June
1986	168.4	169.7	216.3	326.7	350.6	382.6

There is no systematic announcement of minimum support prices, nor any regular price support scheme in respect of potato, but, in a situation of glut in the market, when the interests of the cultivators are threatened, at the request of

the concerned state governments, Government of India lends support to market intervention operations at an agreed indicative/intervention price. Such scheme is implemented through NAFED as the designated Central Agency in association with state cooperatives. These agencies purchase potato directly from growers to prevent distress sales.

During 1984-85 the market intervention price for potato was fixed at Rs. 50 per quintal and it was raised to Rs. 60 per quintal in 1985-86. In 1984-85 the scheme was in operation in the State of Uttar Pradesh, Punjab, Himachal Pradesh and West Bengal and a total of 31,653 tonnes were purchased under it.

However, during 1985-86, there were no purchases for market support purposes as the prices of potato ruled much above the intervention price of Rs. 60 per quintal.<sup>9</sup>

### 3.2 Situation in Maharashtra

The cultivation of potatoes in Maharashtra has been increasing steadily during the last ten years. The area under this crop and its production which was of the order of 8,700 hectares and 39,400 tonnes in the year 1955-56 stood at 16,300 hectares and 53,100 tonnes in the year 1960-61 representing a rise of 77 per cent in area and 34 per cent in production as compared to the all-India rise of 31 per cent and 49 per cent respectively during the same period. The year 1961-62 which

was marked by a heavy rainfall brought a considerable fall in area and production which stood at 13,600 hectares and 43,200 tonnes respectively. The details are presented in Table 3.6.<sup>10</sup>

**Table 3.6** : Area under potato and production in Maharashtra State (1955-56 - 1961-62)

Year	Area (in hectares)	Production (in M.T.)
1955-56	8,700	39,400
1956-57	12,200	55,000
1957-58	12,700	52,200
1958-59	11,500	50,000
1959-60	13,800	55,800
1960-61	16,300	53,100
1961-62	13,600	43,200

#### Potato As A Cash Crop

Various economic and extra-economic factors have been influencing potato cultivation in the region. A few of them which enable the cultivators to make a choice in favour of potato are as follows.

Firstly, potato is primarily used as a vegetable throughout the country and has a steady demand round the year. It has an assured market, particularly in urban areas, where fresh

vegetables are not available at a reasonable rates throughout the year.

Secondly, potato is a short duration crop maturing in 90 to 110 days and thus it not only gives a quick return on the money invested, but can also be grown in this region where irrigational facilities are available for a short period.

Thirdly, the sandy loam and medium coarse variety of the soil of the region is eminently suitable for potato crop as the loose soil allows an easy development of the tubers.

Lastly, the crop fits well into the rotational system in vogue. The predominant crop in the area is kharif bajra followed by rabi potato. The entire nutrients released by the fertilizer doses, however, are not used up during the growth period of the crop. The crop, therefore, necessarily leaves a residue of these inputs that helps the growth of the succeeding crop. A lesser dose of fertilizers and manures adversely affects the output. The cultivators in this region have been customarily growing this crop as an important sources of cash income.

### Rabi Potato

The potato crop is taken in both kharif and rabi seasons in the region. Between these two, cultivators in the region, give preference to the rabi crop for various reasons. One of



the reasons is that the kharif potato being mainly rainfed, it is vulnerable to the monsoonic uncertainties. On the other hand, rabi potato is preferred as it is taken during winter months when the climate is cool and conducive for the rapid growth of the tubers. Moreover, disease-free seeds from a healthy stock grown on high attitudes are available only during this season.

The rabi crop is an irrigated crop. The irrigation during rabi season being under control, water logging which generally results in rotting of potato is easily averted. Irrigation thus increases the percentage of marketing tubers to a considerable extent during the rabi season.

The rabi potato grown in the region is relatively free from disease. The potato experts of the potato research centre located at Khed, are of the opinion that incidence of pests and diseases in the region is generally more during the kharif than during the rabi season. This according to the expert opinion, is one of the reasons why the cultivator prefers the rabi potato.

Furthermore, the rabi produce is generally stored for 3 to 4 months after the harvest and is also sold as seeds to the kharif growers from the adjoining areas during the ensuing kharif. Such potatoes command a premium than sold for direct consumption. Thus the rabi crop not only gives higher output but is also more profitable than the kharif crop.<sup>11</sup>

Yield Rate and Production

A comparative picture of yield rates of potato crop between all-India level and Maharashtra State, during a seven year period, may be seen in Table 3.7.

Table 3.7 : Yield per hectare of potato in India and Maharashtra during 1955-56 to 1961-62

Year	(in tonnes)	
	All-India yield per hectare	Maharashtra State yield per hectare
1955-56	6.43	4.35
1956-57	5.78	4.51
1957-58	6.10	4.11
1958-59	6.96	4.35
1959-60	7.58	4.04
1960-61	7.31	3.26
1961-62	7.41	3.18
Average	6.85	3.92

As compared to the all-India average yield of 6.85 tonnes per hectare, the production of 3.92 tonnes per hectare of Maharashtra State is not commendable. Again, while the yield per hectare for all-India has gradually gone up from 6.43 tonnes in 1955-56 to 7.41 tonnes in 1961-62, that for Maharashtra it has slightly declined.

The annual average production of potato in Maharashtra

worked out on the basis of seven years' average (1955-56 to 1961-62) comes to about 49,800 tonnes. The major portion of the produce comes from Poona District which accounts for 51.13 per cent (average) of the total production of the State. Next important district is Satara with 25.24 per cent followed by Ahmednagar 12.53 per cent and Nasik 7.57 per cent. The relative share of Poona District to State production which was 59.14 per cent in the year 1955-56 now (1961-62) stands at 43.98 per cent. The percentage share of the total production of Satara and Ahmednagar districts have, however, increased from 19.29 to 29.17 and 8.88 to 14.58 respectively during the same period indicating the fact that agriculturists in those districts are gradually taking more and more to the production of potatoes. The data on districtwise production for Maharashtra for a period of seven years are presented in Table 3.8.

Potato, a cash crop, which not only could be preserved easily for a few months, but also commands a ready market, is becoming more and more popular with the producers and as such its area and production in this state are on the increase.

The production in general depends upon the variations in area and yield rates. The yield per hectare is subject to various environmental factors such as weather conditions, disease, pests, etc. Quality of seeds and the cultural operations also play an important role.

**Table 3.8 : Districtwise production of potatoes in Maharashtra**

	(in tonnes)					
	Pune	Satara	Ahmed- nagar	Nasik	Other	Total
1955-56 :						
Production	23,300	7,600	3,500	3,900	1,000	39,400
Percentage	59.14	19.29	8.88	9.90	2.79	100.00
1956-57 :						
Production	27,000	12,900	8,800	45,000	18,000	55,000
Percentage	49.09	23.45	16.00	8.18	3.28	100.00
1957-58 :						
Production	27,500	13,200	6,400	3,400	1,700	52,200
Percentage	52.68	25.29	12.26	6.57	3.26	100.00
1958-59 :						
Production	28,700	10,800	5,300	3,600	1,600	50,000
Percentage	57.40	21.60	10.60	7.20	3.20	100.00
1959-60 :						
Production	28,600	15,800	5,700	4,100	1,600	55,800
Percentage	51.25	28.31	10.22	7.35	2.87	100.00
1960-61 :						
Production	24,200	15,100	7,700	3,600	2,500	53,100
Percentage	45.57	28.44	14.50	6.78	4.71	100.00
1961-62 :						
Production	19,000	12,600	6,300	3,300	2,000	43,200
Percentage	43.98	29.17	14.58	7.64	4.63	100.00
Average :						
Production	25,471	12,571	6,242	3,771	1,759	49,814
Percentage	51.13	25.24	12.53	7.57	3.53	100.00

It would be seen from Table 3.8 that the production of potatoes which was 39,400 tonnes during the year 1955-56 rose to 55,000 tonnes in the year 1956-57. During the next two years i.e. 1957-58 and 1958-59 the total output declined to 52,200 and 50,000 tonnes respectively. An appreciable rise of 15,600 tonnes in production during the year 1956-57 was mainly attributed to significant rise in area and better yield in some of the producing centres.

