

**Evaluation of Impact On Production and Export of Central Sector  
Scheme Integrated Programme for Development of Spices  
Implemented during VIII Plan  
(Executive Summary)**

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## **Executive Summary**

### **1.1 Background**

Spices constitute an important group of agricultural commodities, which are virtually indispensable in the culinary art. Apart from culinary purposes, spices are also used as flavouring agents in beverages, they are active ingredients in ayurvedic medicines, colouring agents in textiles and important constituents in cosmetic products. Further, value added form of spices is becoming a thrust area with tremendous potential. Value addition can be as simple as presenting the commodity in a cleaned graded form or it can be a completely different product such as dehydrated spice products, curry powder, spice oils, oleoresins etc. The change in quality of life, urbanization large number of working women, changes in food habits are all favourable factors that have opened up tremendous growth potential for value added consumer packed spices.

India is well known as the land of spices and it is infact the foremost country with regard to the production, consumption as well as the export of a wide range of spices. The wide variety of spices grown in different parts of the country are mainly consumed by a strong domestic market, the rest being exported. In other words, nearly 94 per cent of spice production is domestically consumed and barely 5 to 6 per cent is exported. India has the potential to become a major player in the world trade in spices and Indian spices are exported to a number of countries in different parts of the world. The country (along with China) has a prominent place in ginger production and is also the largest producer and exporter of turmeric in the world. India has near monopoly in production and exports of large Cardamom. Black pepper is also a major export from India. Other than export of spices, India has monopoly position in the supply of oils and oleoresins in the global market. Again, in case of curry powder, spice powder, spice mixture and spices in consumer packs, India is in a formidable position.

Therefore with very high domestic consumption, increasing world demand for spices and value added spices, opportunities exist for country like India to boost production and play an active role in global trade of spices.

However, lack of enough programmes for large scale production and ~~distribution~~ distribution of quality planting materials of released varieties of spices are an important

factor which have come in the way of increasing production and productivity. Also, productivity is often low due to cultivation of varieties of poor genetic potential, imbalanced manuring and non-adoption of other recommended package of practices. Further, spice crops are easily susceptible to diseases which naturally affects production. Diseases such as soft-rot, fruit-rot take a heavy toll of crops every year and plant protection measures being costly are not adopted by majority of farmers. High production technology developed at the research stations have not been transferred to the field due to lack of sufficient extension personal and infrastructure. Farmers training on adoption of new technology is thereafter required to be carried out in a big way. The government having recognized the importance of spice crop and the potential it has in the national economy, felt it was necessary to promote various strategies and development programmes to boost production. Accordingly, this was emphasized in the "Central Sector Scheme Integrated Programme for Development of Spices in the Eighth Plan".

The present study has thus been taken up to evaluate the performance of the Central Sector Scheme and the extent to which it has helped to boost production. The study is conducted with reference to three spice crops viz. turmeric, ginger and chilli.

## **1.2 Objectives of the Study**

**The broad objectives of the study are:**

- (1) To evaluate the status of spice cultivation in Maharashtra prior to and after the implementation of the scheme;
- (2) To study the district-wise effectiveness of the implementation of the scheme;
- (3) To study the impact of the programme in stepping up the production;
- (4) To obtain the suggestions at different levels for improvement on mode of implementation and monitoring aspect;
- (5) To furnish rational guidelines for betterment of the scheme.

Regarding export of the selected spices from Maharashtra, the study has limitations, as the required data could not be available. Exports from India have however been discussed;

### **1.3 Methodology, sampling Design, Data Base and Coverage of the study**

The study is based on both primary and secondary data. On the basis of secondary data (collected from various issues of Season of Crop Reports, Maharashtra) the study analyses the status of spice cultivation, 5 years prior to and 5 years during the implementation of the scheme. In order to observe this we collected data (district-wise) on area, yield and production of the three spice crops selected.

Further, in order to study the implementation of the scheme, we collected data, on various programmes implemented in the scheme, spice wise and district wise. Thus for each selected spice crop, data was collected on the targets laid down in each district for each programme, and the extent to which these targets were achieved, was analysed. This data was obtained from the Directorate of Horticulture, which is the chief implementing agency at the state level.

With regard to primary data, for each crop, one scheme district having more or less maximum area and targets under each crop was selected. Accordingly Sangli district was selected for turmeric, Satara for ginger and Nagpur district for Chilli. Further, from each selected district, two talukas, which, again had more or less maximum area and targets for the crop were selected. The list of beneficiaries was obtained from the office of the District Superintendent Agricultural Officer, who implements the scheme at the district level.

In each selected district, 50 cultivators among the beneficiaries of the scheme were selected as the sample households. As two talukas were selected from each district, we selected 25 beneficiaries in each taluka. In each taluka 1 to 3 villages were selected depending on the concentration and availability of the beneficiaries.

The list of spice growers was grouped into 5 groups, viz. marginal, small, semi-medium, medium and large, according to Land-holding size. As far as possible from each group, farmers were selected and addressed with a questionnaire regarding their experience in the participation of the Central Sector Scheme.

Thus the sample consists of 3 districts (6 talukas and 1 to 3 villages in each taluka) and 50 farmers in each district, thus totaling to 150 farmers.

#### **1.4 Reference Year**

The study, as can be observed from the title deals with the impact of the Central Sector Scheme on Spice Development during VIII<sup>th</sup> Five Year Plan (1992-93 to 1996-97). Therefore a few years before 1992-93 and the period of the VIII<sup>th</sup> Five Year Plan is the reference year of the study.

#### **1.5 Major Findings**

Before we move onto the major findings of our study, it must be pointed out that the share of spices in the gross cropped area in Maharashtra is less than one per cent and ranges between 0.67 to 0.86 per cent. Out of the total area under spices in Maharashtra the share of turmeric (4 per cent) and that of ginger (1 per cent) is negligible while the share of chilli is maximum i.e. 75 per cent. We can therefore conclude that chilli is the dominant spice crop grown in Maharashtra.

For the country as a whole also, spice crops approximately form 1.23 per cent of the gross cropped area. Despite this, India occupies a prominent position in the global trade of spices.

While exports from India was 1.02 lakh tonnes in 1989-90, they increased to 2.19 lakh tonnes in 1996-97. Presently, our spice exports command 49 per cent in global trade in terms of quantity and 24 per cent in terms of value. Pepper and chillies are our main exports, and these exports alongwith ginger and turmeric normally formed 65 to 70 per cent of our total exports. Further, as already mentioned, exports of value added spices are assuming importance. The exports have increased from 18654.46 tonnes in 1991-92 to 35212.70 tonnes in 1995-96. The main value added spices that are being exported are chilli powder, which formed 34 per cent of total exports and turmeric powder, which was 21 per cent in 1995-96.

The details of exports of spices from Maharashtra State alone could not be obtained, despite attempts to obtain this data from various sources.

The share of Maharashtra (physical and financial) in the central sector scheme, the impact of the scheme on production of spice crops, the district wise participation, the target laid out and achieved and the impact of the scheme on the sample farms have all been observed for three crops i.e. turmeric, ginger and chilli. The following are the results of the study:

### **1.5.1 Share of Maharashtra in Central Sector Scheme on Spice Development**

The total assistance received by the state of Maharashtra to achieve its targets was Rs. 2.16 crores out of a total budget of Rs. 125 crores sanctioned by the Centre. Therefore Maharashtra received 1.73 per cent of the total budget sanctioned by the centre for this scheme.

In case of turmeric, Maharashtra's share in physical terms was 6 per cent for demonstration cum seed multiplication plots, 9 per cent for area expansion programme and 15 per cent for providing assistance for fabrication of polishing drums. The total provision for turmeric was Rs. 58.80 lakh.

In case of ginger, Maharashtra's share in physical terms was 3 per cent in production of nucleus seed, 3.3 per cent for establishment of demonstration plots, 6 per cent for distribution of minikits, 3.5 per cent for plant protection measures and although 5 per cent of the country's targets was allotted towards area expansion, this was not released by the State. The total financial outlay for ginger was Rs. 15.7 lakhs.

The third crop chilli, is the major spice crop grown in Maharashtra and the State has approximately 1.19 lakh hectares under chilli. Its share in the Central Sector Scheme in physical terms was 6.4 per cent in case of production of seeds, 11.8 per cent in case of establishment of demonstration cum seed multiplication plots, 17.4 per cent in case of plant protection measures, 16.6 per cent in case of distribution of minikits, 19.3 per cent for area expansion programme and 6.7 per cent for establishment of demonstration plots of paprika. The total outlay for chilli was Rs. 206.78 lakhs.

### **1.5.2 Status of Spice Cultivation in Maharashtra**

In order to study the status of spice cultivation, we have observed the area, production and yield of the spice crop over a period of 10 years i.e. 5 years prior to the implementation of the scheme (Period I) and during the 5 years of the Eighth Plan (Period II).

In case of turmeric, it was observed that area, production and yield showed a fall in period II as compared to period I. In some districts however, such as Satara, Sangli and Nanded, there was increase in production.

In case of ginger again, all three indicators i.e. Area, Production and Yield showed no improvements after implementation of the scheme. Most of the states in

Maharashtra do not grow ginger and in 1994-95, out of 29 districts only 6 districts cultivated ginger. Satara, however is the major ginger growing district in Maharashtra and its area showed increase in Period II as compared to Period I although there was no increase in productivity. A number of districts such as Parbhani, Latur, Amaravati, which cultivated ginger in Period, I, showed virtually no area under ginger in Period II. This was partly responsible for the overall fall in area in ginger.

The chilli economy of Maharashtra showed marginally better performance in Period II in terms of yield. The yield of chilli, which was 513 kg per hectare in period, I increased marginally to 527 kg per hectare in Period II. Nagpur had maximum area under chilli, which was about 18 per cent of the total area under Maharashtra. In terms of production it contributed only 6 per cent due to very low yield, much below state average. Unlike ginger and turmeric, chilli is grown in every district of Maharashtra. Yield however differed widely across districts, with districts like Jalgaon, Pune, Ahmednagar having yield of 1120 kg per hectare, while in Nagpur the yield was barely 172 kg per hectare in Period II.

### **1.5.3 District-wise Implementation of Cental Sector Scheme on Spices Development**

In case of Central Sector Scheme for turmeric, three programmes viz. establishment of demonstration cum seed multiplication plots, area expansion and assistance for polishing drums were implemented.

At the state level, in case of demonstration plots, the targets were to establish 2557 plots (0.1 <sup>hectare</sup> each) during the VIII<sup>th</sup> Plan period. The number of plots established were 2542, which means that targets were almost, totally achieved. In case of area expansion programme out of a target of 927.5 hectares to be covered, an area of 959 hectares was achieved. Polishing of turmeric is an essential feature of processing, hence assistance was given for purchase of polishing drums. However, out of a target of 30 drums, only 20 drums were purchased.

While targets for all programmes were nearly met, it appears that the scheme was operated on a very small scale in case of all programmes. For example, less than 2 per cent of the area each year was laid out as demonstration plots, while 8 per cent was

under area expansion in 1994-95 and it was 6 per cent in 1995-96. The area expansion programme was negligible in 1996-97 and it covered only 1.6 per cent of the area.

The same observations were made at the district level. For example, Sangli had maximum demonstration plots in 1995-96. But this covered only 2.5 per cent of its area. The participation of most of the districts was very small and most districts had negligible area under demonstration plots and area expansion programme. The scope for yield to increase was thus limited.

Ginger appears to be a minor crop and has a share of only 0.01 per cent in Maharashtra's gross cropped area. In case of ginger, four programmes had been implemented, but all targets were not achieved. The achievement was poor in case of nucleus seed where instead of 69 tonnes only 12.67 tonnes had been produced. Targets were slightly surpassed in case of demonstration plots, but fell short in case of area expansion programme. While the target was to distribute 3033 minikits, the achievement was only 1972 i.e. 65 per cent.

Again, the Central Sector Scheme covered a very negligible area. The establishment of demonstration plots was laid out in hardly 1.5 to 2.5 per cent of the area under ginger. The plant protection programme covered 9 per cent of the area and in 1996-97 it was 1.6 per cent. The minikits distributed also covered less than one per cent of the area. The same was naturally observed in Satara which is the main ginger growing area in the state.

Chilli, as already observed is the major spice crop grown in Maharashtra. Targets were laid out for 6 programmes but were not entirely achieved. Targets achieved were negligible in case of production of nucleus seed and only 0.05 tonnes were produced as against a target of 7.91 tonnes. The achievement was 91 per cent in case of establishment of demonstration plots, 72 per cent in case of plant protection measures, 87 per cent in case of distribution of minikits, 68 per cent for paprika demonstration plots. Only in case of area expansion programme, the achievements surpassed targets. However there were many districts which achieved their targets for a number of programmes. Infact Nagpur and Chandrapur districts having maximum area under chilli, almost always achieved their targets.

Again it was observed that as in case of other crops, the programmes initiated for chilli covered only a small portion of the total area under chilli. Demonstration plots

covered 0.1 per cent of the area, and less than 1 per cent of the area was under area expansion programme. Again negligible area was covered by minikits and paprika demonstration plots. The plant protection programme covered 13 per cent of the area in 1994-95 and 8 to 9 per cent of the area under chilli in 1995-96 and 1996-97.

#### **1.5.4 Impact of Central Sector Scheme on Sample Farm**

**a) Turmeric:** Most farmers cultivated turmeric on an area of 0.20 to 0.40 hectares and the main varieties grown were Salem, Rajapuri and Cudappa.

While secondary data from Season Crop Reports showed that average yields in Sangli district ranged between 1700 to 1900 kg per hectare, in case of our sample farmers, the yield ranged from 1100 kg to 1300 kg per hectare. Also they did not experience higher yields in the year when they participated in the scheme.

The purpose of establishing demonstration plots and of area expansion programme was to popularise the use of high yielding varieties and scientific agronomic techniques, particularly plant protection chemicals. This is so as turmeric is susceptible to diseases such as leaf blotch, leaf spot and rhizome rot. These diseases severely affect the yield.

Our field survey however showed that 'Rajapuri' and other such local varieties were cultivated by farmers. They were not even fully aware of scientific agronomic techniques. Studies show that 'Rajapuri' variety has a yield potential in the range of 2545 to 6300 kg per hectare. Since farmers never achieve this yield, there is scope for them to improve yield. Diseases such as rhizome rot reduce the yield by 50 to 60 per cent and this disease is a common feature in turmeric fields.

**b) Ginger:** It was observed that most farmers cultivated ginger on 0.10 hectares to 0.20 hectares. The farmers who were interviewed revealed that they cultivated only local varieties, namely 'Satari' variety.

Our sample showed that most cultivators participated in the minikit scheme. This was also true for the two selected talukas as a whole.

From our survey it was observed that the yield ranged from 1800 kg per hectare to 2300 kg per hectare across farmers and across years (1991-92 to 1996-97). These figures on yield which are based on field survey are not comparable to the figures quoted in secondary sources. In Season Crop Reports for Maharashtra, the yield for

Satara district barely ranged from 900 kg per hectare to 1200 kg per hectare. This is much lower than that obtained by our sample farmers. Attributing the high yield of our sample farmers to Central Sector Scheme however can not be easily justified. As already noted most farmers participated in minikit scheme, where only one bottle of insecticide was distributed for 0.01 hectare . The yield however is calculated on the basis of production on 0.10 or 0.20 hectares, depending on his area. Also, his yield was often higher in the year when he did not avail of subsidies, as compared to the year when he participated in the scheme.

As in case of turmeric, even ginger is susceptible to rhizome rot and other diseases. The farmers, especially those who were in the high income group revealed that they used plant protection measures which helps to save the crop. Since plant protection chemicals are costly, all farmers can not afford to do so and the crop is often destroyed. Further, since ginger is a minor crop, crop cutting estimates are not conducted to estimate yield. Hence there could also be an element of arbitrariness in Season Crop estimates or even in field estimates (in case farmers have not revealed exact production figures).

c) **Chilli:** Chilli, being a relatively more important crop, farmers cultivated it on area ranging from 1 acre to 1 hectare. Different varieties were grown by cultivators.

Our survey showed that in both the talukas, atleast half the number of beneficiaries who participated in the scheme experienced increase in yield. Farmers who had established demonstration plots and participated in area expansion programme, revealed that they had switched over from local to high yielding varieties. Farmers said that would continue to use high yielding varieties such as G-4, 235, Jayanti etc. Many farmers in the sample experienced higher yields in the following years after their participation in the programmes. This could suggest that they are responding to better farming techniques. Nagpur district, where the yield was normally 134 kg per hectare, experienced a higher yield of a little over 200 kg per hectare in 1994-95, and 1995-96 when the scheme had maximum targets.

Therefore as contrast to the survey on turmeric or ginger, our field results on chilli crop showed better response from farmers. The cultivators who switched over to high yielding varieties and participated in area expansion and other programme experienced higher yields. There were however a few cases when farmers did not

respond positively to the scheme. Even the establishment of paprika demonstration plots were not always successful. On the whole however, micro-level studies do show that the scheme does offer potential for improvement in yield.

At the All India Level, the scheme envisaged an overall growth rate of 8 per cent in the production of spice crops. The growth rates achieved were however short of targeted as can be observed from below

Spice Crop	Average Annual Growth Rate of Production (%) (1991-92 to 1996-97)	
	Targeted	Actual
Turmeric	8	6.08
Ginger	10	4.87
Chilli	9	5.5

The actual growth rate is far short of that targeted. The situation is much worse in Maharashtra, where production actually showed declining trend during the VIII Plan Period, due to both area and yield effect.

### 1.6 Policy Implications

Our study on impact of Central Sector Scheme On Development of Spices leads us to the following implications for policy:

**FIRST**, the scheme has been implemented on a very small scale at the state level and covered a negligible area under all the three selected spice crops. Demonstration plots and adoption of plant protection chemicals, etc, on such a small area can hardly be expected to create any impact on the overall district yield and thereby state level yield. Hence, for the scheme to have a substantial impact and thereby increase production, it is necessary to fix higher targets so that more beneficiaries can avail of subsidies. This will naturally entail more outlay. The release of grants must also not be delayed by the central and state government, as sometimes the release is after the commencement of the planting season. Farmers thus could not participate in some programmes such as establishment of demonstration cum seed multiplication plots, area expansion programme etc. as they have already started planting operation. [Attn: Government of

**India, Ministry of Agriculture, Directorate of Cocoa, Arecanut & Spice Development (Calicut), Kerla, and Directorate of Horticulture, Maharashtra State.]**

**SECOND**, the subsidy for various components and sub-components is very less. For example, the subsidy for component of nucleus seed is less. Hence the Agricultural Universities are reluctant to take up the programme of production of nucleus seed. Again, in case of distribution of minikits for ginger, the subsidy amount in the minikit was Rs 25 for a plot size of 0.01 hectare. The minikit, as per norms is supposed to contain 5 Kg seed rhizomes and its requirements of fertilizers and plant protection chemicals. However, from the office of the District Superintendent Agricultural officer, as well as a personal interview with farmers, it was revealed that under minikit distribution only one bottle of pesticide for 0.01 hectare was available. Also, 5 Kg of seed for 0.01 hectare is insufficient, as the seed rate is 1200 Kg to 1800 Kg per hectare for ginger. Therefore, atleast 10 Kg seed are required for 0.01 hectare. The assistance in this programme, therefore, does not provide any incentive to farmers to participate in the scheme. It is, therefore, felt that subsidy amount should be increased as input prices are escalating over the years. In case of other programmes such as plant protection measures also the subsidy amount was less. [Attn : Government of India, Ministry of Agriculture, Directorate of Cocoa, Arecanut & Spices Development, Kerala.]

- **THIRD**, the purpose of establishment of demonstration plots and of area expansion programme is to encourage farmers to switch over from local varieties to high yielding varieties. In case of ginger and turmeric however, all farmers who had availed of subsidies under the programmes, were still cultivating local varieties.

There have been major constraints in ginger cultivation due to non-availability of sufficient quantity of quality planting materials of high yielding varieties, as well as low fibre content varieties. Ginger is propagated exclusively by vegetative means because of lack of seed set. Hence, the conventional approach in ginger breeding and selection for disease resistance are especially difficult. Poor genetic base and absence of seed set are a few hurdles in the crop improvement programme. However, three high yielding varieties developed in Orissa, namely, Suprabha, Suruchi and Suravi have been released by All India Co-ordinate Research Project on Spices. These varieties

have a potential yield of 5000 Kg per hectare. These varieties however do not seem to be cultivated in Maharashtra. Studies on ginger have revealed that although these varieties are high yielders, none of them are completely resistant to major diseases such as soft rot or rhizome rot which results in total loss of the affected clumps. Research in this direction is limited due to lack of seed set. The maturity range of these varieties ranges from 218 to 229 days. However for rainfed situations, early maturing varieties would suit, while for irrigated conditions, late maturing varieties would adapt well. Thus, there is need to develop varieties to suit different situations.

Research on ginger by plant breeders also reveals that ginger under irrigated conditions gives maximum yields. A high input technology for achieving maximum yields will benefit ginger farmers, if affordable. Further, ginger has seed rhizome dormancy and therefore there is need to evolve non-dormancy varieties. Micro-propagation through tissue-culture is also possible in ginger, though it requires two crop seasons.

Since ginger is a crop with high export potential, while releasing varieties, due attention should be given on quality aspect i.e. low crude fibre content, high oleoresin and high essential oil.

As in the case of ginger, even turmeric is susceptible to diseases and resistant varieties are not available.

Thus as far as ginger and turmeric are concerned, any progress in research work in the directions outlined would be a boon to these cultivators. Ofcourse, high production technology developed at research stations must also be transferred to the fields. [Attn : National Research Centre for Spice, Calicut, and State Agricultural Universities]

**FOURTH**, it was observed that the production of paprika seeds, (a chilli based substance rich in capsanthin – the colouring pigment) had limitations. Mahatma Phule Krishi Vidyapeeth, Rahuri, was involved in the production of paprika varieties. The performance of all varieties was satisfactory till the flowering state. Then all varieties got affected by powdery wilt, die-back and leaf curl diseases, despite use of recommended insecticides and fungicides. Hence production of paprika seeds was not viable. Since paprika has good demand in export market, further research in these varieties assumes importance. [Attn: Indian Council of Agricultural Research;

**Department of Horticulture/Vegetable crops in State Agricultural Universities; Regional Agricultural Research Station Guntur (Andhra Pradesh); Private Seeds Company; National Research Centre for Spice]**

**FIFTH**, the Mahatma Phule Agricultural University released four varieties of chilli. The University however felt the need for more research staff in order to undertake concentrated research programme regarding breeding, agro-techniques, plant protection, post-harvest technology and seed production. The university was undertaking research work under the "Integrated Programme for Development of Spices". The University felt the need for establishment of an independent project on chillies where the research work regarding the development of new varieties of chilli can be undertaken. [Attn: Government of India, Ministry of Agriculture, and State government, Maharashtra]

**SIXTH**, the Agricultural Universities felt that there is lack of post harvest infrastructure for drying of chilli in kharif season which reduced the quality of seed. The traditional method of sundrying is facing the problem of availability of area for drying, watching and protection from unfavourable weather conditions. This practice does not give quality produce and the recovery of the dried material is also less, due to breakage and loss of seeds. The time taken for drying is also long and colour fades during storage, making chilli less attractive. MPKV, Rahuri therefore felt that there was urgent need for availability of chilli drier and seed extracting machine for quicker extraction of seed. [Attn: Government of India, Ministry of Agriculture and State Government, Maharashtra]

**SEVENTH**, a new climate for world trade has been created as a result of the GATT negotiations (also known as Uruguay Round ) which is likely to have an impact on agricultural commodities having competitive edge over other exporting countries. Spices could possibly emerge as agricultural commodities with high export potential.

However, the consumers of spices all over the world are becoming more and more quality conscious. The importing countries are stipulating very stringent quality requirements and hygienic standards of spices. There is therefore need to maintain international norms. For example, there is need to produce chillies free from pesticides

residue, aflatoxins and unfavourable microbial contamination (Singh Paramjit (Dept. of Agriculture and Co-operation, Krihi Bhavan, New Delhi) - An Overview of Chilli Production and Export in India, Arecanut and Spice Journal, 1996). Notified viruses in ginger and turmeric rhizomes have forced importing countries to enforce 'Quality Policies'(Bose and others – Tropical Horticulture, published by Naya Prakash, Calcutta, P.644).

As already noted India has vast potential for export. The world demand for ginger is increasing; the yellow colouring factor 'curcumin' from turmeric is gaining importance in food industry, pharmaceuticals, in preservatives and body care (Bose & Others, Tropical Horticulture, Published by Naya Prakash, Calcutta). There is also demand for high colour and low pungency chillies. In view of the above, there is need to increase yield of our spice crops so that surpluses are generated for export. Studies have indicated that there is a wide gap in potential yield of spice crops and their performance at the farmer's field. As already discussed the important limiting factor in yield increase is major pests and diseases.

The policy prescription to boost exports would therefore be to increase production and productivity of varieties of spice crops which have demand in the global market. Also, attempts should be made to attain international standards. Ofcourse, the Spice Board has launched various quality upgradation programmes for educating farmers, traders and exporters for improving quality and maintaining international standards. Our field surveys, however showed that farmers lacked quality consciousness and hence extension agencies have to make more efforts. [Attn : Export Inspection Agency; Directorate of Marketing & Inspection; Agricultural Universities and Department of Horticulture / Agriculture in spice growing states]

Thus the broad conclusion that emerge from our study can be briefly summarized. In case of ginger, availability of high yielding varieties are limited but in case of turmeric efforts have been made to identify and select a number of turmeric type which combine high yield potential and superior rhizome quality. The varieties developed should be popularized in Maharashtra. In case of chilli, a number of high yielding varieties have been developed and are becoming popular among farmers.

However, all three crops are extremely susceptible to diseases, which causes great economic losses. Schemes such as Central Sector Scheme for Development of Spices are therefore useful in encouraging farmers to increase yield and thus production. However, such schemes have to be implemented on a larger scale to promote production. Farmers must also be quality conscious to be competitive in the export market.

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## **Acknowledgements**

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The study assumed importance in view of the high domestic requirements for spices as well as tremendous export potential. Further, value added spices products are also gaining popularity. These factors prompted the need for such a study.

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## **CHAPTER I**

### **Spices In India : Their Importance and Development**

Spices constitute an important group of agricultural commodities which are virtually indispensable in the culinary art. Spices are aromatic vegetable products, usually dried and used for seasoning and preserving foodstuffs. They play a very important part in human diet by giving an agreeable flavour and aroma to food.

Apart from culinary purposes, spices are also used as flavouring agents in beverages, they are active ingredients in ayurvedic medicines, coloring agents in textiles and important constituents in cosmetic products. Spices may be either bark, buds, flowers, fruits, leaves, rhizomes, roots, seeds or the entire plant. Further value added form of spices is becoming a thrust area with tremendous potential. Value addition can be as simple as presenting the commodity in a cleaned graded form or it can be a completely different product such as dehydrated spice products, curry powders, spice oils, oleoresins etc. The change in quality of life, urbanization, increasing number of working women, changes in food habits are all favourable factors that have opened up tremendous growth potential for value added.

#### **1.1 Area and Production of Spices In India :**

India is well known as the land of spices and it is infact the foremost country with regard to the production and consumption as well as the export of a wide range of spices. The Spice Board (which was formed according to the Spice Board Act, 1986) has 52 Spices under its preview. However, various published sources do not provide the data on area and production of every spice crop but only the major ones. The area and production of these spice crops is presented in Table 1.1 on the next page.

From the table it appears that chilli is the pre-dominant spice in the country both in terms of area and production. The share of chilli in the total area of 11 major spices crops is around 40 per cent while its share in the production ranges between 32 to 35 per cent. In terms of production, turmeric ranks second, followed by garlic. In terms of area, coriander assumes importance after chilli. Pepper, an important spice crop,

Table 1.1

## Area and Production of Major Spices in India

Spice	(Area in Hect, Prodn in Tonnes)											
	1991 - 1992		1992 - 1993		1993 - 1994		1994 - 1995		1995 - 1996		1996 - 1997	
	Area	Prodn	Area	Prodn	Area	Prodn	Area	Prodn	Area	Prodn	Area	Prodn
Chillies	846600 (42.93)	618200 (33.00)	962100 (41.98)	862100 (38.20)	930000 (37.99)	800100 (32.23)	829200 (37.42)	794800 (32.10)	883700 (40.32)	809700 (33.88)	956500 (41.23)	945500 (35.30)
Turmeric	120300 (6.10)	373200 (19.92)	130200 (5.68)	407700 (18.07)	148400 (6.06)	707400 (28.49)	149400 (6.74)	622000 (25.13)	139300 (6.36)	462900 (19.37)	134000 (5.78)	543000 (20.27)
Ginger	59830 (3.03)	176950 (9.45)	59870 (2.61)	201630 (8.94)	60580 (2.47)	186200 (7.50)	61090 (2.78)	197850 (7.99)	66890 (3.05)	219300 (9.18)	70910 (3.06)	232510 (8.68)
Pepper	184200 (9.34)	52010 (2.78)	189390 (8.26)	50760 (2.25)	190990 (7.80)	51320 (2.07)	193270 (8.72)	60740 (2.45)	198030 (9.04)	61580 (2.58)	179590 (7.74)	55370 (2.07)
Garlic	94300 (4.78)	370700 (19.79)	85500 (3.73)	355800 (15.77)	76200 (3.11)	306000 (12.33)	98900 (4.48)	403300 (16.29)	114800 (5.24)	490000 (20.50)	96600 (4.18)	451500 (16.86)
Cardamom sm	81845 (4.15)	5000 (0.27)	82392 (3.80)	4250 (0.19)	82960 (3.39)	6600 (0.27)	83651 (3.78)	7000 (0.28)	83802 (3.82)	7900 (0.33)	73593 (3.17)	6625 (0.25)
Cardamom larg	26300 (1.33)	3400 (0.18)	26430 (1.15)	3550 (0.16)	26645 (1.09)	3725 (0.15)	26131 (1.18)	3600 (0.15)	26130 (1.19)	4750 (0.20)	26129 (1.13)	5150 (0.19)
Coriander	349700 (17.73)	158500 (8.46)	402600 (17.57)	191200 (8.47)	464800 (18.99)	203700 (8.21)	430400 (19.42)	193000 (7.80)	407600 (18.60)	196100 (8.21)	412100 (17.76)	243100 (9.08)
Cumin	163575 (8.29)	64884 (3.46)	313895 (13.70)	135189 (5.99)	420755 (17.19)	166524 (6.71)	282027 (12.73)	118877 (4.80)	220343 (10.05)	75250 (3.15)	307046 (13.23)	117122 (4.37)
Fennel	19504 (0.99)	24851 (1.33)	14700 (0.64)	19000 (0.84)	11100 (0.45)	13100 (0.53)	16687 (0.75)	17438 (0.70)	12821 (0.58)	15696 (0.66)	25107 (1.08)	28380 (1.06)
Fenugreek	26050 (1.32)	25485 (1.38)	24829 (1.07)	25372 (1.12)	35778 (1.46)	37872 (1.53)	45133 (2.04)	56846 (2.30)	38321 (1.75)	46668 (1.95)	38485 (1.66)	49968 (1.87)
TOTAL	945474	704830	1139536	785121	1309228	788841	1176199	860801	1101847	897944	1158650	957215

Source :- Area and Production of Spices in India and the World, Spice Board, Ministry of Commerce, Govt. of India, 1997.

Note :- Figures in parantheses indicate the percentage to total.

especially for exports has a share of 7 to 9 per cent in area and contributed a little more than 2 per cent to production.

The overall conclusions that emerge regarding our spice economy is that area under major spices increased from 19.7 lakh hectares in 1991-92 to 23.20 lakh hectares in 1996-97. In case of production the increase was from 18.7 lakh tonnes in 1991-92 to 26.78 lakh tonnes in 1996-97.