Although potato is mainly produced as a cash crop, it is not uncommon for a cultivator to retain some portion of the produce for the purpose of seed, domestic consumption, gifts to friends and relatives etc. Labourers engaged at the time of harvesting potatoes are given some potatoes for consumption in addition to their wages. The farmer however, may not part with his best produce on such occasions, but may give them inferior potatoes presumably for their consumption.

In Maharashtra while the plantation of rabi crop is done with the seeds purchased from Simla, the seeds for kharif sowing are obtained from the previous rabi produce. It is therefore, natural with the producers to make adequate provision of seeds for kharif season by withholding a portion of their rabi crop.

As Maharashtra State is not self-sufficient in the production of potato, quite a large quantity of it is obtained

from Uttar Pradesh, Tamil Nadu, Gujarat, Karnataka, Madhya Pradesh to supplement the local supplies. In Bombay, very small quantity of potatoes is received by sea from other states like Karnataka, Gujarat, etc. Previously appreciable quantities of potatoes were imported in Maharashtra from Italy, Kenya, Japan, etc. The potatoes from Italy were used for seed as well as table purposes and those from Kenya, Japan, etc., were utilized mainly for the purpose of consumption.

Although the State of Maharashtra is deficit in potato production and imports more quantity of potatoes than what it produces, some of the enterprising agriculturists and traders especially in Satara, Ahmednagar and Nasik districts export potatoes to some important consuming centres in other states like Ahmedabad, Surat, Delhi, Jabalpur, Bangalore, Bhopal, Indore and even Calcutta.

From Bombay port, a small quantity of potato is exported to other states like Gujarat, Tamil Nadu, Karnataka, Kerala, etc. Bombay is the only port from where potatoes from the State of Maharashtra are exported to foreign countries.

While assembling deals with the movement of produce from the farm to the wholesaler's godown, distribution means its subsequent movement to consumers. Thus assembling and distribution are very closely related terms and the same agency may perform one or more functions according to convenience.

For instance, a producer may sell a part or whole of his produce to wholesale merchants from consuming area or a commission agents in an assembling market who may also purchase goods on their own accounts for sale to local retailers, etc. Normally the agencies engaged in distribution of potatoes are : (i) Producers, (ii) Village Merchants, (iii) Commission Agents, (iv) Wholesale Merchants, and (v) Retailers.

The producers have to pay certain charges when they bring the produce in the market for sale. These charges vary from market to market depending upon local conditions. While in regulated market, these charges have been fixed by the market committees.

### Market Practices

(i) Village Sales : In the case of village sales, it is generally the buyer who approaches the grower either directly or through a village merchant or commission agent. The purchaser after examining the goods quotes his price.

(ii) Regulated Markets : In Maharashtra State, potato is regulated in 7 markets and 14 sub-yards. It being a cash crop which is consumed more by urban population, the producers, in many cases, despatch their goods directly to important consuming centres instead of selling them in the nearby regulated markets. The goods are generally disposed off by open auction system. Sometimes sales by private negotiations also takes place.



(iii) Consuming Centres : In consuming centres the goods are generally brought by producers, village merchants, wholesalers, or their agents. Normally a commission agent not only arranges for the transport of owner's produce on behalf of the producer, but also pays all charges of transport, hamali, octroi, weighment, etc., in the first instance and recovers the same from the sale proceeds.

### P r i c e s

Seasonal Variations in Prices : All agricultural commodities including potatoes are subject to seasonal fluctuations in prices. The seasonal variations in the case of potatoes are quite significant as this commodity cannot be conveniently and safely stored for a very long time on the farm, due to crude method of storage resorted to by the farmers.

The prices are generally determined by the forces of demand and supply. Quality of produce, distance of markets from producing areas, facilities for transport and storage and financial position of the cultivator, are the factors that play an important part in the fluctuations of prices of this commodity. Normally, the prices of potatoes are low during the harvest season. When the produce of local kharif crops starts arriving in the market during the months of September and October, the prices in the important terminal and assembling centres like Bombay, Pune, etc., fall sharply.



With the depletion of supplies from the kharif crop, the prices start rising again during the next two months viz., November and December.

### Trend in Prices in Different Markets

#### B o m b a y

Bombay receives its potato supplies from Satara, Pune, Ahmednagar and Nasik districts as well as Uttar Pradesh, Gujarat, Tamil Nadu, Karnataka and other states. The wholesale prices of potatoes in Bombay begin to decline sometimes in January and usually rule at low level upto April due to the following reasons.

(i) The rabi crop of Pune district is marketed during this period and a large part of the produce is consigned to Bombay for sale.

(ii) In Uttar Pradesh, the biggest potato producing state of India, a huge crop of potato is harvested and despatched to all the important consuming markets of Maharashtra State.

(iii) The produce of the winter crop of Maharashtra State does not find markets even in Gujarat State which imports large quantities of tubers from Maharashtra during kharif season in competition to locally produced tubers and those imported from Uttar Pradesh.

The prices register a sharp decline in September and October, as the kharif crop of Maharashtra is marketed during this period. The prices, however, tend to rise during the next two months i.e. November and December as tubers of kharif crop become scarce. During these four months, i.e. September to December, Satara and Pune districts are the main sources of potato supplies for Bombay Market.

### N a g p u r

The wholesale prices of potatoes at Nagpur starts declining from January and rule easy upto June when the tubers from Uttar Pradesh and Madhya Pradesh are available in a fairly large quantities. The lowest prices normally prevail during the months of March and April, as during these months very large quantities of potatoes are imported and stored for the slack season. The prices generally shoot up from July onwards due to the scarcity of stocks and heavy expenses incurred on transport etc., of potatoes from Tamil Nadu and remain high upto December.

### P u n e

Pune is an important assembling and consuming centre. From here, potatoes are despatched to various consuming centres of Maharashtra and other states. 'Local' produce arrives at Pune market throughout the year and it is only during July and August that local supplies are supplemented

by imports from Tamil Nadu and Karnataka States. During the month of January, tubers imported from Uttar Pradesh into Bombay are re-exported to Pune market to a certain extent. The wholesale prices of potatoes in Pune market indicate an easy trend from January to April. Usually the prices move up during May and are quite high from June to August. In September, the prices fall as the kharif crop moves in the market. The prices move marginally in October and reveal a modest improvement during November and December due to reduced supplies.

Price-Spread from Producer  
to Consumer

Potato, like other agricultural commodities, passes through various hands, before reaching the final consumer. As all these intermediaries keep a margin of profit for the services rendered by them, the cost of distribution increases according to the number of middlemen involved. The other important factors affecting the cost of distribution are : (i) transport charges, (ii) market charges, (iii) handling charges, etc. A few examples, showing the cost of distribution in some of the important centres are given below.

Example 1 : Price spread of 93 kgs. of potatoes produced at village Pimpalgaon Bahula, Taluka Nasik, and sold at Nasik

	Rs.	Rs.	Per cent
1) Producers net selling price		25.86	63.1
2) Market charges paid by the producers :			
i) Cleaning, grading, filling, stitching, etc. at Pimpalgaon Bahula	0.50		
ii) Transport from Pimpalgaon to Nasik	0.62		
iii) Depreciation on bag which is taken back by the producer	0.31		
iv) Octroi duty	0.31		
v) Market cess	0.03		
vi) Hamali, weighment, etc.	0.12		
vii) Commission	0.25	2.14	5.2
3) Expenses incurred by wholesaler :			
i) Cost of empty bag	1.00		
ii) Filling in bag and transport to his shop	0.30	1.30	3.2
4) Wholesalers' margin		1.70	4.1
5) Retailer's expenses and margin of profit		10.00	24.4
Consumers price		41.00	100.0

**Example 2** : Price spread of 1,094 kgs. of potatoes sold by a producer of Khed (District Pune) at Bombay

	Rs.	Rs.	Per cent
1) Producers net selling price		237.59	51.6
2) Market charges paid by the producer :			
i) Cleaning, grading, filling, stitching, etc.	5.50		
ii) Cost of empty gunny bags	11.00		
iii) Loading in truck	1.37		
iv) Transport charges from Khed to Bombay	40.75		
v) Commission	10.75		
vi) Vato	7.21		
vii) Hamali	1.67		
viii) Godown charges	1.45		
ix) Charity	0.31		
x) Postage	0.15		
3) Expenses incurred by the wholesaler :			
i) Hamali, transport, etc.	11.00		
ii) Wholesaler's margin	22.00	33.00	7.1
4) Retailers expenses and margin		110.00	23.9
Consumer's price		----- 460.80 -----	100.0

**Example 3** : Price spread of 1866 kgs. of potatoes produced at village Punewadi (District Ahmednagar) and sold at Bombay

	Rs.	Rs.	Per cent
1) Producer's net selling price		869.41	67.25
2) Market charges paid by the producer :			
i) Cleaning, grading, filling, stitching, etc.	9.50		
ii) Cost of empty gunny bags	19.00		
iii) Loading in truck	1.25		
iv) Transport charges from Punewadi to Bombay	116.40		
v) Commission	32.56		
vi) Hamali	7.50		
vii) Charity	0.47		
viii) Association fee	0.15		
ix) Postage, telegram and telephone	3.56	190.39	14.73
3) Expenses incurred by the wholesaler :			
Hamali and transport		14.25	1.10
4) Wholesaler's margin	23.75		1.84
5) Retailer's expenses and margin		195.00	15.08
		-----	
		1292.80	100.00
		-----	
			<u>12/</u>

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## CHAPTER IV

### CULTIVATION AND PRODUCTION OF POTATO IN KHED TALUKA

Although marketing of potato is the main focus of the study, several important aspects of agro-climatic feature, infrastructure, cultivation and production of potato in Khed Taluka are broadly mentioned here to provide the necessary background.

#### 4.1 Geographic Feature of Khed Taluka

Topography : Khed Taluka is situated towards the north of Pune district at 18°-50° North Latitude and 30°-53° East Longitude with the total geographical area of 1,397 sq.kms. Khed Taluka is bounded by Ambegaon, Haveli, Shirur talukas and Maval taluka on Northern, Southern, Eastern and Western sides respectively.

In Khed Taluka, major part of the area is under dry farming. The western part of the taluka is under hills, forests, and uncultivable waste lands. Soil in the Khed Taluka is of mixed nature. It consists of black, red and brown colour.

In Khed Taluka, there are 161 villages and 24 wadis



under the jurisdiction of 130 grampanchayats and Alandi being the only town municipality.

### Water Resources and Rainfall

Total wells in Khed Taluka are 7,270 according to 1986-87 socio-economic survey. Bhima, Bhama, Weal and Indrayani are the rivers in Khed Taluka. These rivers flow with magnificent volume of water during the rainy season and shrink into a narrow thread during the summer season. Chaskaman dam is constructed across Bhima river. Irrigated area by sources is as given below.

<u>S o u r c e</u>	<u>A r e a</u>
a) Well	3,024 hectares
b) Tank	70 hectares
c) River	550 hectares
d) Canal	Nil

Khed Taluka receives its rains mostly from the south-west monsoon during June to October. We have presented the average annual rainfall from 1980 to 1988 in Khed Taluka in Table 4.1. The average annual rainfall of the taluka is about 518 mm. which is received in about 40 to 50 rainy days and rainfall is not quite even in all parts of the taluka. The western part receives the maximum rainfall of 900 to 1000 mm. while the scarce rainfall region on the eastern side receives only 375 mm. The normal rainfall of Khed Taluka is 518 mm. The pre-monsoon rains are very useful for preparatory tillage

**Table 4.1 : Average annual rainfall from 1980 to 1988 in Khed taluka**

Year	Average rainfall (in mm.)
1980	700
1981	690
1982	715
1983	680
1984	672
1985	625
1986	702
1987	690
1988	630

operations while post-monsoon rains in the month of October and November help the crop in the rabi season. It is interesting to note that the annual rainfall in the last decade has slightly exceeded the normal.

#### 4.2 Infrastructure

Khed Taluka being adjacent to Pune urban conglomeration, its socio-economic profile and infrastructural facilities are considerably influenced by the neighbouring metropolis. The taluka is well served by Pune-Nashik Highway and the nearest

railhead facility is available at Talegaon on Pune-Bombay section of Central Railways. Some of the important facilities available within the jurisdiction of Khed Taluka are shown in Table 4.2.

**Table 4.2 : Important facilities which are available in Khed taluka during 1988-89**

Sr. No.	Facilities	Total number
1.	Post offices	11
2.	Banks	28
3.	Primary Health Centres	10
4.	Police Stations	2
5.	Telephone Exchange	1
6.	Milk-chilling Plant	1
7.	Primary Schools	325
8.	Secondary Schools	29
9.	Junior Colleges	3
10.	Degree Colleges	2
11.	Technical College	N11
12.	Electric-pump Sets	1128
13.	Oil Engines	1358
14.	Paper Mills	3
15.	Groundnut Oil Mills	5

**Source :** Tahsil Office, Khed.

#### 4.3 Potato Cultivation in Khed Taluka

In Khed taluka, potato is cultivated in both kharif and rabi seasons of the crop year. It is grown as a major commercial crop and potato cultivators belong to all size of holding groups, namely, small, medium and large.

##### Agro-climatic Aspects

##### S o i l

Potatoes can grow in all types of soil except saline and alkaline soils. Sandy loam and loamy soils rich in organic matter are the most suitable for potato cultivation. Soils that lack desirable physical and chemical characteristics are not suitable for potato cultivation.<sup>1</sup> In Khed taluka, reddish medium black and well drained soil is used for the potato cultivation.

##### Requirement of Climate

The potato is a crop of temperate climate and a temperature of about 20°C is ideal for the development of the tubers. The yields depend upon the maturity period of variety and the length of the period conducive to tuberization. The potatoes in various regions are cultivated at different periods depending upon the climatic conditions.<sup>2</sup>

The crop cannot ordinarily stand rainfall above 30" but

the most important factor controlling its cultivation is temperature. High temperature results in good vegetative growth but tuber formation is very poor under such conditions. Thus it is important that temperature may be rather high when seeds are planted, but 45 days after planting, when tuberization starts, it should be quite low.

The optimum conditions for tuberization in potato crop are when there is wide variation in night and day temperatures. High day temperatures are conducive to good vegetative growth while low night temperatures are ideal for tuber formation. Low night temperature and high day temperature exist in the months of November, December and January in the Maharashtra State.<sup>3</sup> In the Khed Taluka, the crop is grown in the kharif as well as rabi season. The climate of Khed taluka is favourable to grow potato in kharif and rabi seasons.