The cultivation of different spice crops is scattered all over the country with various spice crops assuming different importance in different states. The concentration of production of spice crops across states is as follows :

Chillies	: Andhra Pradesh (49%) ; Karnataka (13%)
Ginger	: Kerala (23%) ; Meghalaya (18%)
Turmeric	: Andhra Pradesh (56.7%) ; Tamil Nadu (18%)
Pepper	: Kerala (96%)
Coriander	: Rajasthan (63%) ; Madhya Pradesh (18%)
Cardamom	: Kerala (49%) ; Sikkim (33%)
Garlic	: Madhya Pradesh (38%) ; Gujarat (22%)
Cumin	: Gujarat (58%) ; Rajasthan (42%)
Fennel	: Gujarat (64%) ; Rajasthan (14%)
Fenugreek	: Rajasthan (99%)

Source : Compiled from CMIE, Agriculture, September 1998 and Indian Cocoa, Arecanut and Spices Journal (1992)

Note : Figures in parantheses indicates share of state's production to all India.

From the above information it is clear that Andhra Pradesh dominates in the production of chillies and turmeric, while pepper is wholly concentrated in Kerala which again has the highest share in the production of ginger and cardamom. While fenugreek and coriander are largely grown in Rajasthan, cumin and fennel are concentrated in Gujarat.

## 1.2 Export of Indian Spices :

The wide variety of spices thus grown in different parts of the country are mainly consumed by a strong domestic market, the rest being exported. In other words, nearly 94 per cent of the spice production is domestically consumed and barely 5 to 6 per cent is exported. India, however, has the potential to become a major player in the world trade in spices.

The exports of Indian spices is presented in Table 1.2. It can be observed that the quantity of spices exported have been increasing over the years. While exports were 1.02 lakh tonnes in 1989-90, they increased to 2.28 lakh tonnes in 1997-98. It can be observed from the Table that pepper and chillies were the major exports and these exports basket of spices showed a decline in exports in 1995-96 forming only 12 per cent of total exports. The leading position of pepper was captured by chillies with the record export of 56073 tonnes forming 28 per cent of total spice exports. Crop failure in major chilli producing countries, such as China and Pakistan, resulted in the import of substantial quantity of Indian chillies by international markets. The share of pepper was again low in 1997 – 98, while ‘other spices’ increased their share due to increased exports of spices, such as cumin.

Indian spices are exported to 29 countries in the world. This can be observed from Table 1.3. USA is the single largest market for spices in the world and for India also, it is the main export market. USA consumed about 30 per cent of total Indian exports in 1997-98, followed by United Kingdom (6.24 per cent), Japan (4.88 per cent) and UAE (4.85 per cent). The trend was similar in 1998-99.

In addition to export of spices, export of value added form of spices are gradually assuming importance. This is presented in Table 1.4. The exports have increased from 18654.46 tonnes to 35212.70 tonnes in a period of 5 years. It can be observed that the main value added spices that are being exported are chilly powder, turmeric powder and spice oleoresins. The exports of chilly powder increased from 19 per cent of total quantity of exports in 1991-92 to 34 per cent in 1995-96; the share of turmeric powder which was 25 per cent of total quantity of exports in 1991-92 declined to 21 per cent in 1995-96. In absolute terms however, the quantity of turmeric powder increased from 4745 tonnes to 7386 tonnes.

The over all conclusions that emerges from Table 1.4 is that the demand for easy – to – use spices is likely to create opportunities for India.

Table 1.2 : Item –wise Quantity of Exports of Indian Spices

(Qty : m tonnes)

Year	Chillies	Turmeric	Ginger	Pepper	Others	Total Export	
	Qty	Qty	Qty	Qty	Qty	Qty	Value (Crores)
1989-90	11967 (11.70)	16900 (16.50)	9037 (8.8)	34650 (34.0)	29616 (29.0)	102170	275.76
1990-91	24534 (22.40)	13624 (12.40)	6555 (6.0)	29985 (27.3)	34938 (32.0)	109636	242.14
1991-92	33398 (25.60)	16565 (12.70)	14259 (11.0)	20535 (15.7)	45810 (35.0)	130567	362.04
1992-93	16850 (13.70)	18950 (15.40)	8220 (6.7)	23821 (19.3)	55424 (45.0)	123265	382.06
1993-94	33450 (19.00)	25250 (14.40)	17150 (9.8)	48743 (27.8)	50939 (29.0)	175532	540.12
1994-95	26279 (17.00)	28199 (18.30)	11098 (7.2)	37264 (24.2)	51272 (33.0)	154112	607.34
1995-96	56073 (27.70)	27376 (13.50)	18191 (9.0)	24150 (12.0)	76407 (38.0)	202197	785.89
1996-97	51900 (23.60)	21600 (9.80)	28350 (13.0)	47770 (21.8)	69780 (32.0)	219400	1180.0
1997-98	42489 (18.57)	27204 (11.90)	28312 (12.4)	35719 (15.6)	95098 (41.5)	228821	1408.30

Source : Spices Export Review, 1997-98, Spice Board.

Note : Figures in parentheses are the percentages to total exports.

Table 1.3 Destination of Exports : Spices

(Rs Lakh)

Name of the Centres	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99
World	39342	56891	61224	79352	120214	140966	161678
USA	11978	17209	17754	17246	39161	42591	51463
UK	2391	3706	3746	4716	6955	8796	10257
Japan	2471	2473	3178	2663	6953	6879	8080
UAE	2820	3335	3288	6164	4387	6838	7342
Singapore	2071	2247	1568	3191	6291	5419	7252
Germany	1754	2330	2264	2782	3815	6475	7214
Canada	1074	1327	1669	1989	3083	4357	5997
Pakistan	1287	1808	1061	3261	4218	3543	5527
Russia	810	2336	4729	2992	3224	5458	4173
Netherlands	580	1276	1303	1596	3845	3177	4167
France	888	1477	1788	2095	2571	3834	4099
Italy	607	944	1716	2306	2289	3677	3165
Mexico	554	159	206	427	1509	1799	2632
Malaysia	654	853	895	1809	4193	2862	2606
Saudi Arabia	1253	1847	1132	2315	2149	2378	2551
South Africa		138	904	1243	1359	2964	2488
Sri Lanka	1071	1487	2093	3782	2657	1368	2287
Australia	336	705	687	649	934	1127	2021
Egypt	247	568	770	838	517	1211	1981
Bangladesh	772	2287	676	4350	779	982	1960
Spain	247	461	565	1250	3174	3215	1602
Brazil	144	247	674	443	1520	1197	1390
Denmark	164	189	249	414	331	689	1364
Nepal	175	113	698	1003	1178	1315	1335
Taiwan (Taipei)	355	201	307	231	803	667	1222
Poland	317	715	1527	1050	837	1173	1099
Hong Kong	180	127	172	340	1144	1888	1021
Belgium	152	143	153	237	418	840	1008
Kuwait	239	324	375	639	521	653	803

Share in total exports(%) in terms of value

	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99
World	100.00	100.00	100.00	100.00	100.00	100.00	100.00
USA	30.45	30.25	29.00	21.73	32.58	30.21	31.83
UK	6.08	6.51	6.12	5.94	5.79	6.24	6.34
Japan	6.28	4.35	5.19	3.36	5.78	4.88	5.00
UAE	7.17	5.86	5.37	7.77	3.65	4.85	4.54
Singapore	5.26	3.95	2.56	4.02	5.23	3.84	4.49
Germany	4.46	4.09	3.70	3.51	3.17	4.59	4.46
Canada	2.73	2.33	2.73	2.51	2.56	3.09	3.71
Pakistan	3.27	3.18	1.73	4.11	3.51	2.51	3.42
Russia	2.06	4.11	7.72	3.77	2.68	3.87	2.58
Netherlands	1.47	2.24	2.13	2.01	3.20	2.25	2.58
France	2.26	2.60	2.92	2.64	2.14	2.72	2.54
Italy	1.54	1.66	2.80	2.91	1.90	2.61	1.96
Mexico	1.41	0.28	0.34	0.54	1.26	1.28	1.63
Malaysia	1.66	1.50	1.46	2.28	3.49	2.03	1.61
Saudi Arabia	3.19	3.25	1.85	2.92	1.79	1.69	1.58
South Africa		0.24	1.48	1.57	1.13	2.10	1.54
Sri Lanka	2.72	2.61	3.42	4.77	2.21	0.97	1.41
Australia	0.85	1.24	1.12	0.82	0.78	0.80	1.25
Egypt	0.63	1.00	1.26	1.06	0.43	0.86	1.23

Source : Centre for Monitoring Indian Economy, Foreign Trade, 1998.

Table 1.4 Item-Wise Export of value-added Spices during 1991-92 to 1995-96

(Qty in M.T.)

Item	1991-92	1992-93	1993-94	1994-95	1995-96(P)
Pepper Powder	10.12	81.45	181.98	243.04	396.74
White Pepper	2.89	3.26	85.55	266.25	162.68
Dey. Green Pepper	144.90	298.81	239.55	246.49	248.36
Fr. Dr. green pepper	0.10	17.24	26.34	13.37	28.79
Pepper in brine	791.01	872.01	920.60	708.15	937.02
Frozen green Pepper	12.90	166.14	134.91	177.58	192.23
Cardamom (S) Powder	-	-	0.87	-	0.07
Chilly Powder	3585.17	3973.60	7407.99	7102.06	11930.58
Ginger Powder	307.58	721.01	286.49	170.91	289.93
Turmeric Powder	4745.17	4809.71	6424.93	6093.73	7385.88
Coriander Powder	309.25	924.43	1226.88	1081.00	869.35
Cumin Powder	46.25	53.95	110.77	156.97	81.67
Celery Powder	3.04	5.82	83.70	26.00	57.80
Fennel Powder	4.05	17.74	5.13	12.55	29.74
Fenugreek Powder	6.74	20.35	103.92	45.34	110.57
Dill Powder	30.78	-	5.50	-	12.69
Mustard Powder	0.41	-	2.10	4.12	5.67
Dehy. garlic flakes	381.11	293.71	231.48	95.15	213.53
Dehy. garlic flakes	65.55	97.32	439.70	67.29	153.11
Tamarind Powder	1195.71	805.41	1369.17	2621.97	2921.75
Tamarind Paste	634.32	274.59	446.53	384.29	288.22
Cinnamon Powder	15.53	-	5.00	0.40	-
Cassia Powder	805.64	1549.81	805.45	265.00	132.74
Tejpat Powder	0.09	9.08	0.95	-	12.69
Asafoetida	164.33	223.90	205.12	242.26	158.97
Spices Powder (NES)	483.58	943.18	1123.47	1340.13	1504.05
Curry Powder	3165.46	2481.00	2972.89	3619.77	3652.88
Curry Paste	116.50	99.25	146.61	102.37	207.41
Other mixtures	234.15	267.92	291.86	412.62	270.26
Spice Oils	366.97	261.80	180.62	360.68	350.98
Spice Oleoresins	1024.79	1007.79	1174.47	1311.14	1364.27
Mint Oils	-	1509.51	1409.84	1582.76	1242.07
Total	18654.46	21789.79	28050.37	28753.39	35212.70

Source : Spice India, December 1996

### **1.3 Development of Spices During The Five Year Plans :**

In view of the recognized place for spices among the agricultural commodities produced in India, the Government of India undertook programmes for development of spices in its Five Year Plans. While no systematic programs for development of spices was undertaken in the First Five Year Plan (1951-56), the Second Five Year Plan (1956-61) contained provision to the tune of Rs 15.49 lakhs but the activities were limited to the production and distribution of quality rooted cuttings of pepper in order to bring more area under the crop, especially in states like Kerala. In the Third Five Year Plan (1961-66), the plan outlay was 35 lakhs and during the Fourth Five Year Plan (1969-74) the outlay was Rs 13.90 lakhs. The emphasis was again, however, on pepper.

During the Fifth Five Year Plan (1974-79), provision for spice development was substantially raised to Rs 175 Lakhs. Ginger and tree spices development were taken on a limited scale while pepper development continued to be the main emphasis.

During the Sixth Plan (1979-84), the Annual Plan (1984-85) and first two years of the Seventh Plan (1985-87), the states, according to a policy decision of Government of India were instructed to continue development programmes with their own resources and a lump sum grant was made available by the Centre. As a result, majority of the State Governments continued the development programme on spices so as to encourage area expansion. This arrangement was, however, not adequate, in view of the growing demand for spices for internal consumption and export. The government felt it was necessary to pay more attention towards spice development with adequate Central assistance and therefore "A Centrally Sponsored Scheme Integrated Programme for Development of Spices" mainly on black pepper and to a lesser extent on ginger, turmeric and chillies was drawn up and implemented in the last three years of the Seventh Plan (1987-90) for which the centre sanctioned Rs 240 Lakhs. This scheme was expanded in the two Annual Plans (1990-91 and 1991-92) by increasing the financial outlay to the tune of Rs 244 Lakhs and Rs 574 lakhs, respectively, with full central assistance. The development programmes were also extended to more spices. The programmes were mostly implemented through the state Horticulture / Agriculture Department.

The Integrated Programme for Development of Spices was further expanded substantially with a financial outlay of Rs 125 crores during the Eighth Plan (1992-97) with cent per cent Central Assistance. The emphasis of the scheme was to increase the overall production of spices both by area expansion and increasing productivity, bringing down the cost of production and improving the quality of produce of about 27 commercially important spices grown in the country (Thomes K.G & Others : A Brief Review of Development of Spices in India During Post Independent Era – Spice India, Nov 1998).

The annual growth rate in the production of spices during the Seventh Plan was four per cent. The production attained the level of 19.5 lakh tonnes by 1991-92 (Velapan E. : An integrated Programme for Spices Development in India During VIIIth Five Year Plan (1992-93 – 1996-97), Indian Cocoa, Arecanut & Spice Development Journal, Jan-March 1994,P2.). Considering the growing demand for internal consumption and export an overall growth rate of 8 per cent was envisaged during VIIIth Plan and accordingly the production target of 29.35 lakh tonnes was fixed for 1996-97(Government of India (Ministry of Agriculture, Directorate of Cocoa, Arecanut & Spices Development, Kerla) – Central Sector Schemes for The Development of Spices, Medicinal and Aromatic Plants, Arecanut, Cocoa, Betelvine During 8<sup>th</sup> Plan Period (1992-97), P.6.). As already mentioned, the Eighth plan, covers 27 spice crops, in contrast to the other plans where more emphasis was given to pepper and less priority to other spices. All the important spices which are presently in demand for internal consumption, export and spice processing industries have been taken up for development. The list of crops covered in the Centrally Sponsored Scheme of the Eighth Five Year Plan are :

- |              |                 |                |                    |
|--------------|-----------------|----------------|--------------------|
| 1. Pepper    | 9. Celery       | 17. Curry leaf | 25. Tamrind        |
| 2. Chillies  | 10. Aniseed     | 18. Kokam      | 26. Mace           |
| 3. Ginger    | 11. Bishopsweed | 19. Saffron    | 27. Large Cardamom |
| 4. Turmeric  | 12. Caraway     | 20. Tejpat     |                    |
| 5. Coriander | 13. Dill        | 21. Staranize  |                    |
| 6. Cumin     | 14. Cinnamon    | 22. Clove      |                    |
| 7. Fennel    | 15. Cassia      | 23. Nutmeg     |                    |
| 8. Fenugreek | 16. Garlic      | 24. All Spice  |                    |

There is also provision to take up the development of any other spice crop which is gaining importance in course of time with regard to internal consumption, export or processing.

#### **1.4 Production Constraints :**

The Eighth Five Year Plan has therefore extended the Centrally Sponsored Scheme to a number of spice crop. The Scheme, through various strategies and development programmes, seeks to achieve its targets.

There have been severe production constraints which have come in the way of spice development. Lack of enough programmes for large scale production and distribution of quality planting materials of released varieties of different spices are an important factor which have come in the way of increasing production and productivity. Also, productivity is often low due to cultivation of varieties of poor genetic potential, non-manuring, under-manuring or imbalanced manuring and non-adoption of other recommended package of practices by the farmers.

Further, spice crops are easily susceptible to disease which naturally affects production. Diseases, such as, soft rot and fruits-rot take a heavy toll of crops such as chilli, ginger, turmeric every year and plant protection measures being costly, are not adopted by the majority of farmers. High production technology developed at the research stations have not been transferred to the field due to lack of sufficient extension personnel as well as and infra-structure facilities. Motivation of farmers to adopt the new technology through field demonstrations had not been carried out sufficiently. High cost of inputs also hinder the crop development. Spice growers, being mostly small and marginal farmers, are not financially sound to adopt new technology. Farmers training on production, protection and processing technology is required to be carried out in a big way [Government of India, (Ministry of Agriculture, Directorate of Cocoa, Arecanut spices Development, Kerla), Central Sector Scheme for the Development of Spices, Medicinal and Aromatic Plants, Arecanut, Cocoa, Betelvia During Eighth Plan Period (1992-97) p7].

Given the importance of spice development for domestic consumption as well as export, it was felt necessary to promote various strategies and development .

programmes to boost production. Accordingly, this was emphasized in the “Central Sector Scheme Integrated Programme for the Development of Spices in the Eighth Plan”.

### **1.5 Strategy for Development :**

In order to increase the production and accomplish the quality parameters the following strategies were adopted by the state and central government:

- (a) Identify spices/varieties available in the country which have high production potential and better export demand and undertake their development.
- (b) Produce quality planting materials in large scale, adopting the latest technology including tissue culture techniques through departments, research institute, voluntary and private organization and individuals.
- (c) Import of seed material of improved varieties, to develop their cultivation and increase production.
- (d) Rejuvenation of unproductive gardens by replanting and adopting scientific cultivation methods.
- (e) Motivating farmers to follow improved cultivation methods including plant protection measures through field demonstrations and supply of inputs.
- (f) Development of water resources and providing irrigation facilities including drip irrigation and sprinkler irrigation systems.
- (g) Use of plastics in agriculture for nurseries, mulches, production of clean spices, etc.
- (h) Educate and encourage farmers to adopt the latest technology for harvesting, processing and storage.
- (i) Assist Government agencies, co-operatives and voluntary organizations to develop common facilities for quality improvement, product diversification, storage and marketing.
- (j) Impart training to different levels of officers of state Agriculture/Horticulture department on the latest technology for increasing production and productivity, quality improvement and storage.
- (k) Collecting statistics on area and production, market arrivals, prices, etc. within and outside the country, their compilation and dissemination, conduct studies on cost of production, price spread, domestic demand, etc [Government of India, (Ministry of

Agriculture, Directorate of Cocoa, Arecanut and Spice Development, Kerla), Central Sector Scheme for the Development of Spices, Medicinal Plants, Arecanut, Cocoa, Betelvine During Eighth Plan Period (1992-97) p7].

#### **1.6 Development Programmes :**

The following are broad classification of the development measures under the Central Sector Scheme Integrated Programme for Development of Spices during Eighth Five Year Plan :

- (a) Production of planting material : The state Agricultural Universities, ICAR institutes etc. dealing with spices have been provided with financial assistance and infra-structure facilities to make available sufficient quantity of nucleus/ breeder / seed / planting material of all the released and accredited varieties of spices. The materials so produced are being supplied to the state department farms for further multiplication and distribution. The quality planting materials produced at the research stations as well as at the farms of the state development departments are supplied to the farmers at 50 per cent subsidized cost. While taking up the programme for planting material production, varieties possessing quality characteristics preferred in the importing countries are given top priority so that the quality of the produce is also improved.
- (b) Laying out demonstration plots in farmer's fields : This programme is intended to convince and motivate the farmers the superiority of new varieties and scientific package of practices. The size of demonstration plots in respects of crops like chillies, ginger and turmeric is 0.1 hectare. For tree spices, 25 clove plants and 100 cinnamon plants are required per plot. The inputs required for the establishment and maintenance of the demonstration plots are given at 50 per cent subsidized rates to the farmers.
- (c) Rejuvenation of the existing old pepper gardens : This has been found necessary to step up productivity and rehabilitate the old pepper gardens by replacing the uneconomically yielding disease affected vines with high yielding varieties and adopting proper management practices in the entire garden. Under the programme, 25,000 hectares are proposed to be covered. As an incentive, 50 per cent of the cost of inputs in the first year and 25 per cent each in the second and

third year are subsidized. The farmers can obtain the rest of the fund through institutional credit, in case it is required.

- (d) Area expansion programme : The main objective of the programme is to encourage the cultivation of improved varieties of spices so as to maximize the production. The cultivation of export oriented varieties is being given top priority in this programme. Implementing this programme on compact area basis is advised so that substantial quantity of the produce of a particular variety is made available from a locality to facilitate processing, marketing and export of superior quality spices.
- (e) Distribution of minikits : This programme is required to meet the home requirement of some of the spices like ginger, chillies, garlic, etc. besides popularising the improved varieties. Each minikit contains a small quantity of seeds / planting materials as well as fertilizers and plant protection chemicals required. These are provided to the farmer at 50 per cent subsidy.
- (f) Adoption of plant protection : The objective of the programme is to encourage farmers to adopt plant protection measures against the major diseases of spices on compact area basis. The chemicals required for drenching and spraying as per the recommended package of practices are supplied to the farmers at 50 per cent subsidized cost. Large scale demonstration programmes to control diseases, such as soft rot of ginger, fruit rot, die-back, etc. of chillies are being taken up on compact area basis.
- (g) Establishment and maintenance of demonstration –cum- progeny gardens in the North – Eastern Region : Keeping in view the vast potential for development of spice cultivation in the North – Eastern states of the country a programme has been taken up to establish and maintain demonstration cum progeny gardens for spices. New varieties of spice crops suitable for the area are to be established in the garden which serves as a centre for education and training on improved agro-practises. Besides, planting materials are also being made available from spice gardens. The programme also facilitates to assess the performance of new crop varieties in different agro-climatic conditions.

- (h) **General programmes :** A few general programmes, such as distribution of plant protection equipments, (limited to 50 per cent subsidy or Rs 750 whichever is less), promotion of soil conservation (25 per cent subsidy or Rs 3000 whichever is less), promotion of marketing of spices such as setting up co-operative societies (Rs 5 lakh per unit) and setting up farmer's co-operatives for making value added products were introduced. In case of farmer's co-operatives, five units were to be established in the country, with each unit getting a financial assistance to the tune of Rs 20 lakhs.

Thus, the above programmes constituted the "Central Sector Scheme Integrated Programme for Development of Spices" implemented during the Eighth Plan.

As mentioned earlier, about 27 spice crops were included in the scheme which was implemented through Horticultural / Agricultural Departments in 25 States, 2 Union Territories, 20 Agricultural Universities, 5 ICAR Institutes and other Government organizations. The scheme was supposed to be monitored by the Directorate of Arecanut and Spices Development at the national level (Indian Cocoa, Arecount and Spices Journal (Jan-March 1994) – "An integrated Programme for Spices Development In India During VIIIth Five Year Plan (1992-93 to 1996-97).

### 1.7 Financial Outlay :

The financial outlay for the scheme to conduct the various programmes was Rs 125 crores with full central assistance. The financial outlay allocated towards each spice crop is given in Table 1.5:

Table 1.5 Financial Outlay for Central Sector Scheme :

Spice Crop	Amount (in lakhs)	Percentage to total allocation
1. Pepper	6329.79	50.64
2. Ginger	982.50	7.86
3. Turmeric	779.85	6.24
4. Chillies	1365.90	10.93
5. Tree Spices	110.51	0.88
6. Minor (Seed) Spices	861.55	6.89

Table 1.5 Contd.

Spice Crop	Amount (in lakhs)	Percentage to total allocation
7. Garlic	197.63	1.58
8. Saffron	15.13	0.12
9. Large Cardamom	317.10	2.54
10. Progeny Gardens In North- East Region	190.20	1.52
11. Tamarind	10.00	0.08
12. General Programmes	1339.84	10.72
Total	12500.00	100.00

Source : Indian Cocoa Arecanut & Spice Journal (1992) – “Central Sector Scheme Integrated Programme for the Development of Spices in the Eighth Plan”

It can be observed from Table 1.5 that 50.64 percent of the financial outlay is allocated to pepper which is wholly concentrated in the state of Kerala. About 25,000 hectares of old pepper gardens had to be rehabilitated, demonstration of high production technology was carried out in 300 hectares while the target for area expansion was 4000 hectares for at the All India level.

Next to pepper, importance in terms of financial outlay was given to chillies. Almost 11 percent of the funds were allocated to chillies, the targets being to bring 11,000 hectares under area expansion, distribute 50,000 minikits, bring 3 lakh hectares under plant protection measures and introduce 40,000 demonstration –cum seed multiplication plots for the country.

Again, almost 11 per cent of the total funds were allocated towards general programmes such as distribution of plant protection equipments, assistance towards setting up irrigation units, promoting marketers, setting up of farmer’s co-operative for producing value added items etc.

The Central Sector Scheme confined to 25 states, and 2 union territories had, thus, defined the financial outlay and the physical targets to be achieved under its various programmes. We have therefore conducted a study to evaluate the performance

of the Central Sector Scheme, the extent to which the targets have been fulfilled, the reasons for shortfall, if any, and policy measures to be undertaken. The study will be confined to the state of Maharashtra with respect to three spice crops, namely ginger, turmeric and chillies.

## CHAPTER II

### Share of Maharashtra In Central Sector Scheme for Development of Spices (During Eighth Plan Period 1992-97)

As mentioned in Chapter I, the main focus of our study is to evaluate the impact of the Central Sector Scheme on Spice Development in the state of Maharashtra with respect to three crops viz. turmeric, ginger and chillies. However, before we proceed to evaluate the impact of the scheme on production and exports, it would be worthwhile to study the status of these three crops in the cropping pattern of Maharashtra and also the share of Maharashtra in India's production and area of turmeric, ginger and chillies.

#### 2.1 Status of Spice Crops (Turmeric, Ginger and Chillies) in Maharashtra's Cropping Pattern :

Table 2.1 indicates the share of spice crops in the gross cropped area of Maharashtra.

Table 2.1 : Share of Spice Crops in Gross Cropped Area of Maharashtra (GCA)

Year	Gross cropped area (million hectares)	Area under spices in Maharashtra (hectares)	Area under turmeric (hectares)	Area under ginger (hectares)	Area under chillies (hectares)	Area under chillies as a perc. of area under spices
1989-90	21.7	177800 (0.82)	7800 (0.04)	2000 (0.01)	129600 (0.60)	73.00
1990-91	21.8	164600 (0.75)	6900 (0.03)	2200 (0.01)	123900 (0.57)	75.00
1991-92	20.1	150700 (0.75)	7400 (0.04)	1300 (0.006)	113500 (0.56)	75.00
1992-93	21.19	182500 (0.86)	7100 (0.03)	1500 (0.007)	142200 (0.67)	78.00
1993-94	21.4	164800 (0.77)	7200 (0.03)	1600 (0.007)	127800 (0.060)	77.50
1994-95	21.4	162800 (0.75)	6800 (0.03)	1600 (0.007)	121700 (0.57)	74.75
1995-96	21.3	151557 (0.71)	5867 (0.03)	1842 (0.009)	96275 (0.45)	63.50
1996-97	21.6	144644 (0.67)	6191 (0.03)	2328 (0.01)	107624 (0.50)	74.40

Source : Season & Crop Reports (Various Issues), Maharashtra State

Note : Figures in brackets are percentage to GCA.

It can be observed from Table 2.1, that the share of spices in gross cropped area in Maharashtra is less than 1 per cent and ranges between 0.67 to 0.86 per cent. Out of the total area under spices in Maharashtra, the share of turmeric (4 per cent) and that of ginger (1 per cent) is negligible while the share of chilli is maximum i.e. 75 per cent. We can therefore conclude that chilli is the dominant spice crop grown in Maharashtra.

## **2.2 Share of Maharashtra In Area, Production and Yield of Turmeric, Ginger and Chillies:**

Spice crops approximately form 1.23 per cent of the gross cropped area of the country. In Table 2.2, 2.3 and 2.4 we have indicated the share of certain states in the area and production of turmeric, ginger and chillies.

### **2.2.1 Turmeric :**

From Table 2.2, it can be observed that Andhra Pradesh has always been the major turmeric growing state. Its average share in area during the period 1992-93 to 1996-97 was 38.4 per cent while its share in production was 53 per cent. In terms of area, Orissa seems to rank second but production is higher in Tamil Nadu due to much higher yield. While yield of turmeric in Orissa is 1985 Kg per hectare, in Tamil Nadu it is as high as 5862 Kg per hectare, perhaps the highest in the country.

The production of turmeric is very low in Maharashtra both due to less area as well as relatively low yield. Maharashtra has 5 per cent of the country's area under turmeric but contributes 1.5 to 2 per cent of the total production in the economy. The yield in Maharashtra is also much lower than the national average.

### **2.2.2 Ginger :**

From Table 2.3, it is clear that Kerala has the highest area under ginger and also ranks first in its production. In Meghalaya, although the area is relatively less, the production is second highest due to very high yields which is one and a half to two times that of the national average.

Maharashtra has a 3 per cent share in the country's area but contributes to barely 1 per cent of the total production. The yield again is very low in Maharashtra as compared to other states.

**Table 2.2 Area and Production of Turmeric In Major States of India**

State	Average of (1987-88 to 1991-92)			Average of 1992-93 to 1996-97		
	Area (000 Ha)	Prod (000 ton)	Yield (Kgs/ha)	Area (000 Ha)	Prod (000 ton)	Yield (Kgs/ha)
India	119.06	374	3130	139.8	556.08	3945
Andhra Pradesh	42.96 (36.08)	147.96 (40)	3482	53.68 (38.4)	294.5 (53)	5426
Orissa	19.34 (16.24)	43.86 (11.7)	1824	24.32 (17.4)	47.8 (8.6)	1985
Tamil Nadu	12.74 (10.7)	67.3 (18)	5164	17.12 (12.2)	100.8 (18.12)	5862
West Bengal	8.5 (7.14)	15.12 (4.04)	1760	11.54 (8.25)	20.9 (3.8)	1813
Assam	8.4 (7.05)	5.2 (1.4)	624	9.2 (6.6)	6.26 (1.12)	676
Maharashtra	6.8 (5.71)	8.4 (2.2)	1230	7.0 (5)	8.9 (1.6)	1272
Others	20.32 (17.06)	86.16 (23.03)		16.94 (12.11)	76.92 (13.8)	

Source : CMIE Agriculture Sep. 1958.

Note : Figures in brackets are percentage to all India

**Table 2.3 Area and Production of Ginger In Major States of India**

	Average of (1987-88 to 1991-92)			Average of 1992-93 to 1996-97		
State	Area (000 Ha)	Prod (000 ton)	Yield (Kgs/ha)	Area (000 Ha)	Prod (000 ton)	Yield (Kgs/ha)
India	53.4	151.2	2832	64.08	205.16	3200
Kerala	14.82 (27.8)	46.48 (30.7)	3146	14.2 (22.16)	49.34 (24.05)	3466
Orissa	8.5 (16)	13.3 (8.8)	1550	10.68 (16.7)	15.5 (7.6)	1436
West Bengal	5.3 (10)	9.2 (6.08)	1730	7.8 (12.2)	15.5 (7.6)	1982
Meghalaya	6.3 (11.8)	29.5 (19.5)	4654	7.0 (10.9)	42.4 (20.7)	6075
Maharashtra	1.72 (3.2)	1.89 (1.25)	1116	1.74 (2.7)	1.89 (0.92)	1030
Others	16.76 (31.4)	50.83 (33.62)	-	22.66 (35.36)	80.49 (39.23)	

Source : CMIE, Agriculture, Sept 1998.

Note : Figures in brackets are percentage to All India.

### **2.2.3 Chilli :**

Again, Andhra Pradesh ranks first in both area and production of chilli as can be observed from Table 2.4. Andhra Pradesh also has highest yield of chilli, almost double the national average.

The share of Maharashtra in the total area has been almost steady at 1,25,000 hectares being 14 to 15 per cent of the country's area. The production has also remained steady at 66,000 tonnes which is 8 to 10 per cent of the country's production. The yield is also low in Maharashtra as compared to national average.

The data thus indicated that spice crops form a negligible portion of the gross cropped area in the country. This is true for the state of Maharashtra also, where area under spices is even less than one per cent of the gross cropped area. Chilli as already noted, seems to emerge as the major spice crop, both in terms of area and production for India. In case of Maharashtra also, area and production are highest in case of chilli viz. – a viz. other spice crops.

However, although area under spices is negligible, spices continue to be a very important crop in India. It was already noted in Chapter I that India is known as " the land of spices" and is a major producer and consumer of spices. Also, India plays a leading role in area and production of a number of spice crops in the world economy of spices. The country ( along with China) has a prominent place in ginger production and is the largest producer and exporter of turmeric in the world. India has near monopoly in production and exports of large cardamom. Black pepper is also a major export from India (Boze, T.K & Other - Tropical Horticulture, Volume I, 1999, Published by Naya Prakash, Calcutta - 700 006). Other than export of spices, value addition assumes importance. India has a monopoly position in the supply of oils and oleoresins in the global market. Again, in case of curry powder, spice powder, spice mixture and spices in consumer packs, India is in a formidable position (Spice Board (Cochin)).