### S e e d s

Farmers of Khed taluka are using mainly three types of seeds : (i) kufri Chandramukhi, (ii) kufri Sindhuri and (iii) kufri Jyoti. Kufri Chandramukhi seed requires 80-100 days to mature. Kufri Sindhuri seed requires 120-160 days to mature, and kufri Jyoti seeds require 110-180 days to mature. These varieties are capable of giving equally good yield under both crop seasons (kharif and rabi) in Khed taluka. Farmers bring these seeds from Madhya Pradesh and Punjab. If proper care is

not taken in selecting good seeds or healthy seedlings, all efforts of cultivation prove to be in vain. In the case of potato, only well developed tubers with prominent eye buds are cut into pieces of suitable size with atleast one or two buds on them. Commission agents and traders are also providing these seeds in both seasons.

### Irrigation

Normally, kharif potato does not require irrigation as the seasonal rainfall is adequate to provide the water requirement of the crop. However, if there is a long gap in the monsoon, one or two irrigations need to be given.

For rabi crop first irrigation is given immediately after plantings. Second irrigation is given a week after planting and thereafter the irrigations are required to be provided regularly at the interval of 7 to 8 days. About 10 to 12 irrigations are necessary during the whole life period of this crop. In Khed taluka, the sources are mainly rivers, and private wells. Lift irrigation schemes are also in operation.

### Interculture

For kharif crop first weeding is done when the plants are 6 to 8 inches high. At the same time a light earthing up is given to the crop. Second weeding is given 3 weeks after the first weeding and second earthing up is given when the crop

has just started forming tubers. Earthing up is very helpful to give support to the plants and to cover developing tubers with soil and is generally done by manual labour with 'kudalies'. Sometimes an entire blade hoe is used with advantage for this purpose. The interspace between the two prongs of the hoe is closed by tying a rope and the hoe is run between two lines of the crop. At a time two hoes can be worked with a pair of bullocks. This gives efficient working and much of the human labour can be saved.

For rabi crop also, first weeding is given when the plants are 6 to 8 inches high and at the same time a light earthing up is done. Second weeding is given three weeks after the first weeding and second earthing up is given six weeks after germination.

While earthing up, care should be taken to keep the soil loose and friable because potato tubers grow best in such loose soil. Similarly, all the tubers should be covered properly otherwise, exposed tubers turn green and become unfit for human consumption and their market value is also considerably lowered.<sup>4</sup>

### Harvesting

The potato crop should be harvested when the foliage turn yellow. At this time the tubers are fully mature. In Khed

taluka, the crop usually matures within about 3.5 months after planting. There are various methods of harvesting potatoes such as digging by 'kudalies'; by ploughing the field and by the use of various types of machine diggers. In Khed taluka, the crop is usually harvested with the help of a wooden plough. While ploughing, the exposed tubers are collected and the operation is repeated until the whole produce is exposed and collected. Harvesting should not be delayed, otherwise there may be a heavy rottage of tubers due to rise in temperature. Similarly, if the crop is harvested earlier, the tubers being immature may lose their skin in handling and thus their market quality is reduced over time or immature tubers do not keep longer in storage.

#### Finance to Potato Growers

An agricultural commodity has to pass through various stages before it reaches the final consumer. Of all these stages that of production is the most important one. This stage requires a good amount of money specially in the case of potato as this crop needs heavy manuring and a large quantity of seeds. The agriculturists, most of them being small holders, cannot bear these initial expenses on their own. There is a considerable difference in the amount of initial expenses required by individual farmers as their requirements of quality of seeds, manures and fertilizers to



be used vary from farmer to farmer and from place to place.

(i) Formerly it was quite common for commission agents, village merchants, moneylenders, etc., to advance money to growers for raising of potato crop. The commission agent, who generally did not charge any interest, gave loans on the understanding that the grower would sell his produce through him. The merchant desired that the produce be sold to him. The moneylender, not only charged exorbitant rate of interest, but also used to press for early sales.

(ii) Finance by cooperative societies and banks : For the last few years cooperative societies and cooperative banks have come to play an important part in providing finance to potato growers.

The method followed in granting loans to potato growers is generally as follows : The requirements of growers for various items like seeds, fertilizers, etc., are assessed by the local cooperative credit society. This society sends a consolidated statement showing the needs of each individual farmer to the Pune District Central Cooperative Bank. A copy of the same is also sent to Khed Taluka Kharedi Vikri Sangh which may be making arrangements for the purchase of seeds from Himachal Pradesh, Punjab and Madhya Pradesh. The bank sanctions the loan and intimates the society and the agency which may arrange for supply of seeds and fertilizers.

### Area Under Potato Cultivation

Potato is grown in all parts of Khed taluka. However, more is grown in eastern zone and less in western zone of Khed taluka.

In Maharashtra, total area under potato cultivation is around 12,000 hectares. Out of this, about 50 per cent is in Pune district and roughly 20 per cent in Khed taluka in particular. In recent years, however, the area under rabi potato has declined in some areas of Khed taluka owing to construction of medium irrigation projects. The data pertaining to season-wise area under potato crop in the state, district and Khed taluka for the period 1975-76 through 1987-88 are presented in Table 4.3.

#### 4.4 Production

The average annual production of potato in Maharashtra State is around 60,000 M. tonnes during the period from 1975-76 to 1987-88. Similarly for Pune district, it is 30,000 M. tonnes and for Khed taluka 12,600 M. tonnes. It is interesting to note that Pune district accounts for about 51 per cent of the average production in the state and out of the district's production the share of the Khed taluka itself works out to nearly 42 per cent. In short, Khed taluka contributes a fifth of the total production of the entire state.

**Table 4.3 : Area under potato cultivation in Maharashtra, Pune district and in Khed taluka**

(Area in hectares)

Year	Maharashtra			Pune			Khed		
	Kharif	Rabi	Total	Kharif	Rabi	Total	Kharif	Rabi	Total
1975-76	6400	4500	10900	3200	3300	5500	910	969	1879
1976-77	5500	5000	10500	2700	2900	5600	725	1315	2040
1977-78	6100	4000	10100	3100	2900	6000	1110	812	1922
1978-79	7100	4300	11400	3500	3000	6500	960	869	1829
1979-80	7300	4300	11600	3400	3000	6400	1381	1020	2401
1980-81	6000	4600	10600	2894	3420	6314	1041	973	2014
1981-82	7700	4600	12300	3050	3392	6442	807	1140	1947
1982-83	6900	4700	11600	2926	3405	6331	1257	1000	2257
1983-84	6900	4700	11600	2957	3406	6363	1366	1110	2476
1984-85	6700	4500	11200	2934	2965	5899	1405	1105	2510
1985-86	6200	5500	11700	2936	3259	6295	1266	1030	2296
1986-87	6300	5200	11500	2894	3040	5934	1235	840	2075
1987-88	6000	4500	10500	2740	2800	5540	1250	650	1900

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**Source :** Season and Crop Report, Agricultural Statistical Department, Pune, for the years 1975-76 to 1987-88.

At the state level, kharif potato accounts for 55 per cent, while at the district level, it is the rabi potato that dominates with nearly 62 per cent of its total production. On the other hand, in the case of Khed taluka the average annual production is almost equally divided between kharif and rabi. The trend in the actual production has not been quite even over the years at all the three levels. There has been ups and downs from year to year in respect of both seasons. In Khed taluka, however, there has been a slight tendency of somewhat declining production during the last three years of the period under reference. The data on production of potato in Maharashtra, Pune district and Khed taluka are presented in Table 4.4.