Therefore, with very high domestic consumption (around 95 per cent of spice production is consumed in the domestic market itself), increasing world demand for spices and taste for value added spices, opportunities exists for countries like India to boost production and play an active role in the global trade of spices. Ofcourse, as consumers all over the world are becoming more and more quality conscious, efforts have to be made to improve the quality of the product so as to meet international

**Table 2.4 Area and Production of Chillies In Major States of India**

State	Average of (1987-88 to 1991-92)			Average of 1992-93 to 1996-97		
	Area (000 Ha)	Prod (000 ton)	Yield (Kgs/ha)	Area (000 Ha)	Prod (000 ton)	Yield (Kgs/ha)
India	823.7	679.7	822	912.3	842.4	907
Andhra Pradesh	211 (25.6)	316.8 (46.6)	1502	220.6 (24.2)	374.6 (44.5)	1704
Karnataka	137.2 (16.6)	38.6 (5.6)	284	181.8 (20)	107.8 (12.8)	593
Maharashtra	124.26 (15.08)	66.34 (9.8)	533	125 (13.7)	65.78 (7.8)	527
Others	351.24 (42.6)	257.96 (38)		385 (42.2)	294.2 (35)	

Source : CMIE, Agriculture, Sept 1998.

Note : Figures in brackets are percentage to All India.

standards and exporters must ensure that the spices and spice products exported have no physical, chemical or microbial contaminants.

The government having recognized the importance of the spice crop and the potential it has in the national economy, introduced the Central Sector Scheme Integrated Programme for Development of Spices During the Eighth Plan. The Scheme had full financial assistance from the Government of India.

The state of Maharashtra had its share in the Central Sector Scheme and participated in the various programmes under this scheme with well defined targets. The extent to which these targets have been achieved and have helped to increase production and export of spices in Maharashtra will be the main objectives of our study.

### **2.3 Share of Maharashtra in the Central Sector Scheme On Spice Development (during Eighth Plan)**

The state of Maharashtra alongwith 25 states and 2 Union Territories participated in the Central Sector Scheme. However, the scheme was extended only to certain spice crops grown in Maharashtra viz. pepper, ginger, turmeric, chillies, tree spices, minor (seed) spices and general programmes. The total assistance received by the state of Maharashtra to achieve its targets was Rs 215.76 lakhs. Therefore Maharashtra received 1.73 per cent of total assistance sanctioned by the centre.

The crops which we would take up for evaluation are turmeric, ginger and chillies. Let us therefore note the various programmes covered under these crops, the targets to be achieved and the financial outlay sanctioned by the Government.

#### **2.3.1 Turmeric:**

The following were the programmes introduced by the Government in the Central Sector Scheme for turmeric :

1. Establishment of demonstration cum seed multiplication plots: It was proposed to establish demonstration cum seed multiplication plots by providing assistance at the rate of Rs. 825/- per plot of 0.1 ha, being 50 per cent of the cost of inputs.

2. Area expansion programme: This programme intends to bring area under high yielding varieties which are of superior quality. The incentive to the farmers is Rs 4000/- per hectare, being 25 per cent of the cost of inputs.
3. Providing assistance for fabrication of polishing drums: Under this scheme it is proposed to distribute polishing drums to turmeric growers allowing subsidy of Rs 1500/- per drum, being 50 per cent of the cost of the unit. By using this drum, farmers can make better quality products and realize higher prices in the market.

Thus the above three programmes were initiated for turmeric. Table 2.5 shows the targets laid out for the various programmes for India and Maharashtra.

Table 2.5 Physical target laid out for Turmeric in Central Sector Scheme

Programme	India	Maharashtra	Target as per release of 8 <sup>th</sup> plan for Maharashtra
1. Demonstration cum seed multiplication plots (Nos)	40,000	5,000	2557
2. Area Expansion Programme (hectares)	10,000	1,500	927.5
3. Providing Assistance for fabrication of Polishing Drums	200	30	30

Source : 1) Government of India, Ministry of Agriculture - Central Sector Scheme for the Development of Spices During Eighth Plan.  
2) Directorate of Horticulture (Pune)

From Table 2.5 we can observe the share of Maharashtra in the total targets laid out by the Central Sector Scheme. The targets finally released for Maharashtra were lower than that fixed by the scheme. Accordingly, Maharashtra's share was 6 per cent for demonstration cum seed multiplication plots, 9 per cent for area expansion programme and 15 per cent for providing assistance for fabrication of for polishing drums in the All India targets to be achieved.

Further, from Table 2.6, we can observe, the year-wise targets to be achieved and the outlay for the same.

From Table 2.6, it can be observed that Rs. 58.8 lakhs was the provision made for turmeric crop as compared to the total outlay of Rs 215.76 lakhs. Therefore the provision made for turmeric was 25.86 per cent of the total provision for Maharashtra.

**Table 2.6 Targets to be Achieved for Turmeric During Eighth Plan & Outlay**

Year	Establishment of demonstration cum seed multiplication plots (1)		Area expansion programme (2)		Assistance for fabrication of polishing drums (3)		Total provision (Rs lakhs) (4)
	Target (Nos)	Provision (lakhs)	Target (hectares)	Provision (lakhs)	Targets (Nos)	Provision (lakhs)	
1992-93	45	0.495	0	0	0	0	0.495
1994-95	931	7.682	477.5	19.10	8	0.12	26.9
1995-96	991	8.211	278	11.13	10	0.15	19.491
1996-97	590	4.86	172	6.88	12	0.18	11.92
<b>Total</b>	<b>2557</b>	<b>21.24</b>	<b>927.5</b>	<b>37.11</b>	<b>30</b>	<b>0.45</b>	<b>58.80</b>

Note : No targets were laid down for 1993-94

Source : Directorate of Horticulture (Pune)

### 2.3.2 Ginger :

The following were the programmes introduced by the Government in the Central Sector Scheme for Ginger :

1. Production of nucleus seed material : This is to make available enough nucleus planting material of all the released varieties of ginger for further multiplication and distribution to farmers at departmental farms. The programme is taken up only at the research stations.
2. Establishment of demonstration plots: The objective is popularisation of the improved varieties and agro-techniques and their fast coverage. An incentive towards 50 per cent of the cost of planting material and plant protection chemicals limited to Rs 1200/- per plot of 0.1 hectare in size is given to the plot owners.
3. Distribution of minikits : Each kit contained 5 Kg seed rhizomes and its requirement of fertilizers and plant protection chemicals. The cost of the kit is limited to Rs 50/- which is to be supplied to the farmers at Rs 25/- per kit for 0.01

hectare. The programme is oriented to meet the domestic requirement of vegetable ginger.

4. Plant protection programme : A large scale demonstration programme to control soft rot of ginger was to be taken up by giving an incentive of Rs 1000/- per hectare, being 50 per cent of the cost of plant protection chemicals to the farmers.
5. Area expansion programme : Under this programme, only specific varieties of ginger are to be cultivated. An incentive of Rs. 5000/- per hectare being 25 per cent of the cost of input was given to the farmers. This production programme was to be linked with export as well as product diversification.

We therefore observe that five programmes were initiated in the Central Sector Scheme for increasing production of ginger. Table 2.7 shows the targets laid out for the various programmes for India and Maharashtra.

**Table 2.7 Physical Targets Laid out for Ginger in Central Sector Scheme**

Programme	India	Maharashtra	Target as per release of 8 <sup>th</sup> Plan for Maharashtra
1. Production of Nucleus Seeds (tonnes)	2250	60	69
2. Establishment of Demonstration Plots (Nos)	25,000	1000	823
3. Distribution of Minikits (Nos)	50,000	3000	3033
4. Plant Protection Programme (hectares)	10,000	200	348
5. Area Expansion (hectares)	10,000	500	Nil

Source : 1) Government of India, Ministry of Agriculture- Central Sector Scheme for the Development of Spices During Eighth Plan.  
2) Directorate of Horticulture, Pune. (Unpublished Material)

From Table 2.7, we can observe the share of Maharashtra in the total targets laid out by the Central Sector Scheme. In some programmes, there was a divergence between targets laid down and those finally released in Maharashtra. Accordingly,

Maharashtra's share was 3 per cent in production of nucleus seed, 3.3 per cent for establishment of demonstration plots, 6 per cent for distribution of minikits, 3.5 per cent for plant protection measures and although 5 per cent of the country's targets was allotted towards area expansion this was not released by the state.

Further from Table 2.8 we can observe, the year-wise targets to be achieved and the outlay for the same.

**Table 2.8 Targets to be Achieved for Ginger during Eighth Plan and outlay**

Year	Production of nucleus seed		Establishment of demonstration plots		Distribution of minikits		Plant protection programme (hectares)		Total provision
	1		2		3		4		5
	Target (tonnes)	Provision (Rs Lakhs)	Target (tonnes)	Provision (Rs Lakhs)	Target (Nos)	Provision (Rs Lakhs)	Target (ha)	Provision (Rs Lakhs)	
1994-95	23.65	0.71	269	3.234	645	0.1632	126	1.26	5.37
1995-96	36.68	1.095	270	3.138	998	0.36	185	1.33	5.92
1996-97	9.00	0.28	284	3.408	1390	0.35	37	0.37	4.4
<b>Total</b>	<b>69.33</b>	<b>2.08</b>	<b>823</b>	<b>9.78</b>	<b>3033</b>	<b>0.76</b>	<b>348</b>	<b>2.96</b>	<b>15.54</b>

Source : Directorate of Horticulture (Pune)

Note : No targets were laid out for 1992-93 & 1993-94

From Table 2.8, it can be observed that Rs <sup>15.54</sup>~~215.69~~ lakhs was the provision made for ginger crop as compared to the total outlay of Rs ~~2~~15.5 lakhs. Therefore the provision made for ginger was 7.3 per cent of the total provision for Maharashtra.

### 2.3.3 Chillies :

The following are the programmes incorporated in the Central Sector Scheme for Chillies :

1. Production of nucleus seed : The target is to produce 125 tonnes of nucleus seed material for further multiplication and distribution to farmers. Nucleus seed was to be produced at the research station while large scale multiplication using this material was to be undertaken by developmental agencies.

2. Establishment of demonstration cum seed multiplication plots : Demonstration plots in the farmer's fields are proposed to be established using released varieties. An incentive towards the cost of inputs at the rate of Rs 700 per plot of 0.1 hectare, being 50 per cent of the total cost is given to the farmers. Seeds from the plots would be collected and distributed to nearby farmers.
3. Demonstration of plant protection measures : An incentive of Rs 200/- per hectare being 50 per cent of the cost of plant protection chemicals will be distributed to the farmers.
4. Distribution of minikits : Each minikit containing seeds, fertilizers and plant protection chemicals which is to cost Rs 100/- would be distributed at 50 per cent subsidy.
5. Area expansion programme : Under this programme, area with better quality and high yielding varieties will be brought by giving an incentive of Rs 3000 per hectare to the cultivators, being 25 per cent of the cost of inputs.
6. Production of seeds of paprika : The purpose is to cultivate high colour value paprika varieties for production of seeds. These seeds would be used for further multiplication and distribution to cover more area under the crop within the shortest possible time.
7. Establishment of demonstration plots of paprika : In order to motivate the farmers to take up paprika cultivation, it is proposed to establish demonstration plots in the farmer's fields. An incentive of Rs.800/- per plot of size 0.1 hectare, being 50 per cent of the cost of inputs will be given to the plot owners.

It can therefore be observed that there were 7 programmes for chilli in the Central Sector Scheme. From Table 2.9 we can observe the physical targets to be achieved and the outlay for the same.

**Table 2.9 Physical Targets to be Achieved for Chilli during Eighth Plan**

Programme	India	Maharashtra	Targets as per release of 8 <sup>th</sup> Plan for Maharashtra
1. Production of seeds (Tonnes)	125	10	7.91
2. Establishment of demonstration cum seed multiplication plots (Nos)	40,000	5,000	4716
3. Demonstration of plant protection measures (hectares)	3,00,000	40,000	53,407
4. Distribution of minikits (Nos)	50,000	8000	8284
5. Area expansion programme	11,000	2000	2122
6. Production of seed of paprika	114	Nil	-
7. Establishment of demonstration plots of paprika (Nos)	5000	400	336

Source : 1) Government of India, Ministry of Agriculture – Central Sector  
Scheme for the Development of Spices During Eighth Plan (1992-97)

From Table 2.9, we can observe, the share of Maharashtra, in the total targets laid out for the country in the Central Sector Scheme for chilli. As already observed, chilli is the major spice crop grown in Maharashtra and the state has approximately 1.19 lakh hectares under chilli. Therefore, its share in the Central Sector Scheme was also quite substantial. It's share was 6.4 percent in case of production of seeds, 11.8 per cent in case of establishment of demonstration cum seed multiplication plots, 17.4 per cent in case of plant protection measures, 16.6 per cent in case of distribution of minikits, 19.3 per cent for area expansion programme and 6.7 per cent for establishment of demonstration plots for paprika. There was no participation by the state in case of production of seed of paprika.

From Table 2.10 we can observe the year-wise targets to be achieved and the outlay for the same.

It can be observed from Table 2.10 that the total outlay for chillies was Rs.206.78 crores. Thus, the major share of total outlay was allocated towards chilli crop. This is perhaps expected, because as observed earlier chilli formed around 75 per cent of the area under spices in Maharashtra.

Table 2.10 Target to be Achieved for Chilli During Eighth Plan and outlay

Year	Production of Seeds		Establishment of Demonstration cum Seed Multiplication Plots		Plant Protection Measures		Distribution of Minikits		Area Expansion Programme		Demonstration Plots for Paprika		Total Outlay (Rs Lakhs)
	Tar. (ton)	Prov. (Rs. Lakhs)	Tar. (Nos)	Prov. (Rs. Lakhs)	Tar. (Ha)	Prov. (Rs. Lakhs)	Tar. (Nos)	Prov. (Rs. Lakhs)	Tar. (Ha)	Prov. (Rs. Lakhs)	Tar. (Nos)	Prov. (Rs. Lakhs)	
1992-93	Nil	-	75	0.525	3951	5.923	Nil	-	Nil	-	Nil	-	6.4
1993-94	Nil	-	370	2.59	6000	9.00	Nil	-	Nil	-	Nil	-	11.59
1994-95	2.31	1.23	1183	8.77	16944	32.19	2762	1.469	540	15.69	45	0.29	59.63
1995-96	4.39	1.99	1405	9.835	14049	30.32	2436	1.215	665	19.95	160	1.28	64.59
1996-97	1.21	0.12	1683	11.786	11347	22.58	3086	1.54	917	27.51	131	1.04	64.57
<b>Total</b>	<b>7.91</b>	<b>3.34</b>	<b>4716</b>	<b>33.506</b>	<b>52291</b>	<b>100.013</b>	<b>8284</b>	<b>4.224</b>	<b>2122</b>	<b>63.15</b>	<b>336</b>	<b>2.61</b>	<b>206.78</b>

Source : Directorate of Horticulture (Pune) (Unpublished Material)

Further, it can be observed in case of all the three crops, that the physical targets allocated to Maharashtra were eventually not the same as the targets finally released in the 8<sup>th</sup> Plan. This is because, at times, the amount released was delayed and hence the planting season for that year was already over. In this case the amount was either directed towards another programme or another crop.

#### 2.3.4 Conclusion:

In this chapter, therefore, we have outlined the various programmes initiated by the Central Sector Scheme for Spice Development (During Eighth Plan) for three important spice crops viz. turmeric, ginger and chillies. The purpose, of course, of all these programmes is to induce the farmers to increase area under spices, use high yielding varieties of seeds and scientific methods of cultivation. This, would increase production which is required for domestic consumption and also to generate an exportable surplus. Spices could, therefore, emerge as important agricultural commodities which would help the country to earn foreign exchange.

The Central Sector Scheme for Spice Development was initiated in a big way during the Eighth Five Year Plan with a financial outlay of Rs.125 crores and Rs.215.76 lakhs was allotted to Maharashtra to carry out its programmes for various

spice crops and meet its targets. Therefore, the extent to which this scheme has been successful in meeting its targets and contributing towards spice development has to be evaluated.

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## **CHAPTER III**

### **Objective And Methodology**

The targets to be achieved under the various programmes in the Central Sector Scheme for the state of Maharashtra had been outlined in chapter II. As already noted, the main objective of our study is to evaluate the performance of this scheme and the extent to which it has been successful in promoting development of spices.

#### **3.1 Objective of the Study :**

The broad objective of the study are :

1. To evaluate the status of spice cultivation prior to and during the implementation of the scheme
2. To study the effectiveness of mode of implementation adopted
3. To study the impact of the programme in stepping up the production
4. To obtain suggestions at different levels for improvement on mode of implementation and monitoring aspect
5. To furnish rational guidelines for betterment of the scheme

Regarding exports of spices from the state of Maharashtra, the study has limitations, as it was difficult to obtain the required data. Exports from India were, therefore, only discussed.

#### **3.2 Methodology**

The effectiveness of the scheme will be studied with respect to three crops viz. turmeric, ginger and chillies.

For each crop, one scheme district having more or less maximum area and targets under each crop was selected. Further, from each selected district, two talukas having maximum area under the spice crop were selected. The villages selected were those had maximum beneficiaries. The list of beneficiaries who received subsidies under the Central Sector Scheme for Spice Development (during Eighth Five Year Plan Period) was obtained from the office of the District Superintendent Agricultural officer, who is in-charge of implementing the scheme at the district level.

The spice growers were grouped into 5 groups, viz., marginal, small, semi-medium, medium and large according to Land – holding size. As far as possible from each group, sample farmers were selected and addressed with a questionnaire regarding their experience in the participation of the Central Sector Scheme.

### 3.2.1 Turmeric :

In case of turmeric crop, we selected Sangli district, which is an important turmeric growing district in Maharashtra and maximum targets for various programmes were fixed for Sangli district. For example, in 1994-95, the target fixed for establishment of demonstration cum seed multiplication plot was 931 out of which 320 plots were in Sangli district. In almost all other districts, the number of plots were less than 100. Again in 1995-96, the target for demonstration plots was highest in Sangli. In case of other programmes, such as area expansion and assistance for polishing drums also, highest targets were fixed for Sangli as compared to other districts. This means that the number of beneficiaries would also be more in Sangli district and, therefore, the selection of this districts.

Further, in Sangli district, two talukas namely Jat and Tasgaon, which together constituted 55 to 65 per cent of the area under turmeric in the district, were selected.

This can be observed from Table 3.1

Table 3.1 Area Under Turmeric In Sangli District

District / Taluka	(Area in hectare)								
	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96
1. Sangli District	1000	900	700	600	800	900	800	700	600
2. Jat Taluka	258	260	302	235	236	287	241	230	235
3. Tasgaon Taluka	280	292	189	74	277	214	221	213	106
4. Total 2+3	538	552	491	309	513	501	462	443	341
5. 4 as a % of 1	54	61	70	51	64	56	58	63	57

Source : Season & Crop Reports (Various Issues) & Commissionerate of Agriculture, Pune, Maharashtra State

From the two talukas Jat and Tasgaon, Kumbhari village in Jat and Hatnur village in Tasgaon were selected and total 50 beneficiaries (25 beneficiaries in each

taluka) were addressed with a questionnaires regarding their participation in the various programmes of the Central Sector Scheme On Spice Development.

### 3.2.2 Ginger :

In case of ginger, the district selected was Satara as this district has more than half of the state's area under ginger. The area under ginger in other districts was relatively less. Since Satara is the major ginger growing area of the state, maximum targets and, therefore, maximum outlay for all the programmes under the Central Sector Scheme were allocated to this district.

In Satara district, the two talukas selected were Satara and Koregaon. The two talukas together constituted 60 to 70 per cent of the area under ginger. This can be observed from Table 3.2

Table 3.2 Area Under Ginger In Satara District

District / Taluka	(Area in hectare)									
	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97
1. Satara District	700	600	700	600	900	900	700	800	1000	1000
2. Satara Taluka	216	240	331	256	360	311	288	307	363	330
3. Koregaon Taluka	222	187	174	168	271	283	155	219	247	321
4. Total 2+3	438	427	505	424	631	594	443	526	610	651
5. 4 as a % of 1	62.6	71	72	71	70	66	63	66	61	65

Source : Season & Crop Reports (Various Issues) & Commissionerate of Agriculture, Pune, Maharashtra State

In Satara taluka, Atit, Ganeshwadi and Boregaon villages were selected while in Koregaon taluka only one village, namely, Chimangaon was selected. From these villages, 50 farmers who received subsidies under the Central Sector Scheme were selected and addressed with a questionnaire regarding their participation.

### 3.2.3 Chilli :

In case of chilli crop we selected Nagpur district, as this district has highest area under chilli in Maharashtra. A number of programmes were implemented for chilli, and Nagpur had highest target for all the programmes.

The two talukas that were selected in Nagpur were Kuhi (having highest area under chilli in Nagpur district) and Mauda. These two talukas constituted half the area under chilli in Nagpur as can be seen from Table 3.3.

Table 3.3 Area Under Chilli in Nagpur

District / Taluka	(Area in hectare)								
	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96
1. Nagpur District	25600	26500	23100	24900	22100	23400	19900	21700	25000
2. Kuhi Taluka	8107	8323	8056	7680	8113	8603	8282	8275	9209
3. Mauda Taluka	5310	4616	2755	1199	1615	2731	2811	2877	3196
4. Total 2+3	13417	12939	10811	8879	9728	11334	11093	11152	12405
5. 4 as a % of 1	52.4	49	47	36	44	48	56	51	50

Source : Season & Crop Reports (Various Issues) & Commissionerate of Agriculture, Pune, Maharashtra State

From the two talukas, three villages, namely, Ambedi, Kuhi & Silly villages in Kuhi taluka and two villages namely, Mauda and Karad in Mauda taluka were selected. From these villages total 50 beneficiaries were selected and addressed with a questionnaires regarding their experience with Central Sector Scheme.

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## CHAPTER IV

### **Status Of Spice Cultivation In Maharashtra**

In our earlier chapters, we noted that the most important theme of this study is to observe the impact of the Central Sector Scheme on production of spices with reference to the state of Maharashtra. In order to observe this, for each of the spice crops selected i.e. turmeric, ginger and chillies, we selected a sample of 50 spice growers who were also beneficiaries of this scheme. These growers had availed of subsidized inputs that were distributed under various programmes in the scheme to promote production.

However, before we move onto a micro-level analyses, on the impact of the scheme on individual beneficiaries, it would be useful to evaluate the status of spice cultivation in Maharashtra (district-wise) prior to the Eighth Five Year Plan when the scheme was not implemented and also during the Eighth Five Year Plan, to see whether the subsidized inputs available to the farmers helped to increase production either by increasing yield or area or both.

In what follows, therefore, we have observed the status of spice cultivation with respect to the three spice crops selected viz. turmeric, ginger and chillies. In order to study the status of spice cultivation we have observed the area, production and yield of the spice crop over a period of 10 years i.e. 5 years prior to the implementation of the scheme and during the 5 years of the Eighth Five Year Plan, when the scheme was being implemented.

#### **4.1 Area, Production and Yield of Turmeric :**

From Appendix A.4.1 , A.4.2 and A.4.3 we can observe district-wise area, production and yield of turmeric respectively over a period of ten years. This picture is summarized in Table 4.1 .

**Table 4.1 Area, Production and Productivity of Turmeric In Maharashtra**

Period	Area (hectares)	Production (metric tonnes)	Productivity (Kg per hectare)
Average of 1987-88 to 1991-92 (Period I)	7228	9611	1334
Average of 1992-93 to 1996-97 (Period II)	6658	8555	1267

Source : Season & Crop Reports, Maharashtra State, Various Issues.

From Appendix A.4.1 to A.4.3 as well as from Table 4.1, it is clear that there is a declining trend in area and production of turmeric in Maharashtra. A fall in productivity is also observed. The average area during Period I, i.e. prior to the Eighth Five Year Plan was 7228 hectares and this declined to 6658 hectares in period II which was the period of the Eighth Plan. The same was observed with production and yield. The Central Sector Scheme was implemented only marginally in 1992-93 and was not implemented in 1993-94. The targets for turmeric were fixed for the last three years of period II, when the area showed a steeper decline.

From Appendix A.4.1, it can be observed that Parbhani is the main turmeric growing district in the state with a share of 24 to 30 per cent. This district along with Sangli, Satara and Nanded contribute to half the area under turmeric. In Parbhani, however, there was a decline in area from 1960 hectares in period I to 1635 hectares in period II. Sangli, however, showed a marginal decline in area. Nanded registered an increase in area from 660 hectares in period I to 793 hectares in period II. Even Satara observed an increase in area by 62 hectares. The overall impact on the state, however, was one of decline in area.

In terms of production also, there was an overall decline in the state as well as in Parbhani district, where production declined from 2466 m tonnes to 1808 tonnes. In Satara, Sangli and Nanded there was however increase in production. The increased production in Nanded was contributed by increase in area as productivity declined from 1164 Kg per hectare in period I to 1148 Kg per hectare in period II. In Satara increase in area and marginal increase in yield contributed to the increase in production from 1206 tonnes in period I to 1323 tonnes in period II.

Sangli however showed a slightly different picture. While there was a fall in area from 800 to 778 hectares (from period I to period II), there was an increase in production from 1311 tonnes to 1399 tonnes. This increased production can therefore be attributed to increase in yield which went up from 1659 Kg per hectare to 1784 Kg per hectare.

However, the overall picture for the state of Maharashtra is not very encouraging as all three indicators namely area , production and productivity showed decline.

#### 4.2 Ginger :

From Appendix A.4.4 to A.4.6, the district-wise area, production and yield for ginger can be observed. This picture is summarized in Table 4.2

Table 4.2 Area, Production and Yield of Ginger In Maharashtra

Period	Area (hectares)	Production (tonnes)	Yield (Kg per hectare)
Average of 1987-88 to 1991-92 (Period I)	1720	1890	1116
Average of 1992-93 to 1996-97 (Period II)	1575	1621	1030

Source : Season & Crop Reports, Maharashtra State, Various Issues.

At the state level, all three indicates i.e. area, production and yield showed no improvement. The area declined by 145 hectares from Period I to Period II, production fell by 269 tonnes and even yield was lower.

At the district level, first of all it can be observed that most of the districts in Maharashtra do not grow ginger at all. For example, in 1994-95, out of 29 districts, only 6 districts cultivated ginger. Appendix A.4.4 shows that all along, Satara has been the district with maximum area under ginger. Infact, in Period II, it contributed 56 per cent of the state's area under ginger and its area under ginger went up from 700 hectares in Period I to 880 hectares in Period II . Bhandara district also showed an increase in area from 120 hectares in Period I to 219 hectares in Period II. However, a few districts such as Parbhani, Latur, Amravati which cultivated ginger in Period I showed virtually no area under ginger in Period II. The withdrawal of area by these

districts was perhaps partly responsible for the overall fall in area in ginger from Period I to Period II.

The overall production in the state declined although Satara and Bhandra districts registered a small increase in production in Period II mainly due to increase in area. There was no increase in productivity for the state as a whole, nor was it observed in case of any district.

Hence, looking at the three indicators i.e. area, production and productivity, one can conclude that there was no improvement in the ginger economy for the state as a whole during the Eighth Plan Period.

### 4.3 Chillies

From Appendix A.4.7 to A.4.9, the district-wise area, production and yield for chilli can be observed. The overall picture for Maharashtra is summarized in Table 4.3

Table 4.3 Area, Production and Yield of Chilli In Maharashtra

Period	Area (hectares)	Production (tonnes)	Yield (Kg per hectare)
Average of 1987-88 to 1991-92 (Period I)	1,25,020	64,242	513
Average of 1992-93 to 1996-97 (Period II)	1,23,740	66,023	527

Source : Season & Crop Reports, Maharashtra State, Various Issues.

From Table 4.3, it can be observed that, there was a marginal fall in area but marginal increase in production and yield.

At the district level it can be observed the Nagpur district had maximum area under chilli which was about 18 per cent of the total area under Maharashtra. In terms of production however, Nagpur contributed only 6 per cent and this was due to very low yield in the state which was much below the state average.

The main highlights of Maharashtra's chilli economy are that in contrast to turmeric and ginger all districts cultivate chilli. As observed earlier, turmeric and ginger are grown in very few districts of the state while chilli is grown in every district. From Period I to Period II about half the districts showed increase in area, while less than half showed increase in production. There was a marginal increase in production and yield

form Period I to Period II. Yield differed widely across districts with districts like Jalgaon, Ahmednagar and Pune having yield of 1120 Kg per hectare, while in Nagpur the yield was barely 172 Kg per hectare in period II.

### **Conclusions:**

The broad conclusion that come out from our analysis on spice cultivation over a period of time is that, for the state as a whole there seemed no improvement in area, production or productivity for ginger and turmeric while chilli showed slight improvement in production and yield. At the district level, however, at times certain districts, showed a reverse trend. For example, while area under ginger went down in Period II, Satara district, the major ginger growing area in Maharashtra showed a rise in area from 700 hectares in Period I to 880 hectares in Period II, although, there was a slight fall in productivity. Again, in case of turmeric, while there was an overall fall in area, Nanded district showed an increase in area.

Regarding chilli, the main feature was that every district in Maharashtra cultivated this spice crop. It was already noted in the earlier chapter that the share of chilli in the cultivation of spice crops is 75 per cent. At the district level however, there were 14 districts (out of 29) which showed increase in area and 12 districts which showed increase in yield. In most districts however, the yield level remained more or less the same. This is reflected in the state average, where there is only a marginal rise in yield in Period II.

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# APPENDIX A.4.1

## Turmeric

District	(Area in hectares)									
	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97
Thane	0	0	0	0	0	0	100	100	100	100
Raigad	0	0	0	0	0	0	0	0	0	0
Ratnagiri	0	0	0	0	0	0	0	0	0	5
Sindhudurg	0	0	0	0	0	0	0	0	0	17
Nasik	0	0	0	0	0	0	0	0	0	0
Dhule	0	0	0	0	0	0	0	0	0	0
Jalgaon	0	0	0	0	0	0	0	0	0	0
Ahmednagar	0	0	0	0	0	0	0	0	0	0
Pune	0	0	100	100	0	100	100	0	0	51
Satara	700	800	900	800	700	800	900	900	800	811
Sangli	1000	900	700	600	800	900	800	700	600	894
Solapur	200	300	300	400	600	500	400	400	300	416
Kolhapur	100	100	100	100	100	100	100	100	100	101
Aurangabad	0	0	0	0	0	0	0	0	0	0
Jalna	0	100	0	0	0	0	100	100	0	100
Parbhani	1400	2400	2100	1900	2000	1500	1700	1900	1400	1677
Beed	800	900	1100	700	700	700	700	300	130	248
Nanded	700	700	700	500	700	900	800	800	600	865
Osmanabad	400	300	300	700	700	500	400	400	409	416
Latur	100	200	300	200	200	200	100	200	93	182
Buldhana	0	0	100	0	0	0	0	0	0	33
Akola	100	100	100	100	100	100	100	100	100	90
Amravati	100	100	0	0	0	100	100	0	0	88
Yavatmal	100	100	100	100	100	100	100	200	100	97
Wardha	0	0	100	0	0	0	0	0	0	37
Nagpur	100	100	200	100	100	100	100	100	100	101
Bhandara	100	100	100	100	100	100	100	100	100	60
Chandrapur	400	500	500	500	500	400	500	400	400	460
Gadchiroli	0	0	0	0	0	0	0	0	0	7
State	6300	7700	7800	6900	7400	7100	7200	6800	5332	6856

Source : Season & Crop Reports, Maharashtra State, Various Issues.