**Table 4.4 : Production of potato in Maharashtra, Pune district and Khed taluka**

(Production in 00 M. tonnes)

Year	Maharashtra			Pune			Khed		
	Kharif	Rabi	Total	Kharif	Rabi	Total	Kharif	Rabi	Total
1975-76	369	284	653	182	209	391	70	82	152
1976-77	256	294	550	122	237	359	60	70	130
1977-78	240	232	472	109	173	282	52	60	112
1978-79	284	238	522	124	172	296	53	63	116
1979-80	323	247	570	119	170	289	47	59	106
1980-81	252	245	497	102	184	286	60	75	135
1981-82	451	270	721	116	203	319	82	73	155
1982-83	333	260	593	106	192	298	70	40	110
1983-84	330	259	589	108	197	305	80	45	125
1984-85	341	252	593	106	171	277	79	60	139
1985-86	337	260	597	106	186	292	63	65	128
1986-87	340	280	620	100	150	250	59	56	115
1987-88	350	295	645	105	160	265	45	68	113

Source : 1) Season and Crop Report, 1975-76 to 1981-82.  
 2) Statistical Abstract District Pune.  
 3) Statistical Department, Panchayat Samiti, Khed.

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## CHAPTER V

### MARKETING OF POTATOES IN KHED TALUKA

The present chapter brings into focus the main aspects of marketing of potato in Khed taluka. Within its purview, the relevant information includes the establishment of regulated market in the taluka with the main potato assembling centre at Chakan Sub-Market Yard, general pattern of potato trading and supportive market functions like transport, assembling, grading, storage, etc. The chapter concludes by analysing market arrivals and prices over a decade of years, as well as, seasonability affecting potato marketing.

#### 5.1 Khed Agricultural Produce Market with Sub-Market Yard at Chakan

Khed taluka being the important potato growing area, Chakan has developed into the most important primary assembling market for the region. It is situated on Pune-Nasik National Highway and has good network of connecting roads with the cities like Bombay, Ahmednagar and also with the many big villages in Khed taluka. This particular situation has resulted into good development of transport and communication facilities which are the primary need for any type of marketing system. Chakan being the important assembling

centre for almost all vegetables, and other agricultural commodities and livestock, the market has been regulated by the Agricultural Produce Market Act of Bombay State since 16.8.1950. As per the act, the Agricultural Produce Market Committee started regulating the marketing of potatoes, onions, green and red chillies, groundnut, as well as bullocks, cows, buffaloes, sheep and goats. The committee established its main market yard at Khed and the sub-market yard at Chakan, but, due to the transport and communication facilities and its location at the centre of vegetable growing area of the taluka this sub-yard turned out to be the main marketing centre, not only for the Khed taluka but also for the surrounding talukas. Gradually it developed as the important marketing centre of the state for potatoes.

#### Jurisdiction of Potato Trading in Khed Agricultural Produce Market

Potato sale in Khed Agricultural Produce Market covers the entire Khed taluka, its total area being 1,397 square kilometres. In Pune district, potato is sold in three markets, namely, Khed, Ambegaon and Junnar. But the Agricultural Produce Market Committee at Khed presides over the biggest potato market in Pune district. About sixty-five per cent of potato supply in Pune district is mainly from Khed taluka. Khed market is the main market of potato in Pune district and one of the major potato markets in Maharashtra.



## 5.2 General Pattern of Potato Trading

Majority of the potato farmers in the Khed taluka brings their produce from the farm to markets. Traders and commission agents arrange for its sale under the supervision of the market committee and make payment to them. (Around 300 producers bring the produce to the Saturday and Wednesday market.)

Whenever Khed (sub-market Chakan) market price is low, some farmers sell their produce at Pune and New Bombay (Washi) Agricultural Produce Markets to get better prices. About 90 per cent sales is in Chakan market. A few producers directly sell their produce to retail traders. Some of the producers with small quantities dispose of their potato in weekly markets by direct sale to consumers.

### Wholesale and Retail Trading in Potato

At Khed taluka market, there are 71 traders, 88 commission agents/brokers, 13 hundekaris, 49 weighmen and 154 porters, among others, operating with licence regulated by the market committee. Among the traders only 28 per cent is classified as 'A' class as the transaction per trader is above Rs. 50,000 per annum. The 'B' class traders with transaction ranging between Rs. 20,000 and Rs. 50,000 form

only 16 per cent. The remaining 56 per cent of the licenced traders, with annual transaction below Rs. 20,000 each, fall in the category 'C'. The traders in the first two classes are treated as wholesalers and the 'C' class as retailers.

Majority of the producers sell their potato at Agricultural Produce Market Yard in Chakan, Wholesale traders purchase potato from farmers in open auction through commission agents. They also deal in other commodities like onion, groundnut, etc. These wholesalers send potato produce to Pune, New Bombay (Washi), Bangalore, Hyderabad, Madras, Gujarat, etc. Wholesale traders form an essential link in the chain of assembling and distribution of potato. It is these traders who act as stockists and supply potato to retailers.

Retailers purchase potato from wholesalers and farmers. The retailers of potato are stall holders, small shop owners, haliwala, etc. Farmers also sell their produce direct to consumers.

No set principle is followed in fixing the retail prices and the retailers usually fix these prices in a common manner. Retail price is the purchase price of the retailer who adjusts his price not only according to supply and demand but also according to quality of produce. Retailers are the last link in the chain of distribution of potato from the

producer to the ultimate consumer. Almost all market transactions are settled by bargaining. Haggling is common and the retailer tries to charge as much as he can. It is profitable for farmers to sell in retail markets. But quick and more sale and also to get income at one time is not possible in retail markets; so they prefer to sell in wholesale markets.

### Market Practices

The market committee supervises the operations of the functionaries and agents, producers and sellers at auctions, weighment, filling and stitching of bags, assembling, transportation, selling, buying, packing, storage of potato and cartage to godowns. Slips are submitted to the farmers regarding weighments and rates through commission agents and weighmen. The supervisors are there to supervise all the activities of the market. The secretariat at the market maintains and reports statistics and information on arrivals and prices of all commodities transacted at the yard. In almost all cases, the market transactions are settled by bargaining.

In open market there are all sorts of malpractices and agents resort to many types of deductions of charges like commission, 'karta', 'vatav', 'dharmadaya', etc. Due to these malpractices and exploitation of all sorts, potato

producer-sellers suffer a lot. As against these malpractices, in regulated markets the charges payable by the receiver and the purchaser have been fixed by the market committees and are quite reasonable. The charges comprise the wages paid to porters for unloading the produce in the market, dressing it for sale and weighing, filling and sewing the bags. In market, 'hamals' and weighmen are the licencees of the market committee and the remuneration to be paid to them is fixed by the market committee.

The items of charges and the amount to be paid under each head is fixed by the market committee and all the traders dealing in the market yard are prohibited to charge any extra and undesirable charges like association fee, 'karta', 'vatav', and 'dharmadaya', etc. So the producer-sellers have correct information of the deductions in gross weight and prices of his produce sold in the market.

#### Marketing Agencies

In Khed taluka, there are about seventy-five licence holding commission agents. Some of the commission agents were doing potato business transactions before the establishment of Agricultural Produce Market Committee. Commission agents play very important role in assembling and distribution of potato. They also deal other important commodities like onion and groundnut pods, etc. A commission agent acts as a

middleman between the farmer and trader. Commission agents sell potato to traders by open auction. After weighing they prepare the bill and make payment to the farmers. They sell potato to traders on credit although they have to make full payment to the owners of the produce immediately after sale. As per law traders have to make payment to the commission agent within 24 hours. Generally they pay within a week. Commission agents maintain books of accounts and register. They also buy and dispatch potato on a large scale to markets in Bombay, Pune, Bangalore, Madras, etc.