# APPENDIX A.4.2

## Turmeric

(Production in m.tons)

District	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97
Thane	0	0	0	0	0	0	100	100	100	76
Raigad	0	0	0	0	0	0	0	0	0	0
Ratnagiri	0	0	0	0	0	0	0	0	0	4
Sindhudurg	0	0	0	0	0	0	0	0	0	18
Nasik	0	0	0	0	0	0	0	0	0	0
Dhule	0	0	0	0	0	0	0	0	0	0
Jalgaon	0	0	0	0	0	0	0	0	0	0
Ahmednagar	0	0	0	0	0	0	0	0	0	0
Pune	0	0	100	100	0	100	100	0	0	67
Satara	1089	1244	1500	1100	1100	1300	1400	1400	1300	1217
Sangli	1556	1400	1300	800	1500	1700	1400	1200	1100	1595
Solapur	311	467	400	500	900	700	500	500	400	560
Kolhapur	155	156	200	200	200	200	200	200	200	190
Aurangabad	0	0	0	0	0	0	0	0	0	0
Jalna	0	156	0	0	0	0	100	100	0	100
Parbhani	2178	3556	2300	2100	2200	1700	1900	2100	1500	1843
Beed	1244	1333	800	700	700	700	700	300	300	246
Nanded	1089	1044	800	600	800	1000	900	900	700	998
Osmanabad	578	444	400	900	900	700	500	500	500	537
Latur	155	267	400	200	300	300	100	300	100	233
Buldhana	0	0	100	0	0	0	0	0	0	38
Akola	133	133	100	100	100	100	100	100	100	112
Amravati	133	133	0	0	0	100	100	0	0	103
Yavatmal	133	133	100	100	100	100	100	200	100	108
Wardha	0	0	100	0	0	0	0	0	0	36
Nagpur	133	133	200	100	100	100	100	100	100	95
Bhandara	133	133	100	100	100	100	100	100	100	64
Chandrapur	533	668	600	500	500	500	600	400	500	529
Gadchiroli	0	0	0	0	0	0	0	0	0	7
State	9553	11400	9500	8100	9500	9400	9000	8500	7100	8776

Source : Season & Crop Reports, Maharashtra State, Various Issues.

# APPENDIX A.4.3

## Turmeric

District	(Productivity in Kg/ha)									
	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97
Thane	0	0	0	0	0	0	755	754	758	756
Raigad	0	0	0	0	0	0	0	0	0	0
Ratnagiri	0	0	0	0	0	0	0	0	0	864
Sindhudurg	0	0	0	0	0	0	0	0	0	1068
Nasik	0	0	0	0	0	0	0	0	0	0
Dhule	0	0	0	0	0	0	0	0	0	0
Jalgaon	0	0	0	0	0	0	0	0	0	0
Ahmednagar	0	0	0	0	0	0	0	0	0	0
Pune	0	0	1397	1281	0	1323	1302	0	0	1307
Satara	1556	1556	1612	1380	1598	1614	1531	1531	1569	1501
Sangli	1556	1556	1863	1378	1934	1870	1727	1727	1815	1785
Solapur	1607	1556	1291	1246	1434	1342	1341	1341	1365	1347
Kolhapur	1607	1556	1955	1809	1982	1928	1807	1882	1900	1879
Aurangabad	0	0	0	0	0	0	0	0	0	0
Jalna	0	1500	0	0	0	0	938	998	0	1000
Parbhani	1556	1482	1101	1096	1097	1102	1098	1098	1099	1099
Beed	1556	1489	744	970	1062	963	998	998	1009	991
Nanded	1556	1489	1153	1155	1154	1153	1154	1124	1154	1154
Osmanabad	1444	1444	1322	1274	1249	1320	1282	1282	1283	1292
Latur	1556	1333	1373	1225	1264	1316	1269	1269	1280	1284
Buldhana	0	0	1219	0	0	0	0	0	0	1138
Akola	1333	1333	1182	1011	1364	1277	1218	1212	1269	1246
Amravati	1333	1333	0	0	0	1165	1181	0	0	1175
Yavatmal	1333	1333	1146	1096	1075	1133	1102	1102	1103	1110
Wardha	0	0	1095	0	0	0	0	0	0	985
Nagpur	1333	1333	938	881	961	963	934	935	948	945
Bhandara	1333	1333	1286	923	982	1177	1029	1030	1055	1073
Chandrapur	1333	1333	1264	1063	1042	1246	1117	1117	1131	1151
Gadchiroli	0	0	0	0	0	0	0	0	0	1000
State	1516	1480	1218	1174	1284	1324	1250	1250	1331	1280

Source : Season & Crop Reports, Maharashtra State, Various Issues.

# APPENDIX A.4.4

## Ginger

(Area in hectares)

District	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97
Thane	0	0	0	0	0	100	100	0	0	5
Raigad	0	0	0	0	0	0	0	0	0	0
Ratnagiri	0	0	0	0	0	0	0	0	0	4
Sindhudurg	0	0	0	0	0	0	0	0	0	2
Nasik	0	0	0	800	0	0	0	0	0	0
Dhule	0	0	0	0	0	0	0	0	0	0
Jalgaon	0	0	0	0	0	0	0	0	0	1
Ahmednagar	0	0	0	0	0	0	0	0	0	0
Pune	0	0	0	0	0	0	100	100	100	100
Satara	700	600	700	600	900	900	700	800	1000	1000
Sangli	0	0	0	0	0	0	0	100	0	47
Solapur	0	0	0	0	0	0	0	0	0	0
Kolhapur	0	0	200	0	0	0	0	100	100	0
Aurangabad	0	0	0	100	0	0	0	0	0	3
Jalna	0	0	100	0	0	0	100	100	100	66
Parbhani	0	400	100	0	0	0	0	0	0	0
Beed	400	500	500	400	300	300	200	200	200	196
Nanded	0	0	0	0	0	0	0	0	0	0
Osmanabad	0	0	0	0	0	0	100	0	0	0
Latur	0	100	100	100	0	0	100	0	0	3
Buldhana	0	0	0	0	0	0	0	0	0	15
Akola	100	0	0	0	0	0	0	0	0	16
Amravati	0	100	100	0	0	0	0	0	0	4
Yavatmal	0	0	0	0	0	0	0	0	0	7
Wardha	0	0	0	0	0	0	0	0	0	5
Nagpur	0	0	100	0	0	0	0	0	0	30
Bhandara	100	100	100	200	100	200	200	200	200	73
Chandrapur	0	0	0	0	0	0	0	0	0	1
Gadchiroli	0	0	0	0	0	0	0	0	0	0
State	1300	1800	2000	2200	1300	1500	1600	1600	1700	1578

Source : Season & Crop Reports, Maharashtra State, Various Issues.

Note : Districts which do not show area under Ginger may actually be having negligible area under cultivation and hence it is not quoted.

# APPENDIX A.4.5

## Ginger

District	(Production in m.tons)									
	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97
Thane	0	0	0	0	0	90	100	0	0	5
Raigad	0	0	0	0	0	0	0	0	0	0
Ratnagiri	0	0	0	0	0	0	0	0	0	4
Sindhudurg	0	0	0	0	0	0	0	0	0	2
Nasik	0	0	0	836	0	0	0	0	0	0
Dhule	0	0	0	0	0	0	0	0	0	0
Jalgaon	0	0	0	0	0	0	0	0	0	1
Ahmednagar	0	0	0	0	0	0	0	0	0	0
Pune	0	0	0	0	0	0	100	100	100	100
Satara	818	709	836	727	1109	1109	700	800	900	1000
Sangli	0	0	0	0	0	0	0	100	0	47
Solapur	0	0	0	0	0	0	0	0	0	0
Kolhapur	0	0	200	0	0	0	0	100	100	0
Aurangabad	0	0	0	109	0	0	0	0	0	3
Jalna	0	0	109	0	0	0	100	100	100	66
Parbhani	0	418	109	0	0	0	0	0	0	0
Beed	418	509	527	418	309	309	200	200	200	196
Nanded	0	0	0	0	0	0	0	0	0	0
Osmanabad	0	0	0	0	0	0	100	0	0	0
Latur	0	109	109	0	0	0	100	0	0	3
Buldhana	0	0	0	0	0	0	0	0	0	15
Akola	109	0	0	0	0	0	0	0	0	16
Amravati	0	109	109	0	0	0	0	0	0	4
Yavatmal	0	0	0	0	0	0	0	0	0	7
Wardha	0	0	0	0	0	0	0	0	0	5
Nagpur	0	0	109	0	0	0	0	0	0	30
Bhandara	109	109	109	200	109	218	200	200	200	73
Chandrapur	0	0	0	0	0	0	0	0	0	1
Gadchiroli	0	0	0	0	0	0	0	0	0	0
State	1454	1963	2217	2290	1527	1726	1600	1600	1600	1578

Source : Season & Crop Reports, Maharashtra State, Various Issues.

# APPENDIX A.4.6

## Ginger

(Productivity in Kg/ha)

District	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97
Thane	0	0	0	0	0	978	987	0	0	1000
Raigad	0	0	0	0	0	0	0	0	0	0
Ratnagiri	0	0	0	0	0	0	0	0	0	1000
Sindhudurg	0	0	0	0	0	0	0	0	0	1000
Nasik	0	0	0	1056	0	0	0	0	0	0
Dhule	0	0	0	0	0	0	0	0	0	0
Jalgaon	0	0	0	0	0	0	0	0	0	1000
Ahmednagar	0	0	0	0	0	0	0	0	0	0
Pune	0	0	0	0	0	0	1008	992	1000	1000
Satara	1174	1187	1199	1212	1226	1238	963	951	900	1000
Sangli	0	0	0	0	0	0	0	957	0	1000
Solapur	0	0	0	0	0	0	0	0	0	0
Kolhapur	0	0	1043	0	0	0	0	971	1000	0
Aurangabad	0	0	0	1030	0	0	0	0	0	1000
Jalna	0	0	1030	0	0	0	912	912	1000	1000
Parbhani	0	1043	1043	0	0	0	0	0	0	0
Beed	1043	1030	1056	1043	1030	1017	915	915	1000	1000
Nanded	0	0	0	0	0	0	0	0	0	0
Osmanabad	0	0	0	0	0	0	1105	0	0	0
Latur	0	1043	1030	0	0	0	880	0	0	1000
Buldhana	0	0	0	0	0	0	0	0	0	1000
Akola	1043	0	0	0	0	0	0	0	0	1000
Amravati	0	1030	1043	0	0	0	0	0	0	1000
Yavatmal	0	0	0	0	0	0	0	0	0	1000
Wardha	0	0	0	0	0	0	0	0	0	1000
Nagpur	0	0	1030	0	0	0	0	0	0	1000
Bhandara	1043	1056	1043	1030	1043	1056	1005	1014	1000	1000
Chandrapur	0	0	0	0	0	0	0	0	0	1000
Gadchiroli	0	0	0	0	0	0	0	0	0	0
State	1119	1091	1109	1090	1174	1151	1000	1000	1000	1000

Source : Season & Crop Reports, Maharashtra State, Various Issues.

# APPENDIX A.4.7

## Chillies(dry)

District	(Area in hectares)									
	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97
Thane	300	400	400	300	400	400	500	500	500	300
Raigad	300	300	200	200	200	400	200	200	300	400
Ratnagiri	200	100	100	100	100	200	200	200	200	200
Sindhudurg	600	500	400	500	400	700	600	500	300	500
Nasik	3200	4700	3500	4000	4200	5100	3900	3700	3400	3900
Dhule	4700	6200	8000	6700	7900	11800	9000	7300	7100	7700
Jalgaon	3600	4300	5100	3900	3900	5300	4500	4000	3800	4400
Ahmednagar	2900	2400	2500	2200	2300	2600	2000	2600	2300	2200
Pune	4100	3600	3400	3500	6200	6000	3900	3100	3400	4400
Satara	1100	1100	1000	1100	1000	1600	1500	1300	800	1300
Sangli	5000	5100	3400	4400	3300	3900	4000	4000	2600	4100
Solapur	3500	3500	3800	3700	3500	3200	3600	3600	3000	3400
Kolhapur	5400	5900	5800	6400	4900	7000	5600	4800	5500	5300
Aurangabad	3800	4100	5000	3900	3900	4100	3900	4000	4000	3800
Jalna	1900	1900	2300	2600	2000	2600	2500	2500	2500	2000
Parbhani	2800	2400	2200	2000	1600	3400	5400	2700	1800	2600
Beed	6100	6300	6600	7200	6600	6000	4600	5400	4900	5600
Nanded	11100	12100	11300	11600	5400	13700	11500	11200	10500	10500
Osmanabad	2700	2600	3200	3300	2000	2800	2900	3200	1800	2800
Latur	3000	2900	2900	3300	2600	2900	2800	2900	2800	2800
Buldhana	5200	5500	4900	4900	4900	4800	6900	6400	5900	2700
Akola	1600	1400	1300	1600	1100	2000	1400	1300	1000	1500
Amravati	5200	4800	6100	4000	2800	5000	4600	4100	5000	4200
Yavatmal	2300	3200	3500	3100	2300	3100	2400	2300	2600	2300
Wardha	1100	1200	1500	1300	1300	1400	1500	1300	1200	1200
Nagpur	25600	26500	23100	24900	22100	23400	19900	21700	25000	15400
Bhandara	3700	3600	3900	3300	3400	4000	4200	3600	3600	3200
Chandrapur	11600	11200	12000	11800	11500	12100	11600	11300	10900	7300
Gadchiroli	1700	2200	2200	1900	1700	2700	2200	2000	2100	2200
<b>State</b>	<b>124300</b>	<b>130000</b>	<b>129600</b>	<b>127700</b>	<b>113500</b>	<b>142200</b>	<b>127800</b>	<b>121700</b>	<b>118800</b>	<b>108200</b>

Source : Season & Crop Reports, Maharashtra State, Various Issues.

# APPENDIX A.4.8

## Chillies(dry)

(Production in m.tons)

District	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97
Thane	200	200	300	200	300	200	300	300	300	200
Raigad	300	200	200	200	100	300	200	200	200	300
Ratnagiri	200	100	100	200	100	200	200	200	200	200
Sindhudurg	600	400	400	500	300	700	500	500	300	500
Nasik	3200	4600	3300	3800	3900	4700	3600	3500	3200	3600
Dhule	3900	5400	6700	5800	6600	10100	7700	6400	6100	6600
Jalgaon	3800	5200	5700	4400	4300	6000	5100	4500	4300	4900
Ahmednagar	3200	2900	2800	2400	2500	2900	2300	2900	2600	2500
Pune	3700	4300	3400	3600	6200	6000	3900	3100	3400	4400
Satara	900	800	900	900	800	1300	1200	1110	700	1100
Sangli	3900	4400	2700	3600	2600	3200	3200	3200	2100	3300
Solapur	2700	2800	2900	2900	2700	2500	2900	2800	2400	2700
Kolhapur	1400	2600	2000	2200	1700	2400	1900	1600	1900	1800
Aurangabad	1700	1400	2000	1500	1400	1600	1500	1500	1500	1400
Jalna	800	700	1000	1000	800	1100	1000	1000	1000	800
Parbhani	1600	400	1300	800	200	1300	1100	1000	600	800
Beed	3100	1100	3300	3200	1200	2200	1900	2100	2000	2000
Nanded	3700	4000	3600	3800	1700	4500	3700	3600	3402	3402
Osmanabad	1000	1200	1300	1300	800	1100	1200	1300	700	1100
Latur	1200	600	1100	1100	600	900	1100	1000	900	900
Buldhana	2300	3500	2500	2600	2500	2500	3600	3300	3100	1400
Akola	800	900	600	700	500	900	700	600	500	700
Amravati	5400	4400	6300	4000	2500	4900	4400	4700	5800	4300
Yavatmal	1300	2300	2100	2000	1400	2000	1500	1500	1700	1500
Wardha	500	600	800	700	700	700	700	600	600	600
Nagpur	2900	4100	3100	3410	3000	3100	2700	4500	5600	2600
Bhandara	1500	1100	1600	1300	1300	1600	1700	1400	1400	1300
Chandrapur	4000	8100	5700	6100	5500	5900	5700	5500	5400	3600
Gadchiroli	600	1600	1000	1000	800	1300	1100	1000	1000	1100
<b>State</b>	<b>60400</b>	<b>69900</b>	<b>68700</b>	<b>65210</b>	<b>57000</b>	<b>76100</b>	<b>66600</b>	<b>64910</b>	<b>62902</b>	<b>59602</b>

Source : Season & Crop Reports, Maharashtra State, Various Issues.

# APPENDIX A.4.9

## Chillies(dry)

(Productivity in Kg/ha)

District	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97
Thane	571	500	667	767	667	589	595	618	627	619
Raigad	950	500	1000	1000	500	833	788	850	800	754
Ratnagiri	950	500	1000	1500	500	858	810	967	927	812
Sindhudurg	960	800	1000	1000	800	931	908	934	914	897
Nasik	914	969	937	939	934	931	935	935	937	935
Dhule	833	865	839	867	839	852	855	873	858	855
Jalgaon	1064	1216	1108	1125	1108	1123	1124	1119	1119	1119
Ahmednagar	1118	1195	1130	1105	1105	1125	1125	1120	1115	1118
Pune	902	1195	1000	1023	1000	1007	1005	1003	1004	1004
Satara	857	765	889	842	778	812	811	823	816	808
Sangli	789	860	800	818	800	808	809	808	809	807
Solapur	784	800	771	778	771	786	792	778	784	782
Kolhapur	256	446	338	348	338	337	340	340	345	339
Aurangabad	436	349	405	390	356	384	381	585	382	378
Jalna	429	349	417	400	409	410	408	406	405	408
Parbhani	567	156	583	414	133	380	318	368	323	304
Beed	500	167	500	450	184	373	417	383	415	354
Nanded	329	327	322	325	322	325	325	324	324	324
Osmanabad	385	444	400	400	394	405	409	405	404	403
Latur	400	214	393	334	214	317	395	334	322	316
Buldhana	450	655	500	529	500	523	523	516	517	516
Akola	482	655	455	438	444	463	467	460	457	458
Amravati	1031	909	1030	1000	900	977	961	1142	1163	1029
Yavatmal	568	727	613	647	625	632	637	634	638	633
Wardha	471	500	500	500	500	490	482	486	486	489
Nagpur	114	156	133	137	135	134	134	207	222	166
Bhandara	409	309	405	405	390	937	397	400	399	397
Chandrapur	346	724	473	516	476	487	493	489	493	488
Gadchiroli	343	737	473	500	467	481	486	482	483	480
State	485	539	530	510	502	531	529	533	536	507

Source : Season & Crop Reports, Maharashtra State, Various Issues.

## **CHAPTER V**

### **District – wise Implementation of Central Sector Scheme On Spices Development**

In Chapter IV we discussed the status of spice cultivation in Maharashtra with respect to all districts. While few districts showed better performance, most showed no improvement in terms of area, production and yield. The importance of spice cultivation for the Indian economy for meeting domestic requirements as well as for exports with a view to earning foreign exchange was also discussed in an earlier chapter. Accordingly, the Central Sector Scheme Integrated Programme for Development of Spices was introduced during the Eighth Five Year Plan (1992-93 to 1996-1997) to promote the cultivation of spices. A number of programmes (discussed earlier) were, thus, introduced and targets were laid down for each district for the various programmes. In this chapter, therefore, we intend to study the targets laid down for each district and accordingly the financial outlay allotted, and more importantly, the extent to which these targets have been achieved and helped to increase production. However, before we move on to the distribution of targets (spice-wise and district-wise) the administrative procedure regarding implementation of the scheme and its system of execution must be understood.

#### **5.1 Administrative Procedure and System of Execution of The Central Sector Scheme On Spice Development :**

As already noted, at the country level, the scheme is executed by Directorate of Arecanut and Spices Development, Calicut Covering 25 states and 2 Union Territories. In the states, it is implemented by the state's Directorate of Horticulture, Agricultural Universities, Agricultural Research Institutes, etc. We can, therefore, briefly discuss the administrative procedure related to the scheme.

##### **5.1.1 Staffing Pattern Sanctioned For the Scheme :**

Centrally Sponsored Integrated Spice Development Programme in Maharashtra is implemented by the Horticulture Board in the Commissionerate of

Agriculture office. The staffing pattern for this scheme in Commissionerate of Agriculture consists of the following staff:

Director, Horticulture (1)

Joint – Director, Horticulture (1)

Deputy Director of Agriculture (1)

Technical officer (1)

Agriculture officer (1)

Senior Clerk (1)

#### **5.1.2 System of Execution :**

The Government of India issues an administrative approval for Centrally Sponsored Spices Development Programme in the month of June, every year. The programme sanctioned for the state is then submitted to Government of Maharashtra for state level administrative approval. After receipt of state level administrative approval for the scheme, component –wise physical and financial targets are distributed to the divisional officers along with necessary guidelines for implementation. District – wise break – up of physical and financial targets are then made at divisional level.

Progress reports of the scheme are collected at monthly and quarterly intervals from divisional office, which is consolidated at state – level and submitted to Government of India.

#### **5.1.3 Agencies Involved In the Implementation of the Scheme :**

The following are the agencies involved in the implementation of the scheme :

- a) Agricultural universities: Production of nucleus seed of improved varieties is an important programme in the Central Sector Scheme. Hence, Agricultural Universities such as Mahatma Phule Agriculture University, Marathwada Agriculture University were involved in production of nucleus seeds.
- b) Maharashtra Agro-Industrial development corporation and sahakari khared-vikri sangh at Taluka level : These organizations were responsible for purchase of fertilizers, plant protection chemicals, plant protection equipment, etc.

- c) Agricultural Universities and Maharashtra State seed corporation: These organizations were responsible for the purchase of seeds.
- d) District superintendent agriculture officer (DSAO): The DSAO in each district is responsible for actual implementation of the scheme at district level.

#### **5.1.4 Co-ordination System :**

After receipt of state level administrative approval for the scheme, physical and financial targets are conveyed to district level officers through divisional officers.

District level officers give wide publicity to the scheme and the applications for participation in the scheme are sought from farmers. Necessary indents for seeds, pesticides, fertilizers and equipment according to allotted targets are placed by district level officers to Agricultural Universities, M.S.S.C, MAIDC and Sahakari Kharedi-Vikri Sangh.

#### **5.1.5 Monitoring System:**

Various officers at different levels have made visits to inspect the plots of beneficiaries. The percentage of inspection by various officers who monitor the Central Sector Scheme is as follows:

- a) Agricultural Assistant – 100 per cent of total work
- b) Mandal Agricultural officer – 50 per cent of total work
- c) Taluka Agricultural officer – 20 per cent of total work
- d) Sub-Divisional Agricultural officer – 10 per cent of total work
- e) District Superintendent Agricultural officer – 5 per cent of total work
- f) Joint – Director of Agriculture – 2 per cent of Total work

#### **5.2 Physical and Financial Performance of Various Programmes In Central Sector Scheme:**

As already noted, physical targets (district-wise) for various programmes under the Central Sector Scheme were fixed by the Government and accordingly subsidized inputs were made available to the beneficiaries.

We shall, therefore, analyse, spice – wise, the targets laid out for each district, their achievement and accordingly the financial outlay depending upon the amount of subsidy given for the programme.

#### **5.2.1 District – wise Targets and Financial Outlay for Turmeric :**

As already noted, the strategy for development through Central Sector Scheme for turmeric was initiated through three programme:

- 1) Establishment of demonstration cum seed multiplication plots for which the rate of assistance was Rs 825 per plot of 0.1 hectare being 50 per cent of the cost of inputs. For a demonstration of Plot of 0.1 hectare the cost of inputs required were calculated as under:

Input	Cost (Rs)
200 Kg seed	800
Chemical Fertilizers	95
Plant Protection Chemical	55
Organic Manures	700
<b>Total Cost</b>	<b>1650</b>

Accordingly, 50 per cent subsidy of the cost of inputs i.e. Rs 825 for 0.1 hectare was made available to each beneficiary.

- 2) Area Expansion Programme : Under this programme, 25 per cent subsidy, amounting to Rs 4000/- per hectare is provided as incentive to farmers according to the following cost :

Calculation ,For 1 hectare :

	Cost (Rs)
Seed requirement is 2000 Kg	6000
Chemical Fertilizers	1000
Organic Manures	7500
Plant Protection Chemicals	1500
<b>Total</b>	<b>16,000</b>

Accordingly 25 per cent of the total cost of Rs 16000 (i.e. Rs 4000) is made available to a farmer as subsidy.

3. Assistance for polishing drums : Under this scheme Rs 1500 i.e 50 per cent of the cost of the unit was provided to farmers as subsidy.

Table 5.1, shows a summarized picture of the participation of Maharashtra in the Central Sector Scheme with respect to turmeric. The Table shows the targets laid for each programme year – wise, the achievements and the financial outlay.

From Table 5.1, it can be observed that for establishment of demonstration cum seed multiplication plots the targets was 2557 plots which was 99.4 per cent achieved. In the year 1994-95 and 1995-96, the achievements surpassed the targets laid, while in 1992-93 and 1996-97, the targets were not fully achieved.

Appendix A.5.1 shows that in 1992-93, only 5 districts participated in the Central Sector Scheme for turmeric and that too, only in one programme i.e establishment of demonstration plots. The target laid out was also negligible. In the year 1993-94 the Central Sector Scheme was absent, but from 1994-95 onwards all the turmeric growing districts participated in the scheme Sangli, an important turmeric growing centre, played a relatively important role in this scheme. In 1994-95, out of 931 targeted demonstration plots, 320 i.e. 34 per cent were laid in Sangli. Again out of 477 hectares to be covered under the area expansion programme, 34 per cent were targeted in Sangli. Accordingly, 31 per cent of the funds were allocated to Sangli.

Under the scheme, assistance was also given for purchase of polishing drums at 50 per cent subsidy. Polishing turmeric is an important part of processing turmeric. Dried turmeric has a poor appearance and a rough outer surface with scales and root bits. The appearance is improved by smoothing and polishing the outer surface by manual or mechanical rubbing. Manual polishing consists of rubbing the dried turmeric fingers on a hard surface or trampling them under feet after wrapping in gunny bags.

The improved method is by using hand – operated barrel or drum method on a central axis, the sides of which are made of expanded metal mesh. When the drum filled with turmeric is rotated, polishing is effected by abrasion of the surface against the mesh as well as by mutual rubbing against each other as they roll inside the drum. The turmeric is also polished in power operated drums. Further, the colour of the

**Table 5.1 Central Sector Scheme In Maharashtra For Turmeric**

Year	Establishment of demonstration cum seed multiplication plots (nos)				Area expansion (hectares)				Assistance for polishing drums (nos)				[Rs Lakhs] Total	
	Tar.	Ach.	Prov	Exp	Tar.	Ach.	Prov	Exp	Tar.	Ach.	Prov	Exp	Prov	Exp
1992-93	45	25	0.495	0.275	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.495	0.275
1993-94	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
1994-95	931	978	7.68	8.06	477.5	528.04	19.10	20.03	8	8	0.12	0.12	26.9	28.175
1995-96	991	1069	8.21	7.291	278	321.35	11.13	12.10	10	3	0.15	0.045	19.49	19.44
1996-97	590	470.3	4.86	4.26	172	109.8	6.88	4.2	12	9	0.18	0.135	11.92	8.59
Total	2557	2542.3	21.24	19.89	927.5	959.19	37.11	36.33	30	20	0.45	0.3	58.80	56.5

Source : Directorate of Horticulture, Pune.

turmeric always attracts buyers . Yellow colouring is given externally to the rhizomes while polishing by a dry or wet process. Turmeric powder is added to the polishing drum in the last 10 minutes in dry process.

Thus, since polishing of turmeric is an essential feature of processing, assistance for purchase of polishing drums was made available under this scheme. The target laid out for this programme was for 30 drums but achievement was only 66.7 per cent i.e. 20 drums were purchased under this programme.

The overall picture that emerges on the implementation of this scheme was that in care of establishment of demonstration plots the targets were nearly met, in case of area expansion the targets were surpassed but in case of assistance for polishing drums, the achievement fell short.

In the previous chapter, we had observed that during the period 1992-93 to 1996-97, there was no increase in yield of turmeric but infact yield registered a marginal fall. This shows that atleast at the overall state level the Central Sector Scheme did not boost production as neither did the area nor yield register any increase. This could perhaps be due to the operation of the scheme on a very small scale in case of all programmes. For example, less than 2 per cent of the area each year was laid out as demonstration plots, while 8 per cent area was under area expansion in 1994-95 and it was 6 per cent in 1995-96. The area expansion programme was negligible in 1996-97 and it covered only 1.6 per cent of the area.

The same observations were made at the district level. For example, Sangli had maximum demonstration plots in 1995-96 but this covered only 2.5 per cent of its area. The participation of most of the districts was very small and most districts had negligible area under demonstration plots and area expansion programme. The scope for yield to increase was thus limited.

### **5.2.2 District – wise Targets and Financial Outlay for Ginger :**

In the case of ginger, 4 programmes were initiated under the Central Sector Scheme to improve cultivation practices and increase production. The programmes, as already noted earlier were, production of nucleus seed material; establishment of demonstration plots where the rate of assistance was Rs 1200 per plot

of 0.1 hectare being 50 per cent of the cost of inputs; plants protection programmes where Rs 1000/- per hectare being 50 per cent of the cost of plant protection chemicals was given and distribution of minikits where each kit costing Rs 25/- was supplied to farmers at 50 per cent subsidy.

In Appendix A.5.2, we have shown year – wise and district – wise, targets laid down for each programme and accordingly the financial outlay for each district.

From Appendix A.5.2, it can be observed that the Central Sector Scheme for ginger was implemented only during the last three years of the Eighth Plan i.e. from 1994-95 to 1996-97. However, during these years, most of the ginger growing districts participated in the scheme. Infact districts which had negligible area under ginger which are not even reported by the Season and Crop Reports also participated in the Scheme with some minimum targets. Table 5.2 gives a summary on Central Sector Scheme for ginger.

From the Table 5.2, it can be observed that in case of production of nucleus seed, the achievement was fell short of the target. While the target was fixed at 69 tonnes, only 12.67 tonnes of nucleus seed was produced. Thus achievement was only 18 per cent.

In case of establishment of demonstration lots, the achievement surpassed the targets because in the year 1995-96, while target was 270 the achievement was 386 plots. As noted earlier, Satara is the main ginger growing district in Maharashtra and hence out of total achievement of 832 demonstration plots during Eighth Plan, 252 plots i.e. 30 per cent were demonstrated in Satara. Similarly in case of plant protection programme out of a total achievement of 310 hectares in the state, 33 per cent was in Satara.

From Appendix A.5.2, it can be observed that, targets (although negligible) for demonstration plots and plant protection measures have been laid and achievements have been met in a number of districts such as Akola, Amravati, Nagpur, Chandrapur, Wardha. However, the Season and Crop Reports have not reported any area under ginger in there districts (see Appendix A.4.4). The area under ginger, as already noted in Table 2.1 (Chapter II) is only 0.01 per cent of the gross cropped area in Maharashtra. The main district which grows ginger is Satara whereas in case of other districts, the

**Table 5.2 Central Sector Scheme In Maharashtra For Ginger**

Year	Production of nucleus seed (tonnes)				Establishment of demonstration plots (nos)				Plant protection programme (ha)				Distribution of minikits (nos)				[Rs Lakhs] Total	
	Tar	Ach	Prov	Exp	Tar	Ach	Prov	Exp	Tar	Ach	Prov	Exp	Tar	Ach	Prov	Exp	Prov	Exp
1994-95	23.65	5.67	0.71	0.17	269	212	3.23	2.54	126	138	1.26	1.16	645	585	0.163	0.149	5.37	4.02
1995-96	36.68	4	1.095	0.224	270	386	3.14	4.63	185	146.2	1.33	0.28	998	659	0.25	0.27	5.824	5.4
1996-97	9	3	0.285	0.105	284	234	3.41	2.9	37	25.8	0.37	0.26	1390	728	0.35	0.14	4.35	3.43
Total	69.33	12.67	2.08	0.499	823	832	9.78	10.07	348	310	2.96	1.7	3033	1972	0.76	0.56	15.54	12.85

Source : Directorate of Horticulture, Pune.

area under ginger is very negligible . Hence, the Season and Crop Reports, may have neglected many districts having negligible area under ginger while reporting area statistics under ginger.

In case of distribution of minikits, while the targets was 3033 minikits, to be distributed, the achievement was 1972 which means that 65 per cent of the target has been achieved. Out of 1972 minikits distributed, again Satara had the maximum share as 1440 minikits were distributed in Satara itself.

The overall picture that emerges from the implementation of this scheme for ginger in Maharashtra was that all targets had not been achieved. The achievement was poor in case of nucleus seed production where instead of 69 tonnes only 12.67 tonnes had been produced. The minikits distributed were also far short of that targeted. Targets were slightly surpassed in case of demonstration plots but fell slightly short in case of plant protection programme

In the previous chapter, we had already observed that during the period 1992-93 to 1996-97, (i.e. during the Eighth Plan Period when the Central Sector Scheme was introduced) there was no increase in area, production or yield for the state as a whole.

During each scheme year, the area covered by the programmes was negligible. The establishment of demonstration plots was laid out in hardly 1.5 to 2.5 per cent of the area under ginger. The plant protection programme covered 9 per cent of the area but in 1996-97 it was 1.6 per cent. The minikits distributed also covered less than one per cent of the area. With the scheme covering such a small portion of the area under ginger, it could hardly be effective in increasing yield.

### **5.2.3 District – wise Targets and Financial Outlay for Chilli:**

It was already observed in chapter II that chilli formed around 75 per cent of the area under spices in Maharashtra. Accordingly, the major share of total outlay was allocated towards chilli crop. The number of programmes initiated for chilli crop were also much more. The subsidy available for each programme have been calculated accordingly:

- 1) Production of Nucleus Seed: For the production of nucleus seed, the subsidy was Rs 40,000 per tonne.
- 2) Establishment of Demonstration Cum Seed Multiplication Plots: For a plot of 0.1 hectare the input cost is:

Input	Cost (Rs)
125 gms Seed	80
Plant Protection Measures	210
Chemical Fertilizers	110
Organic Manure	600
Oil seed cake	400
<b>Total Cost</b>	<b>1400</b>

According to the above cost of Rs 1400, an incentive of Rs 700 per plot of 0.1 hectare, being 50 per cent of the total cost, is given to the farmers.

- 3) Demonstration of Plant Protection Measures : An incentive of Rs 200 per hectare, being 50 per cent of plant protection chemicals was given to farmers.
- 4) Area Expansion Programme: For 1 hectare the input cost for this programme is:

Input	Cost (Rs)
Seed required 1.25 Kg	850
Chemical Fertilizers	3650
Plant Protection Chemicals	4500
Organic Manures	3000
<b>Total</b>	<b>12000</b>

A subsidy of 25 per cent i.e. Rs 3000 per hectare on the total cost of inputs was made available to farmers.

- 5) Distribution of Minikits : Each minikit for 0.01 hectare contains :

Input	Cost (Rs)
10 gms seed	5
Chemical Fertilizers	20
Plant Protection Chemicals	25

Organic Manure	50
	.....
<b>Total Cost</b>	<b>100</b>

The minikit is distributed to farmers at 50 per cent subsidy.

6) Paprika Demonstration Plots : For a plot of 0.1 hectare the input requirement is :

Input	Cost (Rs)
25 gms seed	50
Chemical Fertilizers	125
Organic Manure	1200
Plant Protection Chemicals	125
Putting a banner	100
	.....
<b>Total Cost</b>	<b>1600</b>

An incentive of Rs 800 per plot of size 0.1 hectare being 50 per cent of the cost of the inputs was given to the plot owners.

From the Table 5.3, it can be observed that, in case of chilli, there was virtually no achievement in the production of nucleus seed. The target of 7.9 tonnes had not been achieved and only 0.05 tonnes had been produced.

In the case of establishment of demonstration plots, 91 per cent of the target had been achieved while in case of plant protection programme, the achievement was 71 per cent. In case of distribution of minikits, 76 per cent target had been achieved. Only in case of area expansion programme, the rate of incentive was Rs 3000/- per hectare to cultivators, being 25 per cent of the cost of inputs. However, the figures relating to expenditure on area expansion programme indicate that the rate of incentive was much lower than Rs 3000/- per hectare. Infact, in most of the districts the amount distributed as subsidy, was much lower than Rs 3000/- per hectare. This could perhaps be due to the fact that beneficiaries have not claimed subsidy for all components. Hence the subsidy claimed by them is less than Rs 3000 per hectare.

**Table 5.3 Central Sector Scheme In Maharashtra For Chilli**

Year	Production of nucleus seed (tonnes)				Establishment of demonstration plots (nos)				Plant protection programme (ha)				Distribution of minikits (nos)				Area expansion (ha)				Paprika demonstration Plots (Nos)				Total	
	Tar	Ach	Prov	Exp	Tar	Ach	Prov	Exp	Tar	Ach	Prov	Exp	Tar	Ach	Prov	Exp	Tar	Ach	Prov	Exp	Tar	Ach	Prov	Exp	Prov	Exp
1992-93	-	-	-	-	75	62	0.52	0.43	3951	2452	5.9	3.6	-	-	-	-	-	-	-	-	-	-	-	-	6.34	4.06
1993-94	-	-	-	-	370	85	2.59	0.59	6000	328	9.00	0.49	-	-	-	-	-	-	-	-	-	-	-	-	11.59	1.08
1994-95	2.31	0	1.23	0.81	1183	1164	8.78	7.9	16944	15560	32.18	28.79	2762	2852	1.47	1.39	540	706	15.69	13.05	45	15	0.29	0.12	59.94	32.03
1995-96	4.39	0	1.99	0.313	1405	1321	9.8	7.8	15165	10506	30.32	18.36	2436	2013	1.21	0.92	665	958	19.95	16.44	160	57	1.28	0.43	64.41	44.52
1996-97	1.21	0.05	0.12	0.012	1683	1658	11.79	11.42	11347	9695	22.59	15.96	3086	2359	1.54	1.14	917	1157	27.35	28.66	131	158	1.05	1.15	64.29	58.38
Total	7.91	0.05	3.34	1.33	4716	4290	33.48	28.14	53407	38541	100	67.2	8284	7224	4.22	3.45	2122	2821	63.0	58.15	336	230	2.62	1.7	206.57	160.07

Source : Directorate of Horticulture, Pune.

Again, in case of paprika demonstration plots, the targets had not been achieved. From the period 1994-95 to 1996-97 i.e. last three years of the Eighth Plan, 336 plots had been targeted for demonstration but achievement was only 230 plots i.e. 65 per cent.

The overall picture regarding Implementation of Central Sector Scheme for chilli indicates non-achievement of targets. Accordingly, out of the provision of Rs 206.57 lakhs, only Rs 160.07 lakhs were utilized and distributed to the farmers as subsidy.

As in case of other crops, the programmes initiated for chilli covered only a small portion of the total area under chilli. Demonstration plots covered 0.1 per cent of the area, and less than 1 per cent of the area was under area expansion programme. Again negligible area was covered by minikits and paprika demonstration plots. The plant protection programme covered 13 per cent of the area in 1994-95 and 8 to 9 per cent of the area under chilli in 1995-96 and 1996-97.

Therefore, in view of small coverage various programmes under the Central Sector Scheme could hardly influence yield levels in Maharashtra.

However, if we look at the district level data (Appendix A.4.9) also, we find that most of the districts did not improve their yield position after the introduction of the Central Sector Scheme, while some improved it marginally. A point however worth mentioning, is that in case of Nagpur, while it was often observed that the yield was 134 Kg per hectare (from 1991-92 to 1993-94), there was an improvement in the years 1994-95 and 1995-96 to 207 Kg per hectare and 222 Kg per hectare respectively. During these years, the achievement in case of plant protection measures was quite high in Nagpur (3691 hectares in 1994-95 and 2681 hectares in 1995-96) as compared to other districts. These plant protection measures however covered only 17 per cent of the area under chilli in 1994-95 and 11 per cent of the area under chilli in 1995-96. Studies (Peter K.V. – “Trends in Production, Cultivation, Processing and Storage of Chillies” – Spice India, January 1997) have shown that among the production constraints, incidence of diseases such as leaf curl, bacterial wilt, fruit rot etc. are the major problems. Proper measure such as 2-3 sprays of Dithane M<sub>45</sub> during fruiting

stage (to prevent fruit rot) and seed treatment with appropriate chemicals help to prevent and control the diseases. This helps to increase yield.

One may, therefore, get the impression that the increase in yield in Nagpur from 134 Kg hectare to a little more than 200 Kg per hectare could partly be attributed to the plant protection programme. This fact has to, however, be confirmed by field surveys which will be discussed in the next chapter.

After studying the district-wise implementation of Central Sector Scheme, it would be worthwhile to look into the problems faced by agencies involved in the scheme, because of which, the impact of the scheme is limited.

### **5.3 Problems Faced By Implementing and Participating Agencies Regarding Executing of the Scheme:**

As we know Central Sector Scheme is implemented by the state's Directorate of Horticulture. At the district level it is the District Superintendent Agricultural officers who is in – charge of the scheme. These agencies face certain difficulties while implementing the scheme. Some of the difficulties are :

1. It was reported by the Directorate of Horticulture that the administrative approval by the Central Government is considerably delayed in certain years. This makes it very difficult to implement some components or programmes under the scheme. Any delay by Central Government, delays the state Governments decision and hence the District Superintendent Agricultural officers implementing the scheme at the district level are not able to publicise the scheme at the appropriate time i.e. before the planting season. Eg; for both turmeric and ginger the planting starts after the commencement of south-west monsoon mostly between March-June (unless the irrigation facilities are assured). In case the approval by the Central or State Government is delayed, farmers have already started planting operations and cannot participate in programmes such as establishment of demonstration plots or area expansion programme where the farmers are encouraged to use high yielding varieties.
2. There is also delay in release of grants and sometimes the grants are curtailed by the Centre. This creates difficulties in implementation of the scheme.

3. The subsidy amount for the component – production of nucleus seed material is too less. Hence, the Agricultural Universities are reluctant to take up the programme of production of nucleus seed and further distribute the produced seeds to farmers at subsidised rates.
4. While implementing the scheme at the district level, it was felt that some of the components have very little amount of subsidy. This was observed in the scheme for distribution of minikits. For example, in case of Ginger, the subsidy amount in the minikit was Rs 25 for a plot size of 0.01 hectare. The minikit, as per norms, is supposed to contain 5 Kg seed rhizomes and its requirement of fertilizers and plant protection chemicals. However, from the office of the DSAO, as well as a personal interview with farmers, revealed that under minikit distribution only 1 bottle of pesticides for 0.01 hectare was available. It can be observed from Table 5.2, that entire targets fixed for distribution of minikits for ginger were never achieved. The total targets for 3 years of the scheme (1994-95 to 1996-97) was 3033 plots (each plot of 0.01 hectare) but the achievement was only 1972 plots. Also 5 Kg seed is insufficient for 0.01 hectare, as the seed rate for ginger is 1200 Kg to 1800 Kg per hectare.
5. It was noted from the state authorities that the subsidies are fixed on the basis of input costs in 1992. However, during the course of time, the prices of inputs have escalated and farmers find the subsidy amount less. Even for production of nucleus seed, the subsidy available was Rs 40 per Kg. The sale price of the Agricultural Universities was however Rs 120 per Kg or more. The farmers find the cost of seed too high for purchase.
6. The district authorities often found lack of participation by farmers due to certain formalities required in order to avail of subsidies. For example, farmers have to give details of their land records before they can participate in the scheme. This acts as a disincentive for them to participate in the scheme, especially when the subsidy amount is very limited.

Thus, delay in scheme approval and sanctioning of grants, subsidy amount being too meagre, were some of the limitations of the scheme.

#### **5.4 Problems Faced By Research Stations:**

As already noted, Agricultural Universities such as Mahatma Phule Vidyapeeth, Rahuri, were involved in Central sector Scheme mainly for the purpose of production of nucleus seed which could further be multiplied at state departmental farms and then be distributed to farmers. However, research stations faced certain difficulties in developing varieties and production of seed. Some of the difficulties are:

1. It was noted from the Agricultural Universities that the major constraint in developing ginger varieties are non-availability of sufficient quantity of quality planting materials of high yielding varieties as well as low fibre content. Crop improvement programmes are hampered by lack of seed set. While some high yielding varieties are available, they are not completely resistant to major diseases such as soft rot/leaf spot and scale insect. Ginger, also has seed rhizome dormancy and thus ginger rhizomes must be stored well. Non dormancy varieties have therefore to be evolved. Rapid multiplication with limited initial quantity of plant parts through tissue culture is possible but at uneconomical rates.
2. High production technology developed at research stations have not been transferred to the field to the required level.
3. While virtually no research was undertaken by Agricultural Universities in case of ginger and turmeric the "All India Co-ordinated Vegetable Improvement Project, Mahatma Phule Krishi Vidyapeeth, (MPKV) Rahuri", was involved in the implementation of "Integrated Programme for development of Spices". Under this programme, the seed production of chilli was undertaken for distribution to the farmers and Government agencies.

The scheme work started during the year 1994-95. During the first year, this centre had taken seed production programme on paprika crop on an area of 0.80 ha only, due to lack of availability of sufficient seed of paprika varieties (KTPL – 19, and PPK – 1 and PPK – 3). These varieties were tested in the field in polyhouse and semi-shade conditions during winter season. The performance was satisfactory of all varieties upto the flowering stage. Then all varieties got affected by powdery wilt, die-

back and leaf curl diseases despite use of recommended insecticides and fungicides. Hence production of paprika seeds was not viable.

The University then switched over to chilli seed production in June 1995. This centre had taken demonstration plot of chilli varieties to study farmers reaction. This increased demand for chilli seed by farmers.

The Agricultural Universities released four varieties of chilli which are popular among farmers. However, University MPKV (Rahuri) does not have separate staff and infra-structure to undertake the concentrated research programme regarding breeding, agro-techniques, plant protection, post harvest technology and seed production. The research work is being undertaken with available manpower and facilities. The University therefore felt the need for establishment of an independent researches project on chillies, where the research work regarding the development of new varieties could be undertaken.

While of developing new varieties the Universities face certain problems:

- a) Lack of perennial source of irrigation and interrupted electric power supply were the main problem in cultivation which limited the production potential and scope to increase area.
- b) The cost of cultivation and seed production cost showed an increasing trend due to increase in cost of inputs such as fertilizers, insecticides and labour cost. This limits the area under the chilli seed production as per norms.
- c) Lack of post harvest infra-structure for drying of chilli in kharif season, reduced the quality of seed. The University felt that there was urgent need for availability of chilli drier and seed extracting machine for quicker extraction of seed.

We, therefore, observe that Agricultural Universities had their limitations in developing high yielding varieties of ginger, turmeric and paprika. High yielding varieties were developed for chilli but a lot had yet to be achieved both at the research level as well as at the farmer's end.

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## Appendix A.5.1

### Central Sector Scheme In Maharashtra For Turmeric

**Crop :- Turmeric**

**Year :- 1992 - 93**

**[ Rs. In lakhs]**

Sr. No.	District	Establishment of Demonstration cum Seed Multiplication Plots (Nos)				Area Expansion (ha)				Assistance for Polishing Drums (Nos)				Total	
		Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Prov.	Exp.
1	Parbhani	10	0	0.11	0	0	0	0	0	0	0	0	0	0.11	0
2	Nanded	10	0	0.11	0	0	0	0	0	0	0	0	0	0.11	0
3	Wardha	15	15	0.165	0.165	0	0	0	0	0	0	0	0	0.165	0.165
4	Nagpur	5	5	0.055	0.055	0	0	0	0	0	0	0	0	0.055	0.055
5	Chandrapur	5	5	0.055	0.055	0	0	0	0	0	0	0	0	0.055	0.055
	<b>TOTAL</b>	<b>45</b>	<b>25</b>	<b>0.495</b>	<b>0.275</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.495</b>	<b>0.275</b>

**Note :** In this year Rs 1100/- per Demonstration cum Seed Multiplication Plot of 0.1 hectare was the rate of assistance.

**Source :** Directorate of Horticulture, Maharashtra State

**Crop :- Turmeric**

**Year :- 1994 - 95**

**[ Rs. In lakhs]**

Sr. No.	District	Establishment of Demonstration cum Seed Multiplication				Area Expansion				Assistance for Polishing Drums				Total	
		Plots (Nos)				(ha)				(Nos)				Prov.	Exp.
		Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.		
1	Sangli	320	320	2.64	2.48	163.	162.3	6.52	6.667	3	3	0.045	0.045	9.205	9.192
2	Kolhapur	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	Jalna	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Parbhani	41	60	0.338	0.495	40	40	1.60	1.60	0	0	0	0	1.938	2.095
5	Beed	105	124	0.866	1.203	52	52.45	2.08	2.086	1	1	0.015	0.015	2.961	3.298
6	Nanded	95	100	0.784	0.825	58	57	2.32	2.28	1	1	0.015	0.015	3.119	3.12
7	Osamanabad	160	160	1.32	1.32	55	75	2.2	3.00	1	1	0.015	0.015	3.535	4.335
8	Latur	66	68	0.544	0.561	36	36	1.44	1.44	0	0	0	0	1.984	2.001
9	Buldhana	10	12	0.082	0.071	5	6.79	0.20	0.19	0	0	0	0	0.282	0.261
10	Akola	10	10	0.082	0.082	5	5	0.20	0.20	0	0	0	0	0.282	0.282
11	Amravati	9	9	0.074	0.074	4.50	4.50	0.18	0.18	1	1	0.015	0.015	0.269	0.269
12	Yeotmal	10	10	0.082	0.082	5	5	0.20	0.20	0	0	0	0	0.282	0.282
13	Wardha	50	50	0.41	0.41	30	30	1.20	1.20	0	0	0	0	1.61	1.61
14	Nagpur	20	20	0.17	0.165	10	29	0.40	0.40	0	0	0	0	0.57	0.565
15	Bhandara	10	10	0.08	0.08	0	0	0	0	0	0	0	0	0.08	0.08
16	Chandrapur	25	25	0.21	0.21	14	25	0.56	0.56	1	1	0.015	0.015	0.785	0.785
17	Gadchiroli	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	931	978	7.682	8.058	477.5	528.04	19.1	20.003	8	8	0.12	0.12	26.9	28.175

**Crop :- Turmeric**

**Year :- 1995 - 96**

**[ Rs. In lakhs]**

Sr. No.	District	Establishment of Demonstration cum Seed Multiplication Plots (Nos)				Area Expansion (ha)				Assistance for Polishing Drums (Nos)				Total	
		Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Prov.	Exp.
1	Satara	50	50	0.41	0.410	10.	10	0.40	0.40	0	0	0	0	0.81	0.81
2	Sangli	150	150	1.25	0.874	40	40	1.60	1.316	3	0	0.045	0	2.895	2.19
3	Solapur	50	50	0.41	0.30	10	10	0.40	0.264	0	0	0	0	0.81	0.564
4	Kolhapur	10	10	0.08	0.075	5	5	0.20	0.2	0	0	0	0	0.28	0.275
5	Jalna	30	0	0.248	0	0	0	0	0	0	0	0	0	0.248	0
6	Parbhani	95	95	0.783	0.78	30	32	1.20	1.28	0	0	0	0	1.983	2.06
7	Beed	30	27	0.248	0.223	10	8.6	0.40	0.344	0	0	0	0	0.648	0.567
8	Nanded	135	135	1.113	1.113	35	86.75	1.40	3.47	0	0	0	0	2.513	4.583
9	Osamanabad	65	62	0.536	0.497	25	6.75	1.00	0.214	3	0	0.045	0	1.581	0.711
10	Latur	100	100	0.825	0.825	25	29.6	1.00	1.184	0	0	0	0	1.825	2.009
11	Buldhana	30	30	0.25	0.247	10	7.6	0.40	0.316	1	0	0.015	0	0.665	0.563
12	Akola	15	15	0.123	0.123	5	4.2	0.20	0.20	1	1	0.015	0.015	0.338	0.338
13	Amravati	16	15	0.132	0.124	8	7.8	0.32	0.316	0	0	0	0	0.452	0.44
14	Yeotmal	15	10	0.123	0.08	7	8.05	0.28	0.321	0	0	0	0	0.403	0.401
15	Wardha	75	175	0.62	0.62	25	25	1.01	0.98	1	1	0.015	0.015	1.645	1.615
16	Nagpur	50	41	0.41	0.34	10	10	0.40	0.40	0	0	0	0	0.81	0.74
17	Bhandara	21	50	0.21	0.21	8	15	0.32	0.32	1	1	0.015	0.015	0.545	0.545
18	Chandrapur	54	54	0.44	0.45	15	15	0.60	0.58	0	0	0	0	1.04	1.03
	T O T A L	991	1069	8.211	7.291	278	321.35	11.13	12.105	10	3	0.15	0.045	19.491	19.441

**Crop :- Turmeric**

**Year :- 1996 - 97**

[ Rs. In lakhs]

Sr. No.	District	Establishment of Demonstration cum Seed Multiplication Plots (Nos)				Area Expansion (ha)				Assistance for Polishing Drums (Nos)				Total	
		Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Prov.	Exp.
1	Pune	75	0	0.62	0	20	0	0.80	0.20	0	0	0	0	0.404	0.20
2	Satara	25	75	0.21	0.617	20	14	0.80	0.86	3	3	0.045	0.045	0.87	1.522
3	Sangli	75	8.30	0.62	0.58	20	16.30	0.80	0.20	0	0	0	0	0.604	0.78
4	Solapur	25	5	0.210	0.040	20	5	0.80	0.2	0	0	0	0	0.24	0.040
5	Kolhapur	25	0	0.2	0	20	0	0	0	0	0	0	0	0	0
6	Jalna	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	Parbhani	35	35	0.289	0.289	5	5	0.20	0.20	0	0	0	0	0.489	0.489
8	Beed	5	5	0.041	0.041	1	1	0.040	0.040	1	0	0.015	0	0.096	0.081
9	Nanded	50	50	0.412	0.412	12	12	0.48	0.475	1	1	0.015	0.015	0.907	0.907
10	Osamanabad	95	95	0.784	0.784	20	20	0.80	0.80	0	0	0	0	1.584	1.584
11	Latur	40	44	0.33	0.363	4	6.10	0.16	0.244	1	1	0.015	0.015	0.505	0.622
12	Buldhana	12	10	0.099	0.082	4	4	0.16	0.14	1	0	0.015	0	0.274	0.222
13	Akola	6	6	0.049	0.049	1	1	0.04	0.04	1	0	0.015	0	0.104	0.089
14	Amravati	12	12	0.099	0.099	4	4	0.16	0.16	1	1	0.015	0.015	0.274	0.274
15	Yeotmal	5	5	0.041	0.041	1	1.40	0.04	0.04	0	0	0	0	0.081	0.081
16	Wardha	40	40	0.33	0.327	8	8	0.320	0.321	1	1	0.015	0.015	0.665	0.663
17	Nagpur	6	6	0.049	0.049	1	1	0.040	0.040	1	1	0.015	0.015	0.104	0.104
18	Bhandara	15	30	0.123	0.123	0	0	0	0	0	0	0	0	0.123	0.123
19	Chandrapur	44	44	0.363	0.363	11	11	0.44	0.44	1	1	0.015	0.015	0.818	0.818
	TOTAL	590	470.3	4.869	4.259	172	109.8	6.88	4.40	12	9	0.18	0.135	11.920	8.599

## APPENDIX A.5.2

### Central Sector Scheme For Ginger

Crop :- Ginger

Year :- 1994 - 95

[ Rs. In lakhs]

Sr. No.	District	Production of Nucleus Seed (Tonnes)				Establishment of Demonstration Plots (Nos)				Plant Protection Programme (ha)				Distribution of Minikits (Nos)				Total	
		Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Prov.	Exp.
1	Pune	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Satara	16.68	0	0.50	0	102	102	1.227	1.22	80	80	0.8	0.798	440	440	0.110	0.110	2.837	2.128
3	Sangli	0	0	0	0	20	0	0.241	0	0	0	0	0	0	0	0	0	0.241	0
4	Solapur	0	0	0	0	20	20	0.241	0.241	0	0	0	0	0	0	0	0	0.241	0.241
5	Kolhapur	0	0	0	0	20	0	0.241	0	0	0	0	0	0	0	0	0	0.241	0
6	Aurangabad	1	1	0.03	0.03	41	41	0.49	0.492	5	5	0.05	0.05	30	30	0.0075	0.0075	0.5775	0.5775
7	Jalna	1	1	0.03	0.03	0	0	0	0	5	5	0.05	0.05	30	30	0.0075	0.0075	0.0875	0.0875
8	Beed	0	0	0	0	10	10	0.12	0.12	5	5	0.05	0.05	0	0	0	0	0.17	0.17
9	Nanded	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0.0062	0	0.0062	0
10	Osamanabad	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	Latur	0	0	0	0	0	0	0	0	3	3	0.03	0.03	0	0	0	0	0.03	0.03
12	Parbhani	0	0	0	0	10	10	0.12	0.12	3	3	0.03	0.03	0	0	0	0	0.15	0.15
13	Buldhana	1.67	1.67	0.05	0.05	17	17	0.20	0.204	8	8	0.06	0.032	10	10	0.003	0.003	0.313	0.289
14	Akola	0	0	0	0	0	0	0	0	2	2	0.02	0.02	10	10	0.003	0.003	0.023	0.023
15	Amravati	0	0	0	0	0	0	0	0	2	2	0.02	0.02	10	10	0.003	0.003	0.023	0.023
16	Yeatmal	0	0	0	0	0	0	0	0	0	0	0	0	10	10	0.003	0.003	0.003	0.003
17	Nagpur	2.0	2.0	0.06	0.06	5	5	0.06	0.06	7	24	0.07	0.068	20	20	0.005	0.006	0.195	0.194
18	Bhandara	0	0	0	0	7	7	0.084	0.084	1	1	0.01	0.01	25	25	0.006	0.006	0.10	0.10
19	Chandrapur	0	0	0	0	8	0	0.098	0	1	0	0.01	0	15	0	0.004	0	0.112	0
20	Wardha	1.3	0	0.04	0	7	0	0.084	0	5	0	0.05	0	15	0	0.004	0	0.178	0
21	Gadchiroli	0	0	0	0	2	0	0.028	0	1	0	0.01	0	5	0	0.001	0	0.042	0
TOTAL		23.65	5.67	0.71	0.17	269	212	3.234	2.541	126	138	1.26	1.158	645	585	0.1632	0.149	5.37	4.02

Source : Directorate of Horticulture, Maharashtra State

**Crop :- Ginger**

**Year :- 1995 - 96**

[ Rs. In lakhs]

Sr. No.	District	Production of Nucleus Seed (Tonnes)				Establishment of Demonstration Plots (Nos)				Plant Protection Programme (ha)				Distribution of Minikits (Nos)				Total	
		Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Prov.	Exp.
1	Pune	0	0	0	0	25	0	0.30	0	2	0	0.02	0	30	0	0.0075	0	0.3275	0
2	Satara	21	0	0.63	0	100	100	1.20	1.20	15	15	0.15	0.15	500	500	0.125	0.125	2.105	1.475
3	Sangli	0	0	0	0	20	0	0.24	0	2	0	0.020	0	30	0	0.0075	0	0.2675	0
4	Solapur	0	0	0	0	11	11	0.13	0.132	1	1	0.010	0.010	40	40	0.010	0.010	0.150	0.152
5	Aurangabad	3.18	3.18	0.095	0.095	10	130	0.12	1.56	10	0	1.00	0	280	0	0.070	0.000	1.28	1.655
6	Jalna	2	0	0.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0.060	0
7	Parbhani	1	0	0.03	0	10	0	0.12	0	0	0	0	0	0	0	0	0	0.150	0
8	Beed	1	0	0.03	0	17	14	0.204	0.168	0	0.6	0	0.006	0	0	0	0	0.234	0.174
9	Nanded	1	0	0.03	0	19	19	0.128	0.23	0	0	0	0	0	0	0	0	0.158	0.23
10	Osamanabad	1	0	0.03	0	2	25	0.024	0.30	0	0	0	0	0	0	0	0	0.054	0.30
11	Latur	0	0	0	0	9	45	0.108	0.54	0	0	0	0	0	0	0	0	0.108	0.54
12	Buldhana	0	0	0	0	15	15	0.18	0.18	6	7.6	0.060	0.054	80	80	0.020	0.020	0.26	0.254
13	Akola	0	0	0	0	2	2	0.024	0.024	15	15	0.020	0.018	2	2	0.0004	0.004	0.048	0.046
14	Amravati	1.25	1	0.035	0.034	0	0	0	0	2	7	0.020	0.020	15	15	0.004	0.004	0.059	0.058
15	Yeatmal	1.25	1	0.035	0.035	0	0	0	0	0	0	0	0	10	11	0.002	0.0027	0.037	0.037
16	Nagpur	4	2	0.12	0.06	20	15	0.24	0.18	60	60	0.015	0.015	10	10	0.00	0.10	0.375	0.355
17	Bhandara	0	0	0	0	10	10	0.12	0.12	40	40	0.010	0.010	1	1	0.010	0.010	0.140	0.140
18	Chandrapur	0	0	0	0	0	0	0	0	32	0	0.008	0	0	0	0	0	0.008	0
	<b>TOTAL</b>	<b>36.68</b>	<b>7.18</b>	<b>1.095</b>	<b>0.224</b>	<b>270</b>	<b>386</b>	<b>3.138</b>	<b>4.634</b>	<b>185</b>	<b>146.2</b>	<b>1.333</b>	<b>0.283</b>	<b>998</b>	<b>659</b>	<b>0.2584</b>	<b>0.2757</b>	<b>5.821</b>	<b>5.416</b>

**Crop :- Ginger**

**Year :- 1996 - 97**

**[ Rs. In lakhs]**

Sr. No.	District	Production of Nucleus Seed (Tonnes)				Establishment of Demonstration Plots (Nos)				Plant Protection Programme (ha)				Distribution of Minikits (Nos)				Total	
		Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Prov.	Exp.
1	Pune	0	0	0	0	26	13	0.312	0.156	2	0	0.02	0	30	0	0.0075	0	0.34	0.156
2	Satara	4.00	0	0.12	0	50	50	0.60	0.60	7	7	0.07	0.07	500	500	0.125	0.125	0.915	0.795
3	Sangli	0	0	0	0	20	0	0.24	0	2	0	0.02	0	300	0	0.075	0	0.27	0
4	Solapur	0	0	0	0	15	15	0.18	0.18	2	2	0.02	0.02	40	40	0.01	0.02	0.21	0.22
5	Aurangabad	1	1	0.03	0.03	40	40	0.48	0.48	3	1.9	0.03	0.02	270	0	0.067	0	0.607	0.53
6	Jalna	0	0	0	0	10	10	0.12	0.117	1	0	0.01	0	0	0	0	0	0.13	0.117
7	Parbhani	1	0	0.03	0	25	25	0.30	0.30	1	1	0.01	0.01	0	0	0	0	0.34	0.31
8	Beed	0	0	0	0	10	10	0.12	0.12	1	1	0.01	0.01	0	0	0	0	0.13	0.13
9	Nanded	1	0	0.03	0	20	18	0.24	0.24	1	0	0.01	0	0	0	0	0	0.28	0.24
10	Osamanabad	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	Latur	0	0	0	0	25	17	0.30	0.30	1	0.70	0.01	0.01	0	0	0	0	0.31	0.31
12	Buldhana	0	0	0	0	7	7	0.084	0.084	3	2.70	0.03	0.025	40	40	0.01	0.01	0.124	0.119
13	Akola	0	0	0	0	4	4	0.048	0.048	1	1	0.01	0.01	30	30	0.01	0.01	0.068	0.068
14	Amravati	1	1	0.045	0.045	7	7	0.084	0.084	4	3.5	0.04	0.04	40	40	0.01	0.01	0.179	0.179
15	Yectmal	0	0	0	0	0	0	0	0	1	0	0.01	0	10	10	0.003	0.003	0.013	0.003
16	Nagpur	1	1	0.03	0.03	20	13	0.24	0.156	7	5	0.07	0.05	60	28	0.015	0.007	0.355	0.243
17	Bhandara	0	0	0	0	5	5	0.06	0.06	0	0	0	0	40	40	0.01	0.01	0.07	0.07
18	Chandrapur	0	0	0	0	0	0	0	0	0	0	0	0	30	0	0.008	0	0.008	0
	<b>TOTAL</b>	<b>9</b>	<b>3</b>	<b>0.285</b>	<b>0.105</b>	<b>284</b>	<b>234</b>	<b>3.408</b>	<b>2.925</b>	<b>37</b>	<b>25.8</b>	<b>0.370</b>	<b>0.285</b>	<b>1390</b>	<b>728</b>	<b>0.3505</b>	<b>0.195</b>	<b>4.35</b>	<b>3.490</b>