Due to market regulation, commission agents are benefited and are satisfied. They are getting produce at market yard. Commission agents are not having any problems regarding market regulation. However they need storage and accommodation facilities.

### 5.3 Supportive Market Functions

#### Transportation

Potato producers in Khed taluka bring their produce from the farm straight to market for sale by means of trucks, tractors, tempo or bullock-carts. The transport charge is Rs. 5 per bag weighing 60 to 70 kg., for a distance of 15 kms. Chakan sub-market is very close to National Highway 50, so, there is no problem of transport bottlenecks.

We found that whenever price is low in Chakan market, some producers of potato sell their produce at Pune, Bombay, etc. They despatch their produce to these markets in trucks, and tempo-loads. The local Hundekaris charge depending upon distance and weight. The loss of potato produce in transit is reported to be 2 to 3 per cent. It appears that in Khed taluka the dispatch of potato by truck is generally preferred and is found more convenient and economic. However, such direct dispatches to outstation markets account for a meagre five per cent of the total produce marketed by the Khed producers.

#### Grading and Packing System

The Agricultural Produce (Grading and Marketing) Act, 1937 provides for a voluntary system of grading and if any one is desirous of grading his potato produce, he can obtain, on application, a certificate of authorization from the Agricultural Marketing Adviser to the Government of India. Government grader and grading equipments are available at market committee with AGMARK and other commercial grading facilities. Farmers themselves do sorting of potato on the basis of size like big, medium and small at the time of sale. Traders also do commercial grading.

The standardization of packing is also very important. Gunny bags are commonly used for potatoes. The bag may

contain 60 to 80 kg. of potatoes. The extra handling affects the keeping quality of the produce. When potatoes are sold on a bag basis, there are generally disputes about weight.

The farmers in Khed taluka bring potato in roughly stitched bags to the market yard. There is a system of standard packing of potato bags which consist of 60 kg. at Chakan sub-market.

### S t o r a g e

The problem of providing proper and adequate storage facilities is particularly important in the case of a commodity of a semi-perishable nature such as potato. The produce of this crop is seasonal while the demand is spread out over the whole year. Even though a farmer produces potato mainly for selling, he invariably stocks some portion of the potato for the purpose of domestic consumption, seeds, gifts to friends and relatives, etc. Potato of medium and big size, round and fully matured and well-dried is selected for storage. The problem of storage commences from the moment the crop is harvested and lasts till the commodity has been finally consumed. The difficulties of storage are faced by not only the producers but also wholesalers and commission agents. If the market prices are low, then some of the producers stock their produce for sale at a later date, in expectation of better prices. Wholesalers and commission agents also purchase potato when the market



trends are favourable and stock it for favourable prices. Generally, commission agents store in pits, 18 feet deep and 2 1/2 to 3 feet wide, dug out in the fields. The length of the pit depends on the volume of the produce to be stored. The pit is filled with water which is allowed to soak for five days. When it is dry, neem leaves are spread at the bottom and the sides to avoid the tubers coming into direct contact with the soil. Selected tubers which have been previously dried are heaped in the pit usually upto a height of 3 to 3 1/2 feet and are covered with a thick layer of grass. A ditch is then dug round the heap at a distance of one or two feet and is occasionally filled with water. Sometimes, when it is very hot, water is also sprinkled on the top of the heap to bring down the temperature. As far as possible the heap is not disturbed until the potatoes are finally taken out for sale. Potato is best stored in cold storage under the same conditions of temperature and humidity as required for potato. It has been found that freshly harvested potatoes can be kept without sprouting for 3 to 4 months, at 52° F; for 5 months, at 45° F, for 7 months, at 40° F and for an almost indefinite period at 35° F. Potatoes kept at a temperature of 30° F to 32° F suffer from internal breakdown and do not germinate if stored for three months or more. Good and satisfactory results are obtained by storing full grown, well-developed and clean tubers. Immature tubers lose water rapidly, shrivel badly and are attacked by *Pencilium* fungus. If the



tubers are properly selected, the wastage due to rotting at about 35° F to 40° F is almost nil.

The length of the period for which potatoes are preserved at ordinary temperatures before being put into cold storage affects the period of dormancy at different temperatures except at 35° F at which the tubers remain dormant for an indefinite period. It was observed that potatoes remained dormant for 7 months at 40° F when stored soon after harvest whereas those obtained from the same source but stored after exposure to ordinary temperature for 2 months began to sprout after 2 months.

The loss in weight in storage during 9 months at 35° F is about 10 per cent, when potatoes are kept in open trays, and about 5 per cent if kept in gunny bags or crates at 40° F. The loss in weight is less in the case of big tubers than in the case of small ones. However, as the difference is not much, the size of the tubers is not an important factor. The loss in storage varies from farmer to farmer, and place to place, depending upon various factors like keeping quality, seasonal variations, stage of maturity, after-care ventilation in storage, period of storage, size of tubers, etc.

Khed taluka being a major potato producing area in Pune district the cold storage facilities are not adequately available. Hence the quality and price of the potato get adversely affected.<sup>1</sup>

#### 5.4 Market Arrivals, Prices and Seasonality

The market arrivals of potato and average prices recorded at the regulated market of Khed, beginning from the year 1975-76 through to as recent as 1987-88, are considered here for the purpose of understanding the broad trends in potato market. The relevant data are presented in Table 5.1. In regard to pattern of arrivals, there have been considerable ups and downs, from year to year, over the thirteen year period under reference. The arrivals register the lowest figure of 17,664 quintals in 1977-78 to record the peak of nearly 69,000 quintals in 1981-82. In between, the annual arrivals vary from 30,000 to 50,000 quintals in most years of the period. Broadly speaking, the arrivals at any given market yard are not only governed by the production and marketed surplus available but also the prevailing prices in local and outside produce markets.

Similarly, the average price situation exhibits fluctuating trend to a considerable extent. The year to year price movement has not been uniform. Besides, there has not been any apparent evidence of price increase in keeping with the levels of general price situation. Nevertheless, a broad pattern of the average prices moving with the changes in the annual arrivals may be seen in some years. The broad relationship between the arrivals and the average prices

**Table 5.1** : Total arrivals and average prices of potato at Khed Agricultural Produce Market from 1975-76 to 1987-88

Year	Arrivals (in quintals)	Average prices (in Rs.)
1975-76	37735	89
1976-77	35290	110
1977-78	17664	115
1978-79	32440	84
1979-80	21810	120
1980-81	52750	122
1981-82	68915	110
1982-83	31235	110
1983-84	40895	100
1984-85	53635	95
1985-86	22178	150
1986-87	29844	220
1987-88	33760	200

**Source** : Annual Reports of Agricultural Produce Market Committee, Khed (1975-76 to 1987-88)

establish the fact that prices tend to move upwards when there is a reduction in arrivals over the preceding year. However, the years 1978-79, 1982-83 as also 1986-87 prove exception to this relationship. Moreover, the degree of changes between the yearly arrivals and the average prices are not uniform throughout the period under reference.

The average potato prices are subjected to changes not only from year to year but also during any given year. This happens mainly due to the two harvest seasons for potato, the cash needs of the producers and the level and efficiency of the storage facilities available at the farms and distributory stages. In order to obtain a general idea about the seasonality factor in arrivals at the market yard and the average price, the monthwise quantity of arrivals and prices pertaining to the year 1987-88 are presented in Table 5.2.