### Appendix A.5.3

#### Central Sector Scheme for Chillil

Crop :- Chillies

Year :- 1992 - 93

[ Rs. in lakhs ]

Sr. No.	District	Establishment of Demonstrat on plots (No.)				Plant Protection Programme (ha.)				Total	
		Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Prov.	Exp.
1	Nasik	0	0	0	0	150	0	0.225	0	0.225	0
2	Dhule	0	0	0	0	150	0	0.225	0	0.225	0
3	Jalgaon	0	0	0	0	310	0	0.465	0	0.465	0
4	Ahmednagae	0	0	0	0	310	0	0.465	0	0.465	0
5	Pune	0	0	0	0	0	0	0	0	0	0
6	Satara	0	0	0	0	230	200	0.345	0.30	0.345	0.30
7	Sangli	0	0	0	0	335	305	0.502	0.45	0.502	0.45
8	Solapur	0	0	0	0	50	50	0.075	0.075	0.075	0.075
9	Kolhapur	0	0	0	0	105	87	0.157	0.105	0.157	0.105
10	Aurangabad	0	0	0	0	0	0	0	0	0	0
11	Jalna	0	0	0	0	100	80	0.15	0.09	0.15	0.09
12	Beed	5	0	0.035	0	120	110	0.18	0.165	0.18	0.165
13	Parbhani	5	0	0.035	0	120	120	0.18	0.18	0.18	0.18
14	Nanded	5	0	0.035	0	120	115	0.18	0.172	0.18	0.172
15	Osmanabad	0	0	0	0	120	120	0.18	0.18	0.18	0.18
16	Latur	0	0	0	0	120	74	0.18	0.12	0.18	0.12
17	Buldhana	0	0	0	0	300	250	0.45	0.375	0.45	0.375
18	Akola	0	0	0	0	165	141	0.247	0.195	0.247	0.195
19	Amravati	0	0	0	0	165	0	0.248	0	0.248	0
20	Yeotmal	0	0	0	0	161	0	0.24	0	0.24	0
21	Wardha	10	10	0.07	0.07	25	25	0.037	0.037	0.107	0.107
22	Nagpur	15	17	0.105	0.12	373	373	0.56	0.55	0.665	0.67
23	Bhandara	15	15	0.105	0.105	25	25	0.037	0.037	0.142	0.142
24	Chandrapur	15	15	0.105	0.105	372	372	0.558	0.558	0.663	0.663
25	Gadchiroli	5	5	0.035	0.035	25	25	0.037	0.037	0.072	0.072
TOTAL		75	62	0.525	0.435	3951	2452	5.923	3.626	6.343	4.061

**Crop :- Chillies**

**Year :- 1993 - 94**

**[ Rs. in lakhs ]**

Sr. No.	District	Establishment of Demonstrat on plots (No.)				Plant Protection Programme (ha.)				Total	
		Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Prov.	Exp.
1	Nasik	N.A.				N.A.				N.A	
2	Dhule										
3	Jalgaon										
4	Ahmednagae										
5	Satara										
6	Sangli										
7	Solapur										
8	Kolhapur										
9	Jalna										
10	Beed										
11	Parbhani										
12	Nanded										
13	Osmanabad										
14	Latur										
15	Buldhana										
16	Akola										
17	Amravati										
18	Yeotmal										
19	Wardha										
20	Nagpur										
21	Bhandara										
22	Chandrapur										
23	Gadchiroli										
<b>TOTAL</b>		370	85	2.59	0.59	6000	328	9.00	0.49	11.59	1.08

Note : For 1993 - 94, the district-wise targets were not available

## Crop :- Chillies

Year :- 1994 - 95

[Rs. In lakhs]

Sr. No	District	Production of Nucleus Seed (Tonnes)				Establishment of Demonstration Plots (Nos)				Plant Protection Programme (ha)				Distribution of Minikits (Nos)				Area Expansion (ha)				Paprika Demonstration Plots (ha)				Total	
		Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Prov.	Exp.
1	Thane	0	0	0	0	3	3	0.021	0.021	115	115	0.23	0.23	14	27	0.007	0.007	2	2	0.08	0.08	1	1	0.008	0.008	0.328	0.328
2	Raigad	0	0	0	0	3	3	0.021	0.021	30	30	0.08	0.08	2	2	0.001	0.001	1	1	0.03	0.03	0	0	0	0	0.112	0.112
3	Ratnagiri	0.025	0	0.01	0.01	2	2	0.014	0.013	0	0	0	0	2	2	0.001	0.001	1	1	0.03	0.023	0	0	0	0	0.055	0.047
4	Sindhudurg	0	0	0	0	2	2	0.014	0.014	15	15	0.030	0.030	2	2	0.001	0.001	1	1	0.03	0.03	0	0	0	0	0.074	0.074
5	Nashik	0	0	0	0	0	0	0	0	500	500	1.00	1.00	50	50	0.025	0.025	38	38.5	0.77	0.77	0	0	0	0	1.795	1.795
6	Dhule	0	0	0	0	100	100	0.70	0.70	500	504	1.00	1.01	220	220	0.11	0.11	25	45	0.75	0.75	9	0	0	0	2.560	2.57
7	Jaigaon	0	0	0	0	50	50	0.35	0.35	1000	1000	2.00	2.00	70	70	0.035	0.035	20	20	0.80	0.80	0	0	0	0	2.985	2.985
8	Ahmednagar	0	0	0	0	73	74	0.51	0.51	1000	85	0.30	0.17	20	200	0.10	0.10	20	20	0.40	0.38	0	0	0	0	1.31	1.16
9	Pune	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Satara	0	0	0	0	0	0	0	0	300	300	0.80	0.80	0	0	0	0	0	0	0	0	0	0	0	0	0.80	0.80
11	Sangli	0.95	0	0.38	0	108	78	1.23	0.542	434	434	0.888	0.838	442	442	0.221	0.221	95	55.50	2.85	0.821	7	3	0.058	0.025	5.605	2.445
12	Solapur	0	0	0	0	0	0	0	0	50	50	0.10	0.10	0	0	0	0	0	0	0	0	0	0	0	0	0.10	0.10
13	Kolhapur	0	0	0	0	0	0	0	0	150	163	0.30	0.30	0	0	0	0	0	0	0	0	0	0	0	0	0.30	0.30
14	Aurangabad	0.015	0	0.080	0.080	40	40	0.28	0.28	0	0	0	0	100	100	0.05	0.05	15	15	0.45	0.45	4	4	0.032	0.032	0.872	0.872
15	Jalna	0.015	0	0.080	0.080	40	40	0.28	0.28	300	300	0.80	0.80	100	100	0.05	0.05	15	15	0.45	0.45	1	1	0.008	0.008	1.448	1.448
16	Beed	0.015	0	0.080	0.080	40	41	0.28	0.287	840	871	1.28	1.30	100	100	0.05	0.05	15	15	0.45	0.27	0	0	0	0	2.12	1.987
17	Parbhani	0	0	0	0	40	40	0.28	0.28	840	840	1.28	1.28	100	100	0.05	0.05	15	15	0.45	0.28	0	0	0	0	2.08	1.80
18	Nanded	0.015	0	0.080	0.080	40	40	0.28	0.28	485	458	0.97	0.975	100	100	0.05	0.048	23	38	0.69	0.69	0	0	0	0	2.05	2.05
19	Osmanabad	0.015	0	0.080	0.080	40	40	0.28	0.28	980	985	1.96	1.96	100	100	0.05	0.05	18	24.50	0.48	0.48	0	0	0	0	2.83	2.83
20	Latur	0.010	0	0.040	0	38	38	0.27	0.28	585	585	1.17	1.17	0	0	0	0	15	23	0.45	0.443	0	0	0	0	1.93	1.873
21	Buldhana	0	0	0	0	40	23	0.28	0.10	3000	834.73	6.00	1.528	85	85	0.042	0.08	13	17.10	0.39	0.28	0	0	0	0	7.012	1.948
22	Akola	1.25	0	0.50	0.50	29	29	0.203	0.203	300	307.9	0.80	0.488	85	85	0.042	0.042	12	12	0.38	0.38	8	8	0.048	0.048	1.753	1.821
23	Amravati	0	0	0	0	29	31	0.202	0.188	361	580	0.72	0.789	85	0	0.042	0	12	8.5	0.38	0.324	0	0	0	0	1.324	1.291
24	Yeshwant	0	0	0	0	40	80	0.28	0.29	400	440.1	0.80	0.80	85	85	0.042	0.032	13	21.5	0.39	0.39	0	0	0	0	1.512	1.512
25	Wardha	0	0	0	0	50	50	0.35	0.35	25	45	0.05	0.05	200	200	0.10	0.08	10	10	0.30	0.20	2	0	0.016	0	0.818	0.68
26	Nagpur	0	0	0	0	170	170	1.19	1.18	2545	3891	5.09	7.15	200	200	0.10	0.08	75	129	2.25	2.25	5	0	0.04	0	8.670	10.87
27	Bhandara	0	0	0	0	20	20	0.14	0.14	20	20	0.04	0.04	200	200	0.10	0.10	5	8	0.15	0.15	2	0	0.016	0	0.448	0.43
28	Chandrapur	0	0	0	0	170	170	1.19	1.18	2544	2740	5.09	4.28	200	200	0.10	0.10	75	154	2.25	2.28	5	0	0.040	0	8.87	7.80
29	Gadchiroli	0	0	0	0	18	22	0.13	0.15	25	58	0.05	0.08	200	202	0.10	0.10	10	17	0.30	0.30	3	0	0.024	0	0.804	0.83
TOTAL		2.31	0	1.23	0.81	1183	1164	8.775	7.889	16944	15559.7	32.188	28.794	2762	2852	1.489	1.393	540	705.8	15.69	13.051	45	15	0.288	0.121	59.939	52.034

## Crop :- Chillies

Year :- 1995 - 96  
[Rs. In lakhs]

Sr. No.	District	Production of Nucleus Seed (Tonnes)				Establishment of Demonstration Plots (Nos)				Plant Protection Programme (hs)				Distribution of Minikits (Nos)				Area Expansion (ha)				Paprika Demonstration Plots (ha)				Total	
		Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Prov.	Exp.
1	Thane	0	0	0	0	8	8	0.058	0.058	135	150	0.27	0.28	20	24	0.01	0.01	4	9	0.120	0.120	1	1	0.008	0.008	0.484	0.484
2	Raigad	0	0	0	0	2	2	0.014	0.012	20	53	0.04	0.04	0	0	0	0	1	1	0.030	0.016	0	0	0	0	0.084	0.087
3	Ratnagiri	0.025	0	0.010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01	0
4	Sindhudurg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Nashik	0.4	0	0.18	0.08	20	20	0.14	0.007	90	90	0.18	0.18	30	30	0.015	0.015	30	30	0.90	0.23	5	4	0.04	0	1.435	0.512
6	Dhule	0.4	0	0.18	0.18	100	100	0.70	0	1500	1500	3.0	3.0	150	150	0.075	0.075	40	18	1.20	1.20	10	10	0.08	0.08	5.215	4.515
7	Jaigson	0.45	0	0.18	0.18	100	79	0.70	0.553	1500	873	3.0	2.52	150	0	0.075	0	40	47	1.20	1.151	5	4	0.04	0.032	5.195	4.438
8	Ahmednagar	0.40	0	0.18	0	25	25	0.175	0.175	100	0	0.20	0	100	100	0.050	0.050	30	14	0.90	0.30	5	4	0.04	0.038	1.525	0.581
9	Pune	0	0	0	0	80	25	0.42	0.175	528	275	1.05	0.525	84	0	0.032	0	20	15	0.8	0.45	5	0	0.04	0	2.142	1.15
10	Kolhapur	0	0	0	0	25	0	0.175	0	528	178	1.05	0.34	84	0	0.032	0	15	0	0.450	0	5	0	0.04	0	1.897	0.34
11	Satara	0	0	0	0	25	25	0.175	0.175	528	528	1.05	1.05	84	84	0.032	0.032	15	0	0.450	0	5	5	0.04	0.04	1.747	1.297
12	Sangli	0	0	0	0	80	0	0.42	0	528	528	1.05	0.824	84	84	0.032	0.027	15	15	0.450	0.109	5	0	0.04	0	1.992	1.08
13	Solepur	0	0	0	0	25	30	0.175	0.21	528	528	1.05	1.05	84	70	0.032	0.035	15	14	0.450	0.412	5	5	0.04	0.04	1.747	1.747
14	Aurangabad	0.165	0	0.102	0	45	0	0.315	0	600	0	1.20	0	82	82	0.041	0.041	25	0	0.75	0	8	0	0.064	0	2.472	0.041
15	Jalna	0.150	0	0.083	0	45	0	0.315	0	585	38	1.17	0.076	82	0	0.041	0	25	22.4	0.75	0.672	7	0	0.058	0	2.425	0.748
16	Beed	0.150	0	0.083	0	50	50	0.35	0.35	590	0	1.18	0	82	82	0.041	0.038	25	25	0.75	0.75	7	0	0.058	0	2.47	1.14
17	Parbhani	0.150	0	0.083	0	50	51	0.35	0.35	590	0	1.18	0	82	82	0.041	0.041	25	38	0.75	0.75	7	0	0.058	0	2.47	1.141
18	Nanded	0.150	0	0.083	0	50	50	0.35	0.338	600	0	1.20	0	82	0	0.041	0	25	43.75	0.75	0.833	7	0	0.058	0	2.49	1.171
19	Osmanabad	0.150	0	0.083	0	40	78	0.28	0.553	600	0	1.20	0	82	0	0.041	0	25	0	0.75	0	7	0	0.058	0	2.42	0.553
20	Latur	0.150	0	0.083	0.083	40	40	0.28	0.271	590	0	1.18	0	82	0	0.041	0	25	97.2	0.75	1.95	7	0	0.058	0	2.4	2.314
21	Buldhana	0	0	0	0	60	94	0.42	0.643	1250	1250	2.50	0.995	120	150	0.08	0.075	45	51.5	1.35	1.045	5	5	0.04	0.04	4.37	2.8
22	Akola	1.65	0	0.86	0	30	25	0.21	0.17	130	130	0.26	0.26	50	100	0.025	0.041	15	12.4	0.45	0.335	5	5	0.04	0.04	1.845	0.848
23	Amravati	0	0	0	0	40	40	0.28	0.27	85	80.19	0.13	0.117	88	82	0.03	0.031	25	23.8	0.75	0.473	5	4	0.04	0.035	1.23	0.928
24	Yatmal	0	0	0	0	30	44	0.21	0.223	240	342	0.48	0.3	50	50	0.025	0.025	20	38.4	0.8	0.743	5	10	0.04	0.08	1.375	1.371
25	Wardha	0	0	0	0	30	30	0.21	0.20	20	20	0.04	0.04	106	106	0.053	0.05	5	13	0.15	0.11	2	0	0.018	0	0.489	0.4
26	Nagpur	0	0	0	0	200	200	1.40	1.40	2000	2881	4.0	4.01	200	250	0.10	0.09	70	227	2.1	2.22	15	0	0.12	0	7.812	7.72
27	Bhandara	0	0	0	0	20	50	0.14	0.155	20	25	0.04	0.04	150	150	0.075	0.08	5	20	0.15	0.175	5	0	0.04	0	0.31	0.45
28	Chandrapur	0	0	0	0	200	200	1.40	1.40	1300	1450	2.8	2.58	200	200	0.10	0.10	70	157	2.1	2.1	15	0	0.12	0	8.212	8.19
29	Gadchiroli	0	0	0	0	25	54	0.175	0.17	10	13	0.02	0.02	150	197	0.075	0.070	10	27	0.3	0.3	2	0	0.015	0	0.585	0.58
TOTAL		4.38	0	1.98	0.513	1405	1321	8.835	7.858	15185	10506.2	30.32	18.357	2436	2013	1.215	0.928	665	958.25	19.95	18.443	180	57	1.28	0.431	84.41	44.52

## Crop :- Chillies

Year :- 1996 - 97  
[ Rs. in lakhs]

Sr. No.	District	Production of Nucleus Seed (Tonnes)				Establishment of Demonstration Plots (Nos)				Plant Protection Programme (ha)				Distribution of Minikits (Nos)				Area Expansion (ha)				Paprika Demonstration Plots (ha)				Total	
		Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Tar.	Achv.	Prov.	Exp.	Prov.	Exp.
1	Thane	0	0	0	0	7	7	0.049	0.049	120	120	0.24	0.24	20	20	0.010	0.010	10	15	0.30	0.30	2	2	0.016	0.016	0.615	0.615
2	Raigad	0	0	0	0	3	3	0.021	0.021	20	55	0.04	0.04	20	20	0.010	0.010	0	0	0	0	0	0	0	0	0.101	0.101
3	Ratnagiri	0.03	0	0.012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0
4	Sindhudurg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Nashik	0.03	0.03	0.012	0.012	44	44	0.308	0.308	350	1170	0.70	0.703	120	120	0.08	0.08	20	20	0.80	0.80	15	15	0.12	0.12	1.80	1.803
6	Dhule	0.02	0	0.008	0	100	100	0.70	0.70	700	700	1.40	1.40	150	0	0.075	0	75	75	2.25	2.25	0	0	0	0	4.433	4.35
7	Jaigaon	0.02	0	0.008	0	100	100	0.70	0.70	700	700	1.40	1.20	150	0	0.075	0	75	75	2.25	2.25	0	0	0	0	4.433	4.15
8	Ahmednagar	0.02	0.02	0.008	0	44	44	0.308	0.308	350	620	0.70	0	120	120	0.08	0.080	20	20	0.54	0.412	5	5	0.04	0.04	1.658	0.82
9	Pune	0	0	0	0	75	75	0.525	0.525	501	501	1.002	1.002	88	0	0.043	0.043	20	20	0.80	0.80	4	4	0.032	0.032	2.202	2.202
10	Setara	0	0	0	0	25	25	0.175	0.173	408	408	0.812	0.812	80	80	0.040	0.032	20	20	0.80	0.80	4	4	0.032	0.04	1.858	1.857
11	Sangli	0	0	0	0	75	75	0.525	0.48	408	408	0.812	0.803	80	0	0.040	0	20	20	0.80	0.52	4	16	0.032	0.095	2.008	1.90
12	Solapur	0	0	0	0	25	25	0.175	0.175	408	408	0.812	0.812	80	80	0.040	0.040	20	20	0.80	0.80	4	4	0.032	0.032	1.858	1.858
13	Kolhapur	0	0	0	0	25	25	0.175	0.172	480	208	0.812	0.410	80	102	0.040	0.048	20	20	0.80	0.80	4	4	0.032	0.029	1.858	1.257
14	Aurangabad	0	0	0	0	40	34	0.28	0.238	350	0	0.700	0	100	100	0.05	0.040	20	20	0.80	0.80	3	2	0.024	0.013	1.854	0.891
15	Jalna	0	0	0	0	40	40	0.28	0.28	500	283.75	1.000	0.587	100	0	0.05	0	40	40	1.20	1.197	0	3	0	0.024	2.554	2.07
16	Parbhani	0.03	0	0.012	0	50	50	0.35	0.342	350	0	0.70	0	100	100	0.05	0.050	20	88	0.80	1.328	3	0	0.024	0	1.738	1.72
17	Beed	0	0	0	0	50	50	0.35	0.35	350	0	0.70	0	100	100	0.05	0.050	30	30	0.80	0.88	7	7	0.058	0.051	2.058	1.331
18	Nanded	0.03	0	0.012	0	80	80	0.56	0.564	500	0	1.00	0	100	100	0.05	0.050	50	108.2	1.50	2.04	4	0	0.032	0	3.164	2.654
19	Osmanabad	0.03	0	0.012	0	70	70	0.49	0.49	450	0	0.90	0	100	0	0.05	0	40	40	1.20	1.20	4	6	0.032	0.032	2.684	1.722
20	Latur	0	0	0	0	45	45	0.315	0.315	378	0	0.758	0	100	0	0.05	0	40	101.05	1.20	1.983	3	3	0.024	0.024	2.345	2.332
21	Buldhana	0	0	0	0	45	24	0.315	0.151	1000	925	2.00	1.895	100	100	0.05	0.044	40	50.5	1.20	1.222	8	7	0.084	0.058	3.829	3.368
22	Akola	1	0	0.038	0	50	50	0.35	0.35	100	100	0.20	0.20	100	100	0.05	0.050	35	35	1.05	1.05	6	6	0.048	0.048	1.734	1.698
23	Amravati	0	0	0	0	65	65	0.455	0.455	250	232.39	0.50	0.48	100	77	0.05	0.037	35	38.4	1.05	1.024	13	5	0.104	0.037	2.158	2.013
24	Yavatmai	0	0	0	0	50	67	0.35	0.35	100	200.75	0.20	0.187	100	100	0.05	0.05	35	58.95	1.05	1.05	8	8	0.084	0.052	1.714	1.689
25	Wardha	0	0	0	0	30	30	0.21	0.208	25	25	0.05	0.05	150	150	0.075	0.047	10	10	0.20	0.238	4	2	0.032	0.016	0.587	0.555
26	Nagpur	0	0	0	0	200	185	1.40	1.295	1500	1500	3	2.98	225	265	0.112	0.111	100	90	3.00	2.70	6	20	0.048	0.150	7.580	7.238
27	Bhandara	0	0	0	0	70	70	0.49	0.49	50	50	0.10	0.1	200	200	0.10	0.10	12	12	0.36	0.36	10	14	0.08	0.08	1.03	1.13
28	Chandrapur	0	0	0	0	220	220	1.54	1.54	1000	1083	2.00	2.05	225	225	0.112	0.112	100	138	3	2.78	5	18	0.04	0.12	6.882	8.582
29	Gadchiroli	0	0	0	0	55	55	0.39	0.39	25	25	0.05	0.05	200	200	0.10	0.10	10	15	0.30	0.29	5	5	0.04	0.04	0.78	0.87
TOTAL		1.21	0.05	0.12	0.012	1683	1658	11.786	11.417	11347	9694.89	22.59	15.861	3086	2359	1.542	1.142	817	1157.1	27.35	28.66	131	158	1.048	1.147	64.286	58.375

## **CHAPTER VI**

### **Impact of Central Sector Scheme On Production of Turmeric (Based On Field Survey)**

Turmeric is a rhizomatous spice crop cultivated in India, since ancient times. It is native to India or China and is now a commercial crop of the tropics. The crop grows best on well-drained loamy or alluvial soils with good organic matter. The manure and fertilizer requirements vary according to the agroecological situations prevailing in different regions. The crop cannot withstand waterlogging. Planting starts with commencement of monsoon. A seed rate of 2,500 Kg/ha is optimum. The seeds should be treated with 0.3 per cent solution of Dithane M-45 for 30 minutes before planting. Irrigation may be given at intervals of 10 to 15 days depending upon soil types for the development of rhizomes.

As already noted, turmeric is an important commercial crop with tremendous export potential, therefore, the Central Sector Scheme on Development of spices introduced various programmes to stimulate production of this spice crop along with other spice crops.

While the impact of the scheme on production of turmeric was assessed on the basis of secondary data in chapter IV and V, in this chapter an attempt has been made to see if the scheme had any impact on cultivators who availed of subsidies under various programme laid out for turmeric. Accordingly, 50 beneficiaries in Jat and Tasgaon taluka had been addressed with a questionnaires relating to their participation in the scheme.

#### **6.1 Cropping Pattern of Sample Farmers:**

The cropping pattern of turmeric farmers is indicated in Appendix A.6.1. Most of the farmers who grew turmeric belonged to medium or semi-medium size – group. In most cases, the area under turmeric varies between 0.20 to 0.40 hectares. In case of a few farmers it was 0.60 ha. The important varieties adopted by these farmers were Salem, Rajapuri and Cudappa.

The main crop grown by the beneficiaries was cereals. A small portion of their land holdings was also allocated to pulses and cash crops. Oilseeds and fodder crops did not seem to form an important share in their cropping pattern.

## **6.2 Socio – Economic Background of Turmeric Cultivating Farmers:**

The socio – economic background of the cultivators is indicated in Appendix A.6.2 (a) and (b). Agriculture was the main occupation of the turmeric cultivators. Many of them did not even have subsidiary occupation. The total annual income ranged from Rs 35,000 to Rs 4,68,100 varying across farmers. The total annual income had no relation to size of landholding, perhaps due to other sources of income.

## **6.3 Details of Land and Asset Structure :**

The agricultural implements owned by sample farmers can be observed from Appendix A.6.3(a) & (b). Most of them had milch and drought animals. Poultry farming was also practised by them. All the sample farmers had pumpsets.

## **6.4 Cost of Cultivation and Net Income of Sample Beneficiaries :**

The cost of cultivation of the turmeric growers can be observed from Appendix A.6.3 (a) and (b) from the period 1991-92 to 1996-97.

The total cost per acre was normally in the range of Rs 20,000 to Rs 30,000, varying across cultivator and years. The cost of seed accounted for the major part of total cost.

The net income (per acre) of the turmeric growers is indicated in Appendix A.6.4 (a) and Appendix A.6.4 (b). The net income in most cases ranged between Rs 10,000 to Rs 20,000 although there were quite a few cases when farmers earned more. There was no observation that large farmers earned more net income than farmer having small holdings.

## **6.5 Participation of Beneficiaries In Central Sector Scheme In Sangli for Turmeric:**

From Table 6.1 we can observe the participation of Sangli District in the Central Sector Scheme for turmeric.

**Table 6.1 Central Sector Scheme For Turmeric in Sangli**

Year	Establishment of demonstration (nos) plots	Area expansion programme (hectares)	Assistance for polishing drums (nos)
1994-95	320	162	3
1995-96	150	40	-
1996-97	8	16	0
<b>Total</b>	<b>478</b>	<b>218</b>	<b>3</b>

Source : Derived from Appendix A.5.1.

It can be observed from Table 6.1, that in Sangli district, 478 demonstration plots had been established, while area expansion covered 218 hectares. Assistance for polishing drums had a negligible share in the various programmes. In Table 6.2, we have shown the participation of sample beneficiaries in Central Sector Scheme according to land holding size.

**Table 6.2 Participation of No. of Sample Beneficiaries In Central Sector Scheme According To Land Holding Size**

	Establishment of demonstration plots	Area expansion programme	Assistance for polishing drums	Total
Marginal	2	1	-	3
Small	2	3	-	5
Semi-Medium	13	5	-	18
Medium	17	4	-	21
Large	2	1	-	3
	<b>36</b>	<b>14</b>	<b>-</b>	<b>50</b>

Source : Field Survey

It can be, observed from Table 6.2, that there was more participation in case of demonstration plots as compared to area expansion programme.

## **6.6 Impact of Central Sector Scheme On Yield of Sample Farmers:**

In Appendix A.6.5, we have calculated the yield of sample farmers from Jat and Tasgaon talukas for the years 1991-92 to 1996-97. The figures in Bold show the year in which the cultivator participated in the Central Sector Scheme and availed of subsidy.

A look at Appendix A.6.5 indicates that the year of participation in the scheme was not necessarily the year when the cultivator achieved highest yield. Also, their yields were much lower when compared to the average yield of Sangli District (Appendix A.4.3). In Sangli district as a whole, the yield normally ranged from 1700 Kg per hectare to 1900 Kg per hectare. In case of our sample farmers however, the yield in most cases ranged from 1100 Kg to 1300 Kg per hectare.

The overall picture that emerges from Appendix A.6.5 is the participation of farmers in the programmes of Central Sector Scheme for turmeric, did not help them to improve their yield levels. In fact, the district average showed higher yields than that of sample farmers. It must, however, be pointed that farmers, had availed of subsidy only for 0.1 hectare in case of demonstration plots or for 0.1 to 0.2 hectare for area expansion. The yield however has been calculated on the basis of production on the entire area under turmeric crop.

#### **6.7 Evaluation of Central Sector Scheme On Turmeric and Suggestions :**

Our field survey in two talukas of Sangli district showed no increase in yield due to participation in Central Sector Spice Development Scheme. As observed 36 cultivators had established demonstration plots. These farmers cultivated only local varieties i.e. Salem, Rajapuri and Cuddappa. On being interviewed, they revealed that no improved or high yielding varieties were available to them and they used only local seeds.

Most of the farmers lacked knowledge on scientific agronomic and plant protection measures. They also felt that the subsidy amount was insufficient. For example, while calculating input cost of 0.1 hectare for demonstration plot cost of seed was calculated at Rs 4 per Kg. However, on interview with the farmers, it was observed that the farmers purchased seed at a price of Rs 7 to Rs 12 per Kg. Even, in case of chemical fertilizers the input cost was greatly underestimated. While farmers required atleast Rs 350 worth of chemical fertilizers for 0.1 ha, the amount estimated was only Rs 95.

In case of area expansion programme, the amount available as subsidy was Rs 4000 per hectare. However, farmers hardly ever cultivated one hectare under turmeric and hence the subsidy claimed was for 0.2 or 0.4 hectares. Again, under this scheme the

amount for seed and chemical fertilizers was insufficient. However, the main purpose of this programme was to introduce high yielding varieties of turmeric. However, all farmers surveyed, lacked awareness on high yielding varieties. They also lacked technical guidance on the crop. Turmeric is a crop which is affected by several diseases such as leaf blotch, leaf spot and rhizome rot. These diseases severely affect the yield. Farmers however claimed to lack knowledge on scientific application of plant protection measures. The scheme played a negligible role with respect to subsidizing polishing drums.

Our field survey showed that 'Rajapuri' variety was most popular among cultivators and their yield levels most often ranged from 1100 Kg to 1300 Kg per hectare. However studies conducted by the National Research Center for Spices (Kerla) revealed that for varieties such as Rajapuri the yield potential is 2545 to 6300 Kg per hectare. Since farmers never achieve this yield, there is tremendous scope for them to adopt more scientific agro techniques and improve yield. As already noted, rhizome rot disease is a serious problem of turmeric and the rhizomes decay due to this disease. A study conducted in Andhra Pradesh (Rao, Nageshwar & others – " Production Constraints of Turmeric in Andhra Pradesh", Spice India, Oct 1993) observed that rhizome rot is a major disease causing yield reduction to the extent of 50 to 60 per cent and this was observed in 96 per cent of the fields surveyed.

In view of the serious problem that can be posed by rhizome rot, farmers must be trained on plant protection measures to be adopted such as treating seed rhizomes with 0.3 per cent Dithane M-45 prior to sowing and also in the field beds.

Therefore besides adopting plant protection measures, locating a rhizome rot tolerant resistant variety can be an important objective of turmeric breeding.

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# Appendix A.6.1

[ 1991 - 1992 ], [Area in Hectare]

Tal. JAT Dist. SANGLI and VIII. KUMBHARI  
Cropping Pattern of Sample Farmers

Tal. TASGAON Dist. SANGLI and VIII. HATNUR  
Cropping Pattern of Sample Farmers

No. of Farmer	Area In Hectares					Turmeric Spices Variety	Total (G C A)
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder		
1	0.50	0.10	-	-	-	0.10 Ralapri	0.70
2	0.20	-	-	0.2	-	0.40 Ralapri	0.80
3	-	-	-	-	-	-	-
4	1.50	0.70	-	-	-	0.20	2.40
5	1.00	0.40	-	0.40	-	0.20	2.00
6	0.60	0.40	-	0.80	-	0.40	2.20
7	1.60	0.40	-	-	-	0.20	2.20
8	1.40	0.80	-	0.40	-	0.40	3.00
9	1.00	1.00	-	0.80	-	0.20	3.00
10	1.80	0.80	-	0.40	0.2	0.40	3.40
11	1.60	-	-	-	-	0.20	1.80
12	1.00	0.50	-	-	-	0.15	1.65
13	2.00	1.20	-	0.40	-	0.40	4.00
14	3.60	0.80	0.3	-	-	0.10	4.80
15	2.10	1.10	-	0.80	-	0.20	4.20
16	4.20	0.20	-	-	-	0.40	4.80
17	4.40	-	-	-	-	0.2	4.80
18	4.20	0.20	-	0.10	-	-	-
19	3.80	0.60	-	1.20	-	0.40 Ralapri Selam	6.00
20	2.80	2.00	-	0.80	-	0.40 Ralapri Kaddpa	6.00
21	3.60	2.40	-	0.80	-	0.20 Ralapri	7.00
22	4.60	2.20	-	0.80	-	0.40 Ralapri	8.00
23	4.60	2.20	-	0.80	-	0.40 Ralapri	8.00
24	4.35	-	-	0.80	0.05	0.20 Ralapri	5.40
25	5.40	0.60	-	0.80	0.4	0.60 Ralapri	8.00
1	0.25	-	-	0.35	-	0.10 Rala Kaddpa	0.70
2	0.80	0.9	-	0.40	-	0.40 Kadappa	2.50
3	1.00	0.7	-	0.40	-	0.40 Rala Kaddpa	2.50
4	1.20	0.20	-	0.20	-	0.40 Rala Kaddpa	2.00
5	1.20	0.30	0.20	0.20	-	0.20 Selam	2.10
6	1.00	0.20	0.20	1.40	-	0.20 Selam	3.00
7	1.70	0.60	-	0.20	-	0.20 Rala Selam	2.70
8	2.30	0.40	-	0.20	-	0.10 Ralapuri	3.00
9	0.75	0.40	0.20	0.40	-	0.25 Ralapuri	2.00
10	2.00	0.60	-	0.20	-	0.40 Ralapuri	3.20
11	1.80	0.80	-	-	-	0.40 Ralapuri	3.00
12	2.30	0.40	-	0.20	-	0.10 Ralapuri	3.00
13	2.20	0.80	1.20	0.40	0.20	0.20 Ralapuri	5.00
14	2.80	0.80	1.20	0.40	0.30	0.20 Ralapuri Kaddpa	5.70
15	3.60	0.80	-	0.20	-	0.40 Ralapuri Kaddpa	5.00
16	3.80	0.60	-	0.40	-	0.20 Ralapuri	5.00
17	3.80	0.60	-	0.40	-	0.20 Ralapuri	5.00
18	3.90	0.40	-	0.60	-	0.10 Ralapuri	5.00
19	2.20	0.60	0.80	0.60	-	0.40 Ralapuri	4.60
20	3.60	1.20	-	0.80	-	0.40 Ralapuri	6.00
21	2.80	1.60	2.00	0.80	-	0.40 Selam Ralapuri	7.60
22	5.20	1.20	0.60	0.80	-	0.40 Kaddpa Selam	8.20
23	2.00	1.50	0.80	2.40	0.40	0.60 Selam	7.70
24	6.80	2.40	1.20	1.00	-	0.40 Ralapuri	11.80
25	7.00	3.00	-	0.40	-	0.40 Ralapuri	10.80

Tal. JAT Dist. SANGLI and Vill. KUMBHARI  
Cropping Pattern of Sample Farmers

No. of Farmer	Area in Hectares					Turmeric Spices Variety	Total (G C A)
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder		
1	0.50	0.1	-	-	-	0.10	0.70
2	0.20	-	-	0.2	-	0.40	0.80
3	-	-	-	-	-	-	-
4	1.60	0.60	-	-	-	0.20	2.40
5	1.00	0.40	-	0.40	-	0.20	2.00
6	0.80	0.40	-	0.80	-	0.20	2.20
7	1.70	0.40	-	-	-	0.10	2.20
8	1.40	0.80	-	0.40	-	0.40	3.00
9	1.00	1.00	-	0.80	-	0.20	3.00
10	1.60	0.80	-	0.40	0.2	0.40	3.40
11	1.50	-	-	-	-	0.25	1.75
12	1.00	0.50	-	-	-	0.15	1.65
13	2.00	1.20	-	0.40	-	0.40	4.00
14	3.40	1.00	0.4	-	-	0.10	4.90
15	2.00	1.00	-	0.80	-	0.40	4.20
16	4.00	0.20	-	-	-	0.40	4.60
17	4.00	-	-	-	-	0.4	4.40
18	4.20	0.20	-	0.10	-	-	-
19	3.80	0.60	-	1.20	-	0.40	6.00
20	2.80	2.00	-	0.80	-	0.40	6.00
21	3.60	2.40	-	0.80	-	0.20	7.00
22	4.60	2.20	-	0.80	-	0.40	8.00
23	4.60	2.20	-	0.80	-	0.40	8.00
24	3.95	0.20	-	0.80	0.05	0.20	5.20
25	5.20	0.80	-	1.00	0.4	0.60	8.00

[ 1992 - 1993 ], [Area in Hectare]

Tal. TASGAON Dist. SANGLI and Vill. HATNUR  
Cropping Pattern of Sample Farmers

No. of Farmer	Area in Hectares					Turmeric Spices Variety	Total (G C A)
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder		
1	0.25	-	-	0.35	-	0.10	0.70
2	0.90	0.8	-	0.40	-	0.40	2.50
3	0.80	0.8	-	0.40	-	0.40	2.40
4	1.20	0.20	-	0.20	-	0.40	2.00
5	1.20	0.30	0.20	0.20	-	0.20	2.10
6	0.80	0.20	0.40	1.40	-	0.20	3.00
7	1.70	0.60	-	0.20	-	0.20	2.70
8	2.30	0.40	-	0.20	-	0.10	3.00
9	1.05	0.20	0.30	0.20	-	0.25	2.00
10	2.20	0.40	-	0.20	-	0.40	3.20
11	1.80	0.80	-	-	-	0.40	3.00
12	2.30	0.40	-	0.20	-	0.10	3.00
13	2.40	0.60	1.20	0.40	0.20	0.20	5.00
14	2.80	0.80	1.20	0.40	0.30	0.20	5.70
15	3.60	0.80	-	0.20	-	0.40	5.00
16	3.80	0.60	-	0.40	-	0.20	5.00
17	3.80	0.60	-	0.40	-	0.20	5.00
18	3.90	0.40	-	0.60	-	0.10	5.00
19	2.20	0.60	0.80	0.60	-	0.40	4.60
20	3.60	1.20	-	0.80	-	0.40	6.00
21	2.80	1.60	2.00	0.80	-	0.40	7.60
22	5.20	1.20	0.60	0.80	-	0.40	8.20
23	2.00	1.50	0.80	2.40	0.40	0.60	7.70
24	6.40	2.60	1.40	1.00	-	0.40	12.00
25	7.00	3.00	-	0.40	-	0.40	10.80

[ 1983 - 1984 ], [Area In Hectare]

Tal. JAT Dist. SANGLI and Vill. KUMBHARI

Cropping Pattern of Sample Farmers

Tal. TASGAON Dist. SANGLI and Vill. HATNUR

Cropping Pattern of Sample Farmers

No. of Farmer	Area In Hectares					Turmeric Spices		Total (G C A)	No. of Farmer	Area In Hectares					Turmeric Spices		Total (G C A)
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety			Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety	
1	0.50	0.1	-	-	-	0.10	Ralapuri	0.70	1	0.20	-	-	0.30	-	0.20	Rala Kadappa	0.70
2	0.60	-	-	-	-	0.20	Ralapuri	0.80	2	0.90	0.80	-	0.80	-	0.50	Kaddapa	2.60
3	-	-	-	-	-	-	-	-	3	0.80	0.80	-	0.40	-	0.40	Rala Kadappa	2.40
4	1.40	0.80	-	-	-	0.30	-	2.50	4	1.20	0.20	-	0.20	-	0.40	Rala Kadappa	2.00
5	1.00	0.40	-	0.40	-	0.20	-	2.00	5	1.10	0.40	0.20	0.30	-	0.10	Rala Kadappa	2.10
6	0.80	0.40	-	0.80	-	0.20	-	2.20	6	0.80	0.20	0.40	1.40	-	0.20	Rala Kadappa	3.00
7	1.60	0.40	-	-	-	0.20	-	2.20	7	1.70	0.60	-	0.20	-	0.20	Rala Kadappa	2.70
8	1.60	0.80	-	0.40	-	0.20	-	3.00	8	2.30	0.40	-	0.20	-	0.10	Rala Kadappa	3.00
9	1.10	1.00	-	0.80	-	0.10	-	3.00	9	0.90	0.30	0.20	0.30	-	0.30	Rala Kadappa	2.00
10	1.80	0.80	-	0.40	-	0.40	-	3.40	10	2.20	0.60	-	0.20	-	0.20	Rala Kadappa	3.20
11	1.60	-	-	-	-	0.20	-	1.80	11	1.80	0.80	-	-	-	0.40	Rala Kadappa	3.00
12	1.00	0.50	-	-	-	0.1	-	1.60	12	2.30	0.40	-	0.20	-	0.10	Rala Kadappa	3.00
13	2.20	1.20	-	0.40	-	0.20	-	4.00	13	2.30	0.70	1.20	0.40	0.20	0.20	Ralapuri	5.00
14	3.20	1.20	0.8	-	-	0.10	-	5.10	14	2.80	0.80	1.20	0.40	0.30	0.20	Ralapuri	5.70
15	2.10	1.10	-	0.80	-	0.20	-	4.20	15	3.60	0.80	-	0.20	-	0.40	Ralapuri Kaddpa	5.00
16	4.40	0.20	-	-	-	0.30	-	4.90	16	3.80	0.60	-	0.40	-	0.20	Ralapuri	5.00
17	4.00	-	-	-	-	0.2	-	4.20	17	3.80	0.60	-	0.40	-	0.20	Ralapuri	5.00
18	4.20	0.20	-	0.10	-	0.10	-	4.60	18	3.90	0.40	-	0.60	-	0.10	Ralapuri	5.00
19	3.80	0.60	-	1.20	-	0.40	Selam Ralapuri	6.00	19	2.20	0.80	0.60	0.40	-	0.40	Ralapuri	4.40
20	2.80	2.00	-	0.80	-	0.40	Rala Raddpa	6.00	20	3.80	1.20	-	0.80	-	0.20	Ralapuri	6.00
21	3.70	2.40	-	0.80	-	0.10	Ralapuri	7.00	21	3.00	1.40	2.00	0.80	-	0.40	Ralapuri	7.40
22	4.80	2.20	-	0.80	-	0.20	Ralapuri	8.00	22	5.00	0.80	1.00	0.80	-	0.60	Selam Ralapuri	8.20
23	4.60	2.20	-	0.80	-	0.40	Ralapuri	8.00	23	2.00	1.50	0.80	2.80	0.40	0.40	Selam Ralapuri	7.70
24	4.15	-	-	1.00	0	0.20	Ralapuri	5.40	24	7.00	2.00	1.00	0.60	-	0.20	Ralapuri	10.80
25	5.60	0.60	-	0.80	0.4	0.20	Ralapuri	7.60	25	7.00	3.00	-	0.40	-	0.40	Ralapuri	10.80

[ 1994 - 1995 ], [Area in Hectare]

Tal. JAT Dist. SANGLI and Vill. KUMBHARI  
Cropping Pattern of Sample Farmers

No. of Farmer	Area in Hectares					Turmeric Spices		Total (G C A)
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety	
1	0.50	0.1	-	-	-	0.10	Ralapuri	0.70
2	0.80	-	-	-	-	0.20	Ralapuri	0.80
3	1.10	0.20	-	0.2	-	0.10	Ralapuri	1.60
4	1.80	0.80	-	-	-	0.20	Ralapuri	2.40
5	1.00	0.40	-	0.40	-	0.20	Ralapuri	2.00
6	1.40	0.40	-	0.20	-	0.20	Ralapuri	2.20
7	1.70	0.40	-	-	-	0.10	Ralapuri	2.20
8	1.80	0.80	-	0.40	-	0.20	Ralapuri	3.00
9	1.10	1.00	-	0.80	-	0.10	Ralapuri	3.00
10	1.80	0.80	-	0.40	0.2	0.20	Ralapuri	3.40
11	1.50	-	-	-	-	0.25	Ralapuri	1.75
12	1.00	0.50	-	-	-	0.10	Ralapuri	1.60
13	2.20	1.00	-	0.60	-	0.20	Ralapuri	4.00
14	3.80	0.80	0.3	-	-	0.10	Ralapuri	4.80
15	2.10	1.10	-	0.80	-	0.20	Ralapuri	4.20
16	4.80	0.20	-	-	-	0.20	Ralapuri	5.00
17	4.00	-	-	-	-	0.4	Ralapuri	4.40
18	4.00	0.20	-	0.10	-	0.30	Ralapuri	4.60
19	3.80	0.60	-	1.20	-	0.40	Selam Ralapuri	6.00
20	2.80	2.00	-	0.80	-	0.40	Rala Raddpa	6.00
21	3.80	2.30	-	0.80	-	0.10	Ralapuri	7.00
22	4.80	2.20	-	0.80	-	0.40	Ralapuri	8.00
23	4.80	2.20	-	0.80	-	0.20	Ralapuri	8.00
24	3.85	0.30	-	1.00	0.05	0.20	Ralapuri	5.40
25	5.40	0.40	-	0.80	0.4	0.60	Ralapuri	7.60

Tal. TASGAON Dist. SANGLI and Vill. HATNUR  
Cropping Pattern of Sample Farmers

No. of Farmer	Area in Hectares					Turmeric Spices		Total (G C A)
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety	
1	-	-	-	0.30	-	0.40	Rala Kadappa	0.70
2	0.90	0.80	-	0.40	-	0.50	Kaddapa	2.60
3	1.00	0.60	-	0.40	-	0.40	Kala Kadappa	2.40
4	1.20	0.20	-	0.20	-	0.40	Kala Kadappa	2.00
5	1.10	0.40	0.20	0.30	-	0.10	Kala Kadappa	2.10
6	1.00	0.20	0.20	1.40	-	0.20	Kala Kadappa	3.00
7	1.80	0.60	-	0.20	-	0.10	Kala Kadappa	2.70
8	2.30	0.40	-	0.20	-	0.10	Kala Kadappa	3.00
9	1.10	0.40	-	0.30	-	0.20	Kala Kadappa	2.00
10	2.40	0.40	-	0.20	-	0.20	Kala Kadappa	3.20
11	2.00	0.80	-	-	-	0.20	Kala Kadappa	3.00
12	2.30	0.40	-	0.20	-	0.10	Kala Kadappa	3.00
13	2.10	0.90	1.20	0.40	0.20	0.20	Ralapuri	5.00
14	2.80	0.80	1.20	0.40	0.30	0.20	Ralapuri	5.70
15	3.40	0.80	-	0.40	-	0.40	Ralapuri Kaddpa	5.00
16	3.80	0.60	-	0.40	-	0.20	Ralapuri	5.00
17	3.90	0.60	-	0.40	-	0.10	Ralapuri	5.00
18	3.70	0.40	-	0.80	-	0.10	Ralapuri	5.00
19	2.20	0.80	0.60	0.40	-	0.40	Ralapuri	4.40
20	4.00	1.20	-	0.60	-	0.20	Ralapuri	6.00
21	3.00	1.40	2.00	0.60	-	0.40	Ralapuri	7.40
22	5.00	1.00	1.00	0.80	-	0.60	Selam Ralapuri	8.20
23	2.00	1.50	0.80	2.60	0.40	0.50	Kala Ralapuri	7.80
24	6.00	3.20	2.00	0.60	-	0.10	Ralapuri	11.90
25	7.00	3.00	-	0.40	-	0.40	Ralapuri	10.80

[ 1995 - 1996 ], [Area in Hectare]

Tal. JAT Dist. SANGLI and Vill. KUMBHARI  
Cropping Pattern of Sample Farmers

Tal. TASGAON Dist. SANGLI and Vill. HATNUR  
Cropping Pattern of Sample Farmers

No. of Farmer	Area in Hectares					Turmeric Spices		Total (G C A)	No. of Farmer	Area in Hectares					Turmeric Spices		Total (G C A)
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety			Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety	
1	0.50	0.1	-	-	-	0.10	Ralapuri	0.70	1	0.20	-	-	0.30	-	0.20	Rala Kadappa	0.70
2	0.60	-	-	-	-	0.20	Ralapuri	0.80	2	0.90	0.80	-	0.40	-	0.40	Kaddapa	2.50
3	1.00	0.20	-	0.2	-	0.10	Ralapuri	1.50	3	0.80	0.80	-	0.40	-	0.40	Rala Kadappa	2.40
4	1.50	0.70	-	-	-	0.20	Ralapuri	2.40	4	1.20	0.20	-	0.20	-	0.40	Rala Kadappa	2.00
5	1.00	0.40	-	0.40	-	0.20	Ralapuri	2.00	5	1.20	0.30	0.20	0.30	-	0.10	Rala Kadappa	2.10
6	1.40	0.40	-	0.20	-	0.20	Ralapuri	2.20	6	0.80	0.20	0.40	1.40	-	0.20	Rala Kadappa	3.00
7	1.60	0.40	-	-	-	0.20	Ralapuri	2.20	7	1.60	6.00	-	0.40	-	0.10	Rala Kadappa	2.70
8	1.70	0.80	-	0.40	-	0.10	Ralapuri	3.00	8	2.35	0.40	-	0.20	-	0.05	Rala Kadappa	3.00
9	1.40	1.00	-	0.40	-	0.20	Ralapuri	3.00	9	0.85	0.20	0.80	0.40	-	0.25	Rala Kadappa	2.00
10	1.90	0.90	-	0.40	-	0.20	Ralapuri	3.40	10	2.00	0.60	-	0.40	-	0.20	Rala Kadappa	3.20
11	1.40	-	-	-	-	0.30	Ralapuri	1.70	11	2.00	0.80	-	-	-	0.20	Rala Kadappa	3.00
12	1.00	0.50	-	-	-	0.10	Ralapuri	1.80	12	2.30	0.40	-	0.20	-	0.10	Rala Kadappa	3.00
13	2.20	1.00	-	0.60	-	0.20	Ralapuri	4.00	13	2.00	1.00	1.20	0.40	0.20	0.20	Ralapuri	5.00
14	3.20	1.20	0.4	-	-	0.10	Ralapuri	4.90	14	2.80	0.80	1.20	0.40	0.30	0.20	Ralapuri	5.70
15	2.10	1.10	-	0.80	-	0.20	Ralapuri	4.20	15	3.40	0.80	-	0.40	-	0.40	Ralapuri Kaddpa	5.00
16	4.00	0.20	-	-	-	0.40	Ralapuri	4.60	16	3.80	0.60	-	0.40	-	0.20	Ralapuri	5.00
17	4.40	-	-	-	-	0.2	Ralapuri	4.60	17	3.90	0.60	-	0.40	-	0.10	Ralapuri	5.00
18	4.20	0.20	-	0.10	-	0.10	Ralapuri	4.60	18	3.70	0.40	-	0.80	-	0.10	Ralapuri	5.00
19	3.80	0.60	-	1.20	-	0.40	Selam Ralapuri	6.00	19	2.20	0.80	0.60	0.40	-	0.40	Ralapuri	4.40
20	2.80	2.00	-	0.80	-	0.40	Kaddara Raddpa	6.00	20	4.00	1.20	-	0.80	-	0.20	Ralapuri	6.00
21	3.80	2.30	-	0.80	-	0.10	Ralapuri	7.00	21	2.60	1.80	2.00	0.80	-	0.40	Ralapuri	7.60
22	4.80	2.00	-	0.80	-	0.40	Ralapuri	8.00	22	5.40	1.00	0.80	0.80	-	0.20	Selam Ralapuri	8.20
23	4.90	2.50	-	0.40	-	0.20	Ralapuri	8.00	23	2.00	1.50	0.80	0.60	0.40	0.40	Selam Ralapuri	7.70
24	3.95	0.20	-	1.00	0.05	0.20	Ralapuri	5.40	24	7.20	2.00	1.20	0.80	-	0.20	Ralapuri	11.40
25	5.20	0.80	-	1.00	0.4	0.60	Ralapuri	8.00	25	7.00	3.00	-	0.40	-	0.40	Ralapuri	10.80

Tal. JAT Dist. SANGLI and VIII. KUMBHARI

Cropping Pattern of Sample Farmers

No. of Farmer	Area In Hectares					Turmeric Spices		Total (G C A)
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety	
1	0.50	0.1	-	-	-	0.10	Ralapuri	0.70
2	0.60	-	-	-	-	0.20	Ralapuri	0.80
3	1.00	0.20	-	0.2	-	0.10	Ralapuri	1.50
4	1.40	0.80	-	-	-	0.30	Ralapuri	2.50
5	1.00	0.40	-	0.40	-	0.20	Ralapuri	2.00
6	1.40	0.40	-	0.20	-	0.20	Ralapuri	2.20
7	1.70	0.40	-	-	-	0.20	Ralapuri	2.30
8	2.10	0.40	-	0.40	-	0.10	Ralapuri	3.00
9	1.40	1.10	-	0.40	-	0.10	Ralapuri	3.00
10	1.80	0.80	-	0.40	0.2	0.20	Ralapuri	3.40
11	1.60	-	-	-	-	0.20	Ralapuri	1.80
12	1.00	0.50	-	-	-	0.15	Ralapuri	1.65
13	2.40	1.00	-	0.40	-	0.20	Ralapuri	4.00
14	3.60	0.80	0.3	-	-	0.10	Ralapuri	4.80
15	2.10	1.10	-	0.80	-	0.20	Ralapuri	4.20
16	4.20	0.20	-	-	-	0.30	Ralapuri	4.70
17	4.40	-	-	-	-	0.1	Ralapuri	4.50
18	4.20	0.20	-	0.10	-	0.10	Ralapuri	4.60
19	3.80	0.60	-	1.20	-	0.40	Selam Ralapuri	6.00
20	2.80	2.00	-	0.80	-	0.40	Kaddara Raddpa	6.00
21	3.60	2.50	-	0.80	-	0.10	Ralapuri	7.00
22	4.80	2.20	-	0.80	-	0.20	Ralapuri	8.00
23	4.00	2.50	-	0.40	-	0.20	Ralapuri	8.00
24	3.75	0.20	-	1.00	0.2	0.20	Ralapuri	5.40
25	5.40	0.60	-	0.80	0.4	0.40	Ralapuri	7.60

Tal. TASGAON Dist. SANGLI and VIII. HATNUR

Cropping Pattern of Sample Farmers

No. of Farmer	Area In Hectares					Turmeric Spices		Total (G C A)
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety	
1	-	0.05	-	0.35	-	0.30	Rala Kadappa	0.70
2	0.90	0.80	-	0.40	-	0.30	Kaddapa	2.40
3	1.00	0.70	-	0.40	-	0.40	Rala Kadappa	2.50
4	1.20	0.20	-	0.20	-	0.40	Rala Kadappa	2.00
5	1.10	0.30	0.20	0.20	-	0.20	Rala Kadappa	2.00
6	1.00	0.20	0.20	1.40	-	0.20	Rala Kadappa	3.00
7	1.60	0.60	-	0.40	-	0.10	Rala Kadappa	2.70
8	2.35	0.40	-	0.20	-	0.05	Rala Kadappa	3.00
9	1.15	0.30	-	0.30	-	0.25	Rala Kadappa	2.00
10	2.00	0.60	-	0.40	-	0.20	Rala Kadappa	3.20
11	2.00	0.80	-	-	-	0.20	Rala Kadappa	3.00
12	2.30	0.40	-	0.20	-	0.10	Rala Kadappa	3.00
13	2.20	0.80	1.20	0.40	0.20	0.20	Ralapuri	5.00
14	2.80	0.80	1.20	0.40	0.30	0.20	Ralapuri	5.70
15	3.40	0.80	-	0.40	-	0.40	Ralapuri Kaddpa	5.00
16	3.80	0.60	-	0.40	-	0.20	Ralapuri	5.00
17	3.90	0.60	-	0.40	-	0.10	Ralapuri	5.00
18	3.70	0.40	-	0.80	-	0.10	Ralapuri	5.00
19	2.20	0.60	0.80	0.60	-	0.40	Ralapuri	4.60
20	4.00	1.20	-	0.60	-	0.20	Ralapuri	6.00
21	2.80	1.60	2.00	0.80	-	0.40	Ralapuri	7.60
22	5.20	1.20	0.80	0.80	-	0.20	Selam Ralapuri	8.20
23	2.00	1.50	0.80	2.40	0.40	0.50	Selam Kaddpa	7.60
24	6.80	2.40	1.60	0.80	-	0.40	Ralapuri	12.00
25	7.00	3.00	-	0.40	-	0.40	Ralapuri	10.80

# APPENDIX A.6.2 (a)

Village: Kumbharl, Tal. JAT  
Soci-economic background of house holds

No of the Farmers	Caste	Occupation		Edu of theHead	No of family members			No of workers			No of non Workers			Reason of Non working			Lite - Rate			Illiterate			Member ship any organ.	Total Income (Rs)
		Main	Subsidiary		m	f	c	m	f	c	m	f	c	m	f	c	m	f	c	m	f	c		
1	1	1	-	9th	1	1	1	1	1	-	-	-	1	-	-	2	1	1	1	-	-	-	1	29200
2	1	1	5	10th	2	3	2	2	2	-	-	1	2	-	5	2	2	2	2	-	1	-	1	90200
3	5	1	-	12th	1	1	2	1	1	-	-	-	2	-	-	2	1	1	2+3	-	-	-	1	71300
4	5	1	1	-	1	2	-	1	2	-	-	-	-	-	-	-	1	2	-	-	-	-	1	76900
5	5	1	-	B.A.	2	2	2	2	1	-	-	1	2	-	5	2	2	1	2	-	1	-	1	65150
6	5	1	-	9th	3	2	-	3	1	-	-	1	-	-	5	-	2	1	-	1	1	-	1	94500
7	1	1	-	5th	1	1	-	1	1	-	-	-	-	-	-	-	1	-	-	-	1	-	1	76500
8	5	1	2	10th	3	3	4	3	2	-	-	1	4	-	5	2	3	2	4	-	1	-	1	56100
9	1	3	-	9th	1	1	-	1	-	-	-	1	-	-	5	-	1	-	-	-	1	-	1	42400
10	1	1	-	-	6	4	7	5	3	-	1	1	7	4	5	2	5	2	2+3	1	2	-	1	73800
11	1	1	-	B.Sc.	2	2	2	2	2	-	-	-	2	-	-	2	2	1	2+3	-	1	-	1	96700
12	1	1	1	5th	2	2	1	2	2	-	-	-	1	4	-	2	1	1	1	1	1	-	1	47700
13	1	1	-	6th	4	1	-	3	-	-	1	1	-	1	5	-	4	1	-	-	-	-	1	177200
14	5	1	-	-	6	5	7	5	4	-	1	1	7	-	1	2	4	3	7	2	2	-	1	60800
15	1	1	-	7th	3	2	1	3	2	-	-	-	1	-	-	2	3	1	-	-	1	-	1	94800
16	5	1	-	-	3	3	-	3	3	-	-	-	-	-	-	-	1	2	-	2	1	-	1	77700
17	1	1	-	-	6	4	11	6	4	-	-	-	11	-	-	2+3	6	4	2+3	-	-	-	1	68500
18	5	1	-	-	5	4	8	5	4	-	-	-	4	4	-	2+3	2	-	2+3	3	4	-	1	116600
19	1	1	-	10th	4	4	5	3	2	-	1	2	5	4	5	2+3	3	3	2+3	1	1	-	1	2590600
20	1	1	-	3rd	5	4	7	4	2	-	1	2	-	-	5	2+3	4	3	2+3	1	1	-	1	160000
21	5	1	1	-	4	4	2	4	3	-	-	1	-	-	5	2+3	4	2	-	-	2	-	1	96300
22	8	1	6	10th	1	1	2	1	1	-	-	-	-	-	-	2+3	1	1	-	-	-	-	1	128800
23	8	1	6	5th	1	1	2	1	1	-	-	-	-	-	-	2+3	1	1	-	-	-	-	1	99400
24	5	1	1	5th	5	4	5	5	3	-	-	1	-	-	1	2+3	5	-	2+3	-	4	-	1	79200
25	1	1	-	-	6	4	6	6	4	-	-	-	6	-	-	2+3	5	3	2+3	1	1	-	1	468100

# APPENDIX A.6.2 (b)

## TURMERIC

Village: Hatnur, Tal. TASGAON, Dist : SANGLI

Soci-economic Background of house hold

No of the Farmers	Caste	Occupation		Edu of the Head	No of family members			No of workers			No of non Workers			Reason of Non working			Lite - Rate			Illiterate			Member ship any organ.	Total Income (Rs)
		Main	Subsidiary		m	f	c	m	f	c	m	f	c	m	f	c	m	f	c	m	f	c		
1	1	1	8	6th	3	1	-	3	1	-	-	-	-	-	-	-	3	-	-	-	1	-	128700	
2	1	1	1	11th	1	1	2	1	-	-	-	1	2	-	5	3	1	1	-	-	1	-	172000	
3	1	1	-	10th	1	1	2	1	1	-	-	-	2	-	-	2	1	1	1	-	-	1	163500	
4	1	1	1	10th	2	2	2	2	2	-	-	-	2	-	-	2	2	1	1	-	1	-	85200	
5	3	1	-	7th	2	2	1	1	1	-	1	1	1	2	1	2	2	1	1	-	1	-	84000	
6	1	1	-	3rd	4	4	5	3	3	-	1	1	5	1	1	2	3	4	2	1	-	3	81245	
7	1	1	2	-	3	4	6	3	3	-	-	1	6	-	5	3	3	2	1	-	2	-	55000	
8	3	1	-	6th	2	2	3	2	1	-	-	1	2	-	5	2	2	2	2	-	-	-	34800	
9	3	1	8	4th	3	2	3	3	2	-	-	-	3	-	-	2	2	1	3	1	1	-	70800	
10	1	1	1	-	4	2	3	3	-	-	1	2	3	4	5	3	3	2	-	1	-	-	92800	
11	1	1	1	7th	2	2	1	2	2	-	-	-	1	-	-	3	2	2	-	-	-	-	44000	
12	1	1	-	3rd	2	2	4	2	1	-	-	1	3	-	5	2+3	2	1	1	-	1	-	40800	
13	1	2	4	M.Sc	2	1	1	2	-	-	-	1	1	-	5	2	2	1	1	-	-	-	298500	
14	1	1	-	10th	1	2	2	1	1	-	-	1	2	-	1	2	1	2	2	-	-	-	199000	
15	1	1	-	7th	4	4	5	3	2	-	1	2	5	4	5	2+3	4	3	2	-	1	-	119800	
16	1	1	1	4th	6	4	4	5	2	-	1	2	4	4	5	2	5	2	4	1	2	-	105600	
17	1	1	1	10th	2	1	1	2	1	-	-	-	1	-	-	3	2	1	-	-	-	-	62800	
18	4	1	-	4th	2	2	1	1	1	-	1	1	1	4	5	3	2	2	-	-	-	-	118000	
19	3	1	-	12th	3	4	5	3	3	-	-	1	5	-	-	2+3	3	2	4	-	2	-	175500	
20	1	1	1	B.Com	3	1	-	1	1	-	2	-	-	2	-	-	3	-	-	-	1	-	92800	
21	1	1	-	M.A.	3	2	-	3	2	-	-	-	-	-	-	-	3	2	-	-	1	-	195100	
22	1	1	-	-	5	6	10	5	6	-	-	-	10	-	-	2+3	5	3	8	-	3	-	309850	
23	1	2	1	10th	2	2	2	2	2	-	-	-	2	-	-	2	2	2	2	-	-	-	224500	
24	4	1	-	4th	5	4	5	4	4	-	1	-	5	1	-	2+3	5	3	3	-	1	-	202800	
25	3	1	-	7th	5	4	5	4	3	-	1	1	5	4	5	2+3	3	2	2	2	2	-	120400	

Caste (Code No)		Occupation				Reasons (Code No)	Member	
		Main	Subsidiary					
Maratha	1	Agri	1	Dairy	1	Agri	1	Yes
Tell	2	Service	2	Labour	2	Schooling	2	No
Sutar	3			Thresher	3	Small	3	
Brahman	4			Agri	4	Service	4	
Mall	5			Hotel	5	H. Work	5	
Kumbhar	6			Flow Mill	6			
Muslim	7			Service	7			
				Other	8			

### Appendix A.6.3 (a)

Village: KUMBHARI, Dist. SANGLI, Tal : JAT

Details of Land (Ha)