The freshly harvested kharif potato starts arriving in market during late September and October month. Most of the farmers with urgent cash needs and without proper storage facilities at their disposal bring bulk of their produce to the market in October. Thereafter, the monthly arrival in November has registered a decline but is seen picking up in the subsequent four months to reach the peak month of arrivals in March. Bulk of the kharif potato is disposed of in the market by December. On the other hand, the rabi potato starts arriving in market during the month of February and reaches the peak in March. From April-May the arrivals decline steadily and reach the low proportions during the rainy season. Again it picks up with the commencement of kharif harvesting season from late September.

By and large, the price of potato appears to be a

**Table 5.2** : Monthly arrivals of potato produce and its monthly price in the Khed sub-market Chakan in 1987-88

Month	Quantity in quintal	%	Average price per quintal
October	5950	17.63	210
November	1450	4.29	200
December	2400	7.10	160
January	2650	7.86	165
February	5480	16.25	170
March	6050	17.92	165
April	2220	6.57	190
May	2220	6.55	195
June	1430	4.26	240
July	1145	3.39	245
August	670	1.98	250
September	2095	6.20	220
<b>Total</b>	<b>33760</b>	<b>100.00</b>	<b>200.00</b>

**Source** : Joint Report of Agricultural Produce Market Committee, Khed, 1982-1988.

function of supply. The monthly average price has ruled highest in August when the quantity of arrivals touched the lowest ebb. Generally, the price has remained above the level of yearly average of Rs. 200 per quintal in most cases of the lean season (June-September) except the October, the peak month of kharif potato.

The total arrivals of potato in sub-market Chakan can be classified into three seasons : (1) season of the kharif potato (2) season of the rabi potato and (3) lean season.

The bulk of the arrivals of potato in Khed (sub-market Chakan) market is of the potato produced in rabi season. As we have seen, nearly half of the total annual arrivals of potatoes are of rabi season of three months from January to March. The arrivals of kharif potatoes are comparatively low - about 29 per cent of the total supply in the year. In the lean period the arrivals are mostly from the stocks kept by the big farmers who have storage facilities. Naturally the arrivals in this period are bound to be very low compared to those of kharif and rabi seasons. In this period nearly 20 per cent of the total annual arrivals were reported for the year 1987-88.

In all these seasons the prices of potatoes have more or less in regular correspondence with their supply in the market. It is observed that the prices of the kharif potatoes are generally much higher than those of the rabi.

It may be noted from the table that the prices of the kharif crop varied between Rs. 160 and Rs. 210 per quintal of potatoes during the three month period from October to December in 1987-88. As against this the prices

of the rabi potatoes fluctuated between Rs. 165 and Rs. 190 per quintal during the four months of the season from January to April in 1987-88.

In the lean period the prices of potatoes ruled comparatively high, varying between Rs. 195 and Rs. 250 per quintal. Thus the average price per quintal of potatoes is generally lower for the rabi season crop and quite high for the kharif season crop.

On the whole, we observe that seasonality in arrivals of the potato produce in the khed (sub-market yard Chakan) plays a major role and cause great fluctuations in the wholesale prices. It may be said that the wholesale prices respond much more quickly to the seasonal variations in the arrivals of the potatoes in the Khed (sub-market Chakan) market. The table shows that when the arrivals of potato at the Chakan yard of Khed market are at the highest peak, the prices are at the lowest level. We may conclude the discussion by saying that the main cause for steep rise or steep fall in the potato prices is the sharp fluctuation in the quantities of arrivals of potato produce in the Khed market (sub-market Chakan).

The potato arrivals and price level at Pune and Bombay markets influence the arrivals and prices at Chakan sub-market. Commission agents and purchasers contact on phone to these markets before fixing the prices at sub-

market yard of Chakan. The demand for consumption, the cost of storage and the extent of losses during storage period also have influence on prices.<sup>2</sup>

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- 2 Agricultural Produce Market Committee, Annual Report, 1975-76 to 1987-88.



## CHAPTER VI

### SUMMARY, CONCLUSION AND SUGGESTIONS

#### 6.1 Summary and Conclusions

In the present chapter, we summarize the earlier chapters and highlight some of the important conclusions and suggestions. In the first chapter, which is the introduction, we have discussed about Marketing, Historical Reviews and importance of potato.

The significance of agricultural marketing, marketable surplus and some basic elements of an agricultural system are taken note of. It is also seen, how marketing plays an important role in stimulating production and consumption. According to the National Commission of Agriculture, the success of any agricultural development programme rests on efficiency of the marketing system and hence, many advanced countries took advantages of improving technology in agriculture, production and marketing along with the services of transportation, storage, packing, handling and distribution of commodities.

It is made clear that how the study of marketing is important to both the individual and to the society. A subtle difference between marketable surplus and marketed surplus is rightly brought out.

The meaning of cost of marketing, when the marketing costs begin and the various factors that include the marketing costs are given. The difference between the final price and the price received by grower of crops, how are they taken to represent the costs and profits of marketing. Even these costs are paid by the producers, marketing agencies and consumers. It is a direct outcome of the existence of different stages in the marketing system. The term price spread, though variously defined is generally understood to mean the difference between the two prices i.e. as paid by the consumer and the one received by the producer.

There is, and, indeed, there must be a margin between what the producer receives for a product and what the consumer pays for it. But since the public has so little knowledge of what these services include, there has grown up the feeling that much of the cost is unnecessary.

The marketing and processing margin is the difference between the price per unit that the consumer pays and the price received by the farmer. It also helps us to know the different components of marketing margins and their influence on the final price which the consumer pays. It is very difficult to measure exactly the cost of marketing. It is often said that farmer's share in the consumer's rupee is relatively small as compared to that of several intermediaries in the market channel.

Marketing costs and margins would vary depending upon the nature of the commodity, services rendered, the type of marketing channel.

Minimum input of various economic resources which will result in the satisfaction in goods and services subdivides marketing efficiency into two categories, namely, (i) Technological efficiency, and (ii) Economic efficiency.

The agencies engaged in distribution of potatoes are producers, village merchants, commission agents, wholesale merchants and retailers.

U.S.S.R. is the foremost potato producing country of the total world area under potato. Poland comes the next. Much smaller countries produce potatoes. In India, Uttar Pradesh, West Bengal and Bihar are the major potato producing states, three-fourths of the production comes from these three states. Gujarat ranks first so far as yield are considered.

The agricultural prices commission presents the price policy for potatoes for 1975-76 and 1976-77 season. The Commission made various recommendations regarding prices. It is found that potatoes are an established stable food in various parts of our country and is one of the major crops of annual production.

Due to price fluctuations and uncertain prices, farmers suffer much. Cold storage capacity and establishment of processing units for potatoes should be increased. The minimum support price should be fixed. Being a perishable commodity potato cannot be stored in ordinary godowns for long time. So export on time is essential. Thus the Government should purchase the produce for disposal in foreign markets.

The study has also shown that the disposal of the procured produce in the country markets during the peak season failed to improve the price situation and this was not of any help to the average producer.

One main problem with regard to the production of perishable commodity like potato is the high fluctuation in prices. There is a negative relationship between market arrivals and prices. Potato prices vary considerably spatially as well as temporarily.

There is no systematic announcement of minimum support prices nor any regular price support scheme in respect of potato. When the interest of the cultivators are threatened Government of India lends support to market at an intervention price. Such scheme is implemented through NAFED as the designated agency.

In Maharashtra, the major proportion of production

of potato comes from Pune district (which accounts for 51.13 per cent average total production of the state). Then follow Satara, Ahmednagar and Nasik districts. The agriculturists in these districts are taking more and more interest in the production of potato. Potato, a cash crop, can be easily preserved for a few months and thus, the area as well as production in the state is increasing.

Though potato is a cash crop, cultivators retain some portion of the produce for domestic use. Some producers make provision of seeds for kharif.

Assembling deals with the movement of produce from the farm to the wholesaler's godown and distribution means its movement to consumers. Normally, distributing agencies are producers, village merchants, commission agents, wholesale merchants and retailers.

A commission agent arranges to pay all charges of transport, hamali, octroi and weighment. He recovers it (charge) from the sale proceeds.

There are fluctuations in prices. The prices are determined by the forces of demand and supply, quality of produce, distance of markets, facilities for transport and storage. The prices are low during the harvest season. The prices start rising during the months of November and December.

The wholesale prices of potatoes decline from January to June when the tubers from Uttar Pradesh, Madhya Pradesh are easily available. The lowest price is found in the month of March. April is called slack period. The prices remain high in the month of December.

The wholesale prices in Pune indicate an easy trend from January to April. The prices start rising in May and remain quite high from June to August. In September the prices decline, but a modest improvement is seen in November and December.

Potato passes through various hands before reaching the final consumer. All these hands keep a margin of profit for their services. Factors affecting the cost are : (i) transport charges, (ii) market charges, (iii) handling charges.

In Khed taluka, potato crop is taken both in rabi and kharif seasons. Rabi potato is taken during winter months when the climate is cool and conducive for rapid growth. It is an irrigated crop. The irrigation during rabi is under control. The incidence of pests and diseases is more during kharif than during the rabi season. These are the reasons why the cultivators prefer rabi potato. Thus rabi crop gives higher output and more profit than kharif one.

The average size of holding of Khed taluka works out

to 4.5 hectares. The holdings are not only small but they are scattered in small fragments. All types of farmers are growing potato. They grow potato twice in a year. Local farmers use three types of seeds : D.C. Kufri-Chandramukhi, Kufri Sindhuri and Kufri Jyoti and seeds are brought from Madhya Pradesh and Punjab. Commission agents and traders provide these seeds to the farmers in both seasons (kharif and rabi).

Potatoes can grow in all types of soil except saline and alkaline. The temperate climate is useful to potato and hence potatoes in various regions are cultivated at different periods depending upon the climatic conditions, especially the climate of Khed taluka is favourable to grow potato in kharif and rabi seasons. Ten or 12 irrigations are necessary during the whole life period of rabi potato. Farmers use water from rivers, private wells, lift irrigation schemes, etc. Weedings and earthing are necessary for growing potato well. The potato crop is harvested when the foliage turns yellow and the tubers are fully matured. Potato, especially in Khed taluka, matures within 3.5 months.

Regulated market at Khed was established on 16.8.1950. The jurisdiction of the main and sub-yards of the market covers an area of 1,397 sq.kms. Farmers in Khed taluka bring their produce by trucks, tractors, tempo and bullock-

carts to the markets. If the market price is low, they sell their produce at Pune and Bombay (Washi).

Government grader and grading equipments are available at market committee. Farmers themselves do grading of potato like big, medium and small size. Gunny bags are used for packing potatoes. The bag may contain 60 to 80 kg. potatoes. Storage facilities are important to potatoes. Difficulties of storage are faced by producers, wholesalers and commission agents. Pits with spreading of neem leaves at the bottom and sprinkling water on top are the methods to bring down the temperature. Care must be taken by farmers that potatoes should not be germinated. Cold storage facilities are not available in Khed taluka even though it is an important producing area in Pune district.

The market committee supervises the operation of the functionaries, agents producers and sellers. Slips are submitted to the farmers containing weight, rates and mapedi. But in open market there is a sort of cheating in weight, charges like karta, vatav and dharmadaya.

About 95 licence holding agents are in Khed market. They play very important role in assembling and distribution of potato. They act as middlemen between the farmers and traders. Commission agents, therefore, are satisfied and benefited and hence they do not have any problems regarding market regulations.



We have observed that the total arrivals of potatoes in Khed (Chakan) market is 33,760 quintals. More than fifty per cent of the total production of potatoes in Pune district is marketed at the Chakan market yard. In the month of March, the arrivals of potatoes at Chakan market are high. Generally, majority of the farmers bring potato produce to the market to sell immediately after harvest as they have their urgency of money.

Potato arrivals and price level of Pune and Bombay markets have influence on the arrivals and prices of Chakan sub-market..

The total arrivals of the potato in sub-market Chakan can be classified into three seasons i.e. kharif, rabi and lean seasons. The main bulk of the arrivals of potato is found in rabi season, but the arrivals of kharif potatoes are comparatively low. In the lean season, the arrivals of potatoes are mostly from the stocks kept by big farmers who have some storage facilities. So the prices of potatoes have more or less in regular correspondence with their supply. The prices of the kharif potatoes are much higher than those of the rabi.

We have observed that the seasonality in arrivals of the potato produce in Khed taluka plays a major role and causes great fluctuations in the wholesale prices. We

may conclude by saying that the main cause for steep rise or steep fall in the prices is the sharp fluctuations in the quantities of arrivals in the Khed market.

### Suggestions

The following suggestions are made to improve the production and marketing of potato.

1. Soil Testing : Majority of the potato growers are without the facility of soil testing before taking this crop. If the soil is examined the potato growers will come to know which fertilizers are to be used.
2. Cultivation Method : We have observed that the potato growers in this region are using traditional implements for the cultivation, like wooden plough, wooden kulwa, etc. If they use modern instruments, it will lead to increase in productivity.
3. Cost of Cultivation : While planting the potato tubers farmers are not using modern method and instruments. We find that cost of cultivation is increasing year by year, like human labour, bullock labour, etc. It is essential to reduce the cost of cultivation.
4. Supply of Inputs : There should be adequate and timely supply of inputs like quality seeds, fertilizers, pesticides, etc., at a reasonable price, which requires the stream-lining of distribution channels. Provision may also be made for the supply of easy credit to purchase the above inputs.

5. Storage Facilities : In this region we find that no cold storage facilities are available. Potato growers prefer to store the potato under the crude methods like shade of trees and the pit system with coverage of the grass. Because of these old storage system, the quality of potato is considerably affected. Considering these drawbacks of the storage, the potato growers have failed to realise higher remunerative returns.
6. Transport : The potato growers have no proper transport facilities with reasonable rate. In kharif season, the transport facilities will not be available in time. There are no suitable all weather roads to carry the potatoes from farm to market. It takes a lot of time to reach the market place.
7. Market Information : We find that majority of the potato growers have no sufficient market information. They have to rely on the information provided by traders and commission agents. Daily price bulletins are issued; price and market information is also displayed on notice boards in the market and supplied to newspapers, journals, radio and television. The market information is required by all participants in the market viz., potato growers, traders, commission agents and consumers, etc.
8. Low Prices : It has been observed that in the last ten years, there has been a very wide fluctuation in prices.

In the months of May, June, July and August, the prices were relatively high, while in October, November, January and February, the prices were very low because of high arrivals in the market. In order to regulate the prices throughout the year to save the producer as well as consumer from the hardship, the government should fix the support prices as well as the ceiling prices at a level fair to both the producer as well as consumer. Since potato is a perishable commodity, government will have to enter the market for the purchase of the commodity for onward supply to the deficit areas.

9. Industrial Use of Potato : The industrial use of potato should be encouraged and factories should be established in this area for the production of starch, vodka, etc.

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