No of Farmers	Total area Owned (Ha)	Waste Land	Cultivated area (Ha)	Area sold During last 5 years	Area Pur. during last 5 years	Area under Irrigation	Mich Animals	Drought Animals	Poultry	Others	Live Stocks							
											Modern Agri Implements							
											1	2	3	4	5	6	7	8
1	0.48	0.08	0.40	-	-	0.40	-	-	-	-	1	2	-	-	-	-	-	-
2	0.80	-	0.80	-	-	0.80	-	1	20	-	1	2	-	-	-	-	-	-
3	1.26	0.26	1.00	-	1.26	0.20	-	1	4	1	1	2	-	-	-	-	-	-
4	2.00	0.40	1.60	-	-	0.40	2	1	-	2	1	2	-	-	-	6	-	8
5	2.40	0.40	2.00	-	-	1.00	1	2	-	-	1	2	-	-	5	-	-	-
6	2.44	0.24	2.20	-	-	1.00	2	2	20	-	1	2	3	-	-	-	7	8
7	2.80	1.20	1.60	-	-	1.60	-	2	-	-	1	2	-	-	-	-	-	-
8	3.10	0.10	3.00	-	-	1.00	4	1	5	-	1	2	-	-	-	-	-	-
9	3.20	0.20	3.00	-	-	1.00	1	1	25	-	1	2	-	-	-	-	-	-
10	3.60	0.20	3.40	-	-	1.00	1	3	25	2	1	2	3	-	-	6	-	-
11	3.60	2.60	1.00	-	-	0.80	-	1	-	-	1	2	-	-	-	-	-	-
12	3.60	2.60	1.00	-	-	0.80	1	-	-	1	1	2	3	-	-	-	-	8
13	4.00	-	4.00	-	-	2.00	2	-	25	2	1	2	3	-	5	-	-	8
14	4.00	-	4.00	-	-	0.80	-	2	-	2	1	2	3	-	-	6	-	8
15	4.20	-	4.20	-	-	1.00	1	3	25	2	1	2	3	-	-	-	-	-
16	4.80	0.80	4.00	-	-	1.00	-	1	-	2	1	2	-	-	-	-	-	-
17	4.80	2.40	2.40	-	-	1.00	1	1	-	1	1	2	3	-	-	-	-	-
18	4.80	0.80	4.00	1.20	-	0.80	3	4	-	-	1	2	-	-	-	-	-	-
19	6.00	-	6.00	-	-	2.00	4	3	-	-	1	2	3	-	-	-	7	-
20	6.00	-	6.00	-	-	1.00	-	4	50	-	1	2	3	-	-	-	7	-
21	8.00	1.00	7.00	-	-	1.00	4	2	10	2	1	2	3	-	-	-	-	-
22	8.00	-	8.00	-	-	2.00	3	2	25	2	1	2	3	-	-	-	-	-
23	8.00	-	8.00	-	-	2.00	4	1	20	-	1	2	-	-	-	-	-	-
24	8.00	2.80	5.20	-	2.80	1.00	1	2	7	6	1	2	3	-	-	6	-	-
25	14.00	8.00	6.00	-	-	4.00	2	2	-	2	1	2	3	-	-	6	-	8

# Appendix A.6.3 (b)

Village: HATNUR, Dist. SANGLI, Tal : TASGAON

Details of Land (Ha)

No of Farmers	Total area Owned (Ha)	Waste Land	Cultivated area (Ha)	Area sold During last 5 years	Area Pur. during last 5 years	Area under Irrigation	Mich Animals	Drought Animals	Poultry	Others	Live Stocks Modern Agri Implements							
											1	2	3	4	5	6	7	8
1	0.80	0.10	0.70	-	-	0.70	2	2	-	1	1	2	3	-	5	6	-	-
2	1.80	-	1.80	-	-	1.80	2	3	-	2	1	2	3	-	5	6	-	-
3	1.80	0.10	1.70	-	-	0.70	1	1	-	-	1	2	3	-	5	6	-	8
4	2.00	-	2.00	-	-	1.00	2	2	5	-	1	2	-	-	-	-	-	-
5	2.40	0.80	1.60	-	-	0.80	1	3	-	-	1	2	-	-	-	-	-	-
6	2.80	0.40	2.40	-	-	1.40	1	1	-	-	1	2	-	-	-	-	-	-
7	2.80	0.10	2.70	-	-	1.20	1	1	-	-	1	2	-	-	5	-	-	-
8	3.00	-	3.00	-	-	1.00	-	-	-	2	1	2	-	-	-	-	-	-
9	3.00	1.20	1.80	-	-	1.00	1	1	-	2	1	2	3	-	-	-	-	-
10	3.20	-	3.20	-	-	1.00	2	4	5	2	1	2	3	-	-	-	-	-
11	3.20	0.20	3.00	-	-	1.00	2	2	10	-	1	2	-	-	-	-	-	-
12	3.60	0.60	3.00	-	-	1.00	2	4	2	-	1	2	-	-	-	-	-	-
13	5.00	0.60	4.40	-	-	1.40	1	1	-	-	1	2	3	4	5	-	7	-
14	5.60	0.60	5.00	-	-	0.80	2	4	-	3	1	2	3	-	-	6	7	8
15	5.60	0.60	5.00	-	1	1.20	2	2	20	22	1	2	3	-	-	-	-	-
16	5.60	0.60	5.00	-	-	1.00	4	6	15	4	1	2	3	-	-	-	-	-
17	5.60	0.60	5.00	-	-	1.00	3	2	-	-	1	2	-	-	-	-	-	-
18	6.00	1.00	5.00	-	-	1.00	1	1	-	4	1	2	3	-	-	-	-	-
19	6.18	2.18	4.00	-	-	1.80	1	3	-	2	1	2	3	-	-	-	-	8
20	6.40	0.40	6.00	-	-	1.40	2	2	-	2	1	2	3	-	-	-	-	-
21	6.80	0.80	6.00	-	-	2.40	2	-	-	4	1	2	3	-	-	6	-	8
22	7.60	1.40	6.20	-	-	3.00	1	4	10	2	1	2	3	-	5	6	-	8
23	8.00	1.00	7.00	-	-	2.00	1	4	-	1	1	2	3	-	-	6	-	-
24	11.60	2.00	9.60	-	-	4.80	1	4	-	-	1	2	3	-	5	6	7	8
25	12.00	1.20	10.80	-	-	2.00	1	1	-	2	1	2	3	-	-	-	-	-

Code (for modern agricultural implements)

Well / Tube well	1
Pump. Set/Engin	2
Ironplough	3
Thresher	4
Drip system /Sprinkler	5
Dunlop cart.	6
Tractor / Trolly	7
Others	8

**Appendix A.6.4 (a)**  
Tal. JAT, Dist. SANGLI  
**TURMERIC**  
**Cost of Cultivation Per Acre**

[ 1991 - 1992 ]

Cost of Seed (Rs)	Manure (Rs)	Fertilizer (Rs)	Insecticides (Rs)	Pesticides (Rs)	Hired Labour (Rs)	Bullock Labour (Rs)	Higher Mach. (Rs)	Irrigation Charges (Rs)	Land Revenue (Rs)	Interest on W. Capital (Rs)	Misc Expenses (Rs)	Int. On Owned F. Capital (Rs)	Family Labour (Rs)	Total Cost (Rs)
10400	4000	1200	400	-	3000	2000	440	800	48	720	2000	960	2000	27968
11800	3400	1600	300	-	3500	2000	100	300	100	2000	2200	2000	1500	30800
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11200	2400	1500	-	400	3000	1600	400	600	30	1200	2400	1200	1000	26930
12000	4000	1800	300	-	4000	2000	180	400	100	1800	1600	1800	1600	31580
11800	3600	1800	400	-	3600	1900	100	300	100	1800	2100	1800	1600	31000
10400	4000	1000	-	-	3000	1600	360	800	50	720	2000	1200	2000	27130
11800	3600	1300	300	-	3300	1500	100	350	100	1500	2000	1800	1300	28950
12000	4000	1800	400	-	4000	2200	180	400	100	2200	2600	2400	1600	33880
12000	3800	1400	300	-	3200	1600	100	350	100	1600	2000	1800	1300	29550
11200	2000	600	-	-	2000	2000	160	500	30	480	2000	240	1000	22210
9600	2668	1200	600	-	2668	2000	-	533	28	960	1868	1040	1868	25023
12000	3800	1900	300	-	3800	2000	125	350	100	1600	2000	1800	1500	31275
9600	3000	1200	600	-	2800	2000	-	600	28	960	1200	1200	2000	25188
12000	3600	1800	300	-	3600	2000	120	300	100	2000	2400	2000	1500	31720
15000	4800	1000	-	500	1500	1500	220	500	20	1200	1600	600	800	29240
14000	4500	1000	-	600	1600	1600	240	600	50	1440	2000	360	800	28790
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11000	3800	1300	250	-	800	800	200	300	100	1500	2000	750	500	23300
11500	3200	1400	200	-	3300	1800	100	300	100	2000	2500	2000	1500	29900
11700	4000	1600	400	-	3600	1800	160	400	100	1400	1600	1600	1200	29560
11250	3200	1500	200	-	3200	1800	90	250	100	1800	2100	1800	1400	28690
11700	4000	1800	350	-	3500	1800	150	400	100	1500	1800	1600	1400	30100
9600	3000	2000	1000	-	3600	2000	160	500	30	2400	1400	1000	1000	27690
10668	3000	1000	-	333	800	1000	200	400	12	960	800	480	600	20251

**Tal. JAT, Dist. SANGLI**  
**TURMERIC**  
**Cost of Cultivation Per Acre**

[ 1992 - 1993 ]

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrigation Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
11200	4800	1200	-	500	3200	2000	480	900	48	720	2000	960	2200	30208
12500	3600	1900	-	400	3800	2200	110	350	100	2200	2400	2000	1500	33060
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11900	3000	1600	450	-	3500	1800	440	600	30	1200	2800	1200	1300	29820
13000	4200	2000	400	-	4200	2200	200	450	100	2000	1800	2000	1800	34350
12000	3600	1800	300	-	3600	2200	120	300	100	1600	2200	1800	1800	31220
11700	4800	1000	-	-	3600	2000	360	800	48	1440	2000	1200	2000	30948
12000	3800	1400	350	-	3500	1600	110	400	100	1700	2000	1800	1400	30160
13000	4400	2000	500	-	4200	2400	200	500	100	2400	2700	2500	1800	36700
13000	4000	1800	400	-	3400	1800	125	400	100	1800	2100	1800	1500	32225
10080	1920	560	-	-	1920	1920	160	480	24	384	1760	192	960	20360
10200	3200	1400	666	-	3200	2133	-	600	28	960	2000	800	2000	27185
12500	4000	2000	400	-	4200	2200	175	400	100	1800	2200	1800	1900	33675
10200	3200	1400	640	-	3000	2200	-	700	28	960	1400	1200	2200	27128
11800	3400	1600	300	-	3500	2000	100	300	100	2000	2200	2000	1500	30800
16000	5000	1200	-	600	1600	1600	220	550	20	1200	1800	800	800	31190
15000	4800	1200	-	500	1700	1600	220	650	50	1440	1800	360	800	30120
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11500	4000	1400	300	-	900	900	200	350	100	1600	2100	1800	1600	26750
12000	3400	1500	250	-	3500	1000	110	350	100	2100	2600	2100	1600	30610
13600	5000	1700	500	-	4000	2000	180	500	100	1500	1800	1700	1400	33980
11500	3400	1600	250	-	3400	2000	100	275	100	1800	2100	1900	1500	29925
12800	4300	2000	400	-	4000	2000	160	450	100	1800	2000	1800	1800	33410
11200	3600	2000	1200	-	4000	2400	160	500	30	2400	1400	1000	1200	31090
12000	3200	1033	-	353	1000	1066	260	440	12	960	1000	480	666	22470

**Tal. JAT, Dist. SANGLI**  
**TURMERIC**  
**Cost of Cultivation Per Acre**

[ 1993 - 1994 ]

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrigation Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
11700	4800	1300	600	-	3400	2200	720	1000	48	900	2400	1200	2400	32668
12000	3600	1800	300	-	3600	2200	120	300	100	2200	2400	2000	1500	32120
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10800	3200	1866	-	400	3333	2000	400	666	30	1200	2666	1200	1333	29094
13000	4400	2200	-	500	4400	2400	200	500	100	2200	2000	2000	1800	35700
13000	4000	2000	-	400	3800	2400	140	400	100	1800	2400	1900	1600	33940
11700	4800	1200	-	-	3200	1800	418	900	50	900	2400	1500	2400	31266
12500	3700	1300	-	300	3500	1600	120	400	100	1800	2000	2000	1600	30920
12000	4000	2000	500	-	4400	2400	240	500	100	2400	2400	2600	2000	35540
14000	4200	1600	400	-	3600	2000	150	400	100	1800	2200	2200	1500	34150
12600	2400	700	-	-	2200	2400	200	700	30	480	2300	240	1100	25350
10800	3400	1600	700	-	3200	2400	-	700	28	1200	2000	720	2200	28948
12500	4000	2200	300	-	4000	2300	180	400	100	1800	2400	1800	1600	33580
10800	3400	1600	700	-	3200	2400	-	800	28	1200	1600	1400	2400	29528
12500	3800	1800	300	-	3800	2200	140	650	100	2200	2800	2000	1600	33890
14333	6000	1333	600	-	2000	1733	272	600	20	1400	2000	600	1000	31891
15000	4800	1200	500	-	1700	1000	240	650	50	1800	2400	450	900	30690
9600	4000	-	-	-	5600	3200	300	2400	40	960	2000	2880	2000	32980
12000	4000	1400	350	-	950	1000	216	350	100	1800	2200	900	700	25966
12300	3600	1600	300	-	3600	2000	120	400	100	2200	2800	2200	1800	33020
14000	5200	1800	500	-	4400	2000	100	500	100	1400	1600	1600	1400	34600
13000	3600	1600	300	-	3800	2000	150	300	100	2000	2200	2000	1600	32650
14000	4500	2200	450	-	4500	2100	180	500	100	2000	2200	2100	1800	36630
10800	3900	2400	1500	-	4000	2800	200	600	30	3000	1500	1200	1500	33430
14000	3400	1000	-	400	1000	1100	288	500	12	1200	900	600	700	25100

**Tal. JAT, Dist. SANGLI**  
**TURMERIC**  
**Cost of Cultivation Per Acre**

[ 1994 - 1995 ]

Cost of Seed (Rs)	Manure (Rs)	Fertilizer (Rs)	Insecticides (Rs)	Pesticides (Rs)	Hired Labour (Rs)	Bullock Labour (Rs)	Higher Mach, (Rs)	Irrigation Charges (Rs)	Land Revenue (Rs)	Interest on W. Capital (Rs)	Misc Expenses (Rs)	Int. On Owned F. Capital (Rs)	Family Labour (Rs)	Total Cost (Rs)
12000	6000	1400	-	680	3600	2400	540	1100	48	900	2400	1200	2800	34868
13000	3700	1900	-	350	3900	2400	180	300	100	2200	2400	2000	1700	34130
12000	4000	1200	-	-	1200	1200	360	300	20	960	1200	960	800	24200
12600	3200	1800	-	500	4000	2000	480	700	30	1500	3000	1500	1500	32810
14000	4600	2400	-	500	4600	2600	220	500	100	2400	2000	2000	1800	37720
13000	4200	2000	-	500	4000	2600	180	500	100	1900	2800	2000	1800	35160
12352	6000	1300	-	-	4000	2200	504	900	48	1800	2400	1500	2400	35404
13000	4000	1400	-	350	3800	1700	140	450	100	2000	2200	2200	1800	33140
12800	4400	2200	600	-	4600	2600	260	600	100	2600	2500	2600	2200	38060
12000	4000	1800	400	-	4000	2200	180	400	100	2200	2600	2400	1800	33880
11200	2000	640	-	-	2080	2080	173	640	24	480	1920	240	1040	22517
12000	3600	1800	740	-	3400	2600	-	800	28	1200	2200	720	2400	31488
13200	4200	2300	400	-	4400	2500	100	450	100	2000	2600	1900	1700	35850
12000	3600	1800	-	740	3400	2600	-	900	28	1200	1800	1400	2800	32068
13000	3900	1800	300	-	3800	2200	160	650	100	2400	2800	2000	1800	34710
15000	5000	1400	-	500	1800	1400	330	500	20	1200	1600	600	1000	30150
16000	5000	1400	-	600	1800	1700	288	700	50	1800	2000	450	900	32688
10200	4800	2000	-	1000	6400	3600	320	2800	33	960	2600	2880	2400	39993
12500	4100	1400	375	-	1000	1100	300	350	100	1800	2300	900	800	27025
12500	3800	1800	300	-	3800	2100	130	450	100	2300	2900	2300	2000	34480
15200	5600	2000	600	-	4800	2200	240	600	100	1400	1800	1700	1800	37840
11800	3600	1650	300	-	3600	2100	110	300	100	1800	2200	2000	1800	31160
13000	4200	2000	400	-	4200	2200	180	500	100	2000	2400	2300	1800	35280
12000	4200	2400	-	1600	5000	3200	200	600	30	3000	1500	1200	1600	36530
13333	3600	1100	400	-	1200	1200	224	468	12	1200	1068	600	800	25201

**Tal. JAT, Dist. SANGLI**  
**TURMERIC**  
**Cost of Cultivation Per Acre**

[ 1995 - 1996 ]

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrigation Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
12800	6200	1400	-	720	4000	2400	600	1200	48	1080	3000	1440	2800	37688
14000	3800	2000	-	200	4000	2800	200	400	100	2200	2400	2000	1900	36000
14400	4800	1600	-	-	1600	1600	432	400	20	1200	1600	1200	800	29652
14000	3600	2000	-	600	4400	2400	480	700	30	1500	3000	1500	1600	35810
14000	4800	2600	-	500	4800	2800	220	500	100	2600	2000	2000	1800	38720
13600	4800	2200	-	500	4000	2800	180	500	100	1900	2800	2000	1600	36980
13000	6000	1400	-	-	3600	1900	480	1000	50	1080	3000	1800	3000	36310
13200	4000	1200	-	360	3600	1600	160	500	80	2090	2200	2200	2600	33700
13600	5200	2200	600	-	4200	2500	220	550	100	2500	2800	2600	2000	39070
13000	4200	2000	500	-	4200	2200	180	500	100	2200	2600	2500	1800	35980
13333	2666	800	-	-	2000	2000	174	600	20	480	1933	240	1000	25246
12600	3800	2000	-	760	3600	2800	-	900	28	1440	2400	800	2600	33728
13600	4600	2800	500	-	4800	2700	220	500	100	2000	3200	2000	1800	38820
12600	3800	2000	-	760	3600	2800	-	1000	28	1440	2000	1600	2800	34428
13200	4000	1800	300	-	3800	2400	180	700	100	2400	3000	2000	1600	35480
18000	5500	1600	-	700	1700	1800	345	600	20	1500	2000	900	1000	35665
16000	5000	1400	-	600	1800	1800	330	700	50	2160	2800	540	900	34080
10800	5600	-	-	-	7200	4000	360	3000	40	1200	3000	3600	2800	41600
12500	4200	1400	400	-	1200	1200	360	400	100	2000	2400	1000	900	28060
12800	4000	1900	300	-	4000	2200	140	450	100	2400	3000	2400	2000	35690
16000	6400	2000	800	-	5600	2400	240	600	100	1600	1800	1800	1600	40940
12000	3800	1700	350	-	3800	2200	120	325	100	1800	2200	2100	1800	32295
13600	4800	2400	450	-	4400	2400	180	500	100	2000	2600	2400	1900	37710
13000	4500	2600	1800	-	6000	3600	240	700	30	3600	1600	1400	1800	40870
14666	3600	1133	-	440	1333	1200	320	500	12	1200	1200	600	800	27004

**Tal. JAT, Dist. SANGLI**  
**TURMERIC**  
**Cost of Cultivation Per Acre**

[ 1996 - 1997 ]

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrigation Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
14400	7200	1600	760	-	4400	2800	600	1400	48	1080	3400	1440	3000	42128
15000	4000	2000	400	-	2000	3000	200	400	100	2200	2400	2000	1900	35600
18000	6000	2000	-	-	2000	2000	480	500	20	1440	2000	1440	1200	37080
12000	4000	2000	-	533	4000	2333	426	800	30	1200	3333	1200	1600	33455
15000	5000	3000	-	500	5000	2800	220	500	100	2800	2000	2000	1800	40720
14000	5000	2200	-	500	4200	3000	180	500	100	2000	3000	2000	1600	38280
14400	8000	1500	-	-	4000	2000	480	1000	50	1080	3400	1800	3000	40710
14000	4200	1400	-	400	3800	1800	200	600	80	2200	2400	2400	2600	36080
13200	4800	2400	600	-	4800	2800	280	800	100	2800	2800	2600	2200	39980
14000	4600	2200	500	-	4200	2400	200	500	100	2200	2600	2800	2000	38100
14000	3000	1000	-	-	3000	2800	300	1000	30	600	2400	360	1200	29690
12800	4000	2000	-	800	4000	2666	-	800	26	1440	2266	800	2666	34264
14400	5200	3200	500	-	5000	2800	200	500	100	2000	3000	2000	1800	40700
13200	4000	2000	840	-	4000	3000	-	1200	28	1440	2000	1600	3000	36308
14000	4000	1800	300	-	3800	2400	180	700	100	2400	3000	2000	1600	36280
16000	6333	1600	-	666	2000	2133	300	533	20	1400	2000	1000	1600	35585
18000	6000	1600	800	-	2000	2000	300	800	48	2200	3200	480	1200	38628
12000	6000	-	-	-	8000	4000	400	3200	40	1440	3200	4320	3200	45800
13000	4200	1600	450	-	1400	1400	330	400	100	2000	2500	1000	1000	29380
13000	400	2000	350	-	4100	2400	150	450	100	2500	3000	2500	2000	32950
17600	7200	2200	800	-	6400	2400	280	800	100	1800	2000	2000	1800	45180
14000	3800	1800	400	-	4000	2200	180	350	100	2200	2400	2200	1700	35330
15200	5000	2800	500	-	5200	2800	220	500	100	2000	3200	2700	2000	42220
14000	4500	2860	2000	-	6000	4000	240	700	30	3600	1600	1400	2000	42930
15600	4000	1400	-	500	1500	1200	450	500	12	1440	1400	720	1000	29722

**Appendix A.6.4 (b)**  
Tal. TASGAON, Dist. SANGLI  
**TURMERIC**  
**Cost of Cultivation Per Acre**

[ 1991 - 1992 ]

Cost of Seed (Rs)	Manure (Rs)	Fertilizer (Rs)	Insecticides (Rs)	Pesticides (Rs)	Hired Labour (Rs)	Bullock Labour (Rs)	Higher Mach. (Rs)	Irrigation Charges (Rs)	Land Revenue (Rs)	Interest on W. Capital (Rs)	Misc Expenses (Rs)	Int. On Owned F. Capital (Rs)	Family Labour (Rs)	Total Cost (Rs)
11440	3000	300	400	-	1600	1000	240	600	20	1200	1000	1200	800	22800
12500	3000	500	250	-	1000	1000	250	500	25	1440	800	800	-	21865
12500	3000	500	200	-	1000	1000	240	450	22	1440	750	800	250	21952
11300	3000	1200	200	-	3000	1600	100	200	100	1800	1500	1500	1200	26700
16800	6000	3000	600	-	1600	1200	240	1000	30	1200	2000	720	1000	35390
7200	2400	1000	-	-	2000	2000	180	500	20	1200	1400	1200	1000	20100
12000	3200	1600	300	-	3600	2400	150	300	100	2000	2000	2200	1600	31450
13200	4400	1800	280	-	3600	1800	200	600	100	2000	2000	2000	2000	33980
10080	3200	1120	-	-	2400	1280	160	160	80	960	800	1152	800	22192
11300	3000	1400	150	-	3000	1600	100	200	100	1600	2000	1600	1500	27550
11400	2800	1400	200	-	3000	1600	100	200	100	1600	2000	1600	1400	27400
12800	3600	1600	280	-	3200	1600	200	600	100	2000	2000	2000	2200	32180
14400	6800	900	600	-	2400	2000	220	700	40	1200	2000	1200	1000	33460
14000	6000	1000	1000	-	3000	1600	200	600	50	3200	1600	1200	1000	34450
11300	3000	1400	150	-	3000	1600	100	200	100	1600	2000	1500	1400	27350
11000	2800	1200	160	-	2800	1400	120	350	100	1600	1800	1800	1600	26730
11600	3200	1600	200	-	3200	1600	120	400	100	1800	2080	2000	1800	29700
9600	3000	1200	600	-	2800	2000	-	600	28	960	1200	1200	2000	25188
10400	3000	300	400	-	1500	1000	220	400	20	1440	800	800	500	20580
11400	2800	1300	200	-	2800	1500	100	200	100	1500	2000	1800	1500	27200
11000	3800	650	250	-	2000	1000	220	300	100	1500	1000	750	1500	24070
12000	3000	700	300	-	1600	1000	220	300	25	1200	800	600	900	22645
10000	3000	668	468	-	2000	1333	168	333	33	800	1333	560	668	21358
9600	3000	300	200	-	1500	1000	220	500	25	1200	800	1200	1000	20545
11400	2500	1200	200	-	3200	1800	100	300	100	1500	2000	1800	1400	27500

**Tal. TASGAON, Dist. SANGLI**  
**TURMERIC**  
**Cost of Cultivation Per Acre**

[ 1992 - 1993 ]

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrig. Charges	Land Revenue	Interest on W. Capital	Misc. Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
11800	3200	320	440	-	1680	1200	200	700	20	1200	1200	1200	1000	24160
13000	3200	600	275	-	1200	1100	230	550	25	1440	900	600	-	23120
12500	3000	550	250	-	1100	1200	250	500	22	1440	800	600	300	22512
11500	3100	1400	250	-	3200	1800	110	250	100	1800	1800	1800	1300	28210
17500	6400	3200	700	-	2000	1500	220	1200	30	1200	2400	720	1200	38270
7800	2800	1100	-	-	2200	2000	240	600	24	1200	1800	1200	1100	21864
12600	3500	1800	400	-	3800	2600	200	300	100	2200	2000	2200	1600	33300
13600	4800	2000	320	-	3800	1800	200	600	100	2200	2200	2000	2200	35820
11200	4000	1200	-	-	2800	1600	154	272	104	960	880	1152	880	25202
11500	3200	1600	200	-	3200	1800	100	250	100	1600	2000	1800	1600	28950
11500	2900	1500	250	-	3100	1800	100	250	100	1800	2000	1800	1500	28600
13200	3800	1700	320	-	3600	1800	240	600	100	2200	2000	2400	2200	34160
14800	7200	1000	1200	-	3000	2200	240	800	40	1200	2400	1400	1400	36880
14400	6400	1100	1100	-	3600	1700	240	700	50	1200	1800	1200	1400	34890
11500	3100	1500	200	-	3100	1800	110	250	100	1800	2100	1600	1500	28660
11600	3000	1300	200	-	3000	1600	140	400	100	1600	1800	2000	1700	28440
12000	3600	1700	250	-	3600	1800	180	500	100	2000	2000	2000	2000	31730
10200	3200	1400	640	-	3000	2200	-	700	28	960	1400	1200	2200	27128
11700	3250	325	450	-	1600	1200	200	450	20	1440	900	600	600	22735
11600	3000	1400	250	-	3200	1800	110	250	100	1800	2100	2000	1800	29410
11500	4000	700	300	-	2500	1200	200	350	100	1600	1100	800	1600	25950
12500	3200	800	350	-	1800	1100	200	350	25	1200	900	650	1000	24075
1066	3000	733	466	-	2000	1333	200	360	33	800	1333	560	666	12550
10200	3200	400	225	-	1750	1200	240	600	25	1200	1000	1200	1200	22440
11600	2600	1400	250	-	3300	2000	110	350	100	1800	2100	1800	1500	28710

**Tal. TASGAON, Dist. SANGLI**  
**TURMERIC**  
**Cost of Cultivation Per Acre**

[ 1993 - 1994 ]

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrig. Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
12400	3500	360	450	-	1700	1400	264	800	20	1500	1400	1500	900	26194
18240	3400	560	240	-	1280	1280	298	600	30	1800	1040	840	-	29608
13750	3200	600	300	-	1200	1200	345	500	22	1800	900	700	350	24867
11800	3300	1600	250	-	3400	2000	110	300	100	1800	1800	1800	1400	29660
18200	7200	3600	800	-	2000	1600	288	1200	28	1800	2400	900	1200	41216
8100	3000	1200	-	-	2400	2400	192	800	24	1500	1800	1500	1200	24116
13000	3700	1900	500	-	4000	2800	220	300	100	2400	2000	2200	1800	34920
14400	5000	2200	320	-	4000	1800	240	800	100	2400	2600	2200	2400	38460
13333	4000	1200	-	-	2666	1600	192	166	100	933	800	1120	933	27043
12000	3600	1600	250	-	3600	1800	120	300	100	1800	2000	1900	1700	30770
11800	3000	1500	250	-	3200	1800	100	250	100	1800	2000	1900	1500	29200
14400	4000	1700	320	-	4000	1800	280	600	100	2200	2200	2400	2400	36400
15000	7400	1300	1400	-	3400	2400	240	900	40	1600	2800	1600	1800	39880
14800	6800	1200	1200	-	4000	1800	264	800	50	1500	2000	1500	1800	37714
11800	3200	1600	250	-	3200	2000	110	300	100	1900	2100	1700	1500	29760
12000	3600	1400	300	-	3200	1700	160	450	100	1700	2000	2000	1700	30310
13000	4000	1800	300	-	3600	1900	200	500	100	2000	2000	2000	2000	33400
10800	3400	1600	700	-	3200	2400	-	800	28	1200	1600	1400	2400	29528
12350	3500	350	450	-	1650	1400	216	500	20	1800	1000	750	700	24686
11200	3000	1400	250	-	3000	1800	120	250	100	1800	2000	2000	1800	28720
12000	4000	750	350	-	2700	1250	288	350	100	1800	1200	900	1700	27388
12000	3333	933	400	-	2000	1066	350	400	27	1200	933	666	1066	24374
18000	5000	1200	850	-	3500	2500	450	600	50	1500	2500	1050	1200	38400
10800	3400	500	250	-	2000	1400	240	600	24	1500	1100	1500	2800	26114
11800	2800	1600	300	-	3400	2000	120	350	100	1800	2200	1800	1600	29870

**Tal. TASGAON, Dist. SANGLI**  
**T U R M E R I C**  
**Cost of Cultivation Per Acre**

[ 1994 - 1995 ]

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrl Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
13000	3700	400	500	-	1800	1600	264	850	20	1500	1500	1500	1000	27634
18240	3600	600	260	-	1360	1400	288	640	30	1800	1120	840	-	30178
13750	3200	500	350	-	1000	1400	330	550	22	1800	1000	700	400	25002
12250	3600	1800	250	-	3400	2000	120	300	100	2000	2000	2000	1500	31320
18900	8000	4000	900	-	2200	1800	240	1400	28	1800	3080	900	1300	44548
8400	3200	1400	-	-	2800	2400	330	900	24	1500	2000	1500	1400	25854
12800	3600	1800	500	-	4000	2800	240	400	80	2600	2200	2400	1600	35020
15200	5200	2400	320	-	4400	2000	240	800	100	2400	2800	2400	2800	41060
15000	6000	1600	-	-	4400	2800	300	270	170	1400	1300	1920	1200	36360
13000	3700	1700	300	-	3800	1800	140	300	100	1900	2000	2000	1800	32540
12600	3000	1400	300	-	3200	2400	150	300	100	2000	2200	2400	1500	31550
15200	4400	1700	400	-	4000	1800	280	800	100	2400	2200	2400	2400	38080
15200	7800	1400	1600	-	4000	2600	264	1000	40	1700	3000	1800	2000	42404
15200	7200	1300	1300	-	4400	1900	288	900	50	1500	2400	1500	2080	40018
12000	3300	1700	250	-	3400	2100	120	300	100	2000	2100	1800	1500	30670
12600	3800	1500	300	-	3600	1700	160	500	100	1700	2000	2000	1800	31760
13200	4400	1800	280	-	3600	1800	200	600	100	2000	2000	2080	2000	34060
12000	3600	1800	740	-	3400	2600	-	900	28	1200	1800	1400	2600	32068
13000	3750	375	500	-	1800	1600	252	525	20	1800	1100	750	800	26272
11600	3200	1500	300	-	3200	1900	140	300	100	1900	2200	2200	1900	30440
12500	4100	775	375	-	3000	1300	345	350	100	1800	1300	900	1800	28645
13333	3600	1000	500	-	2133	1133	320	433	27	1200	1000	666	1133	26478
14400	4000	1040	680	-	2800	2000	336	520	40	1200	2000	840	960	30816
11200	3600	560	300	-	2240	1600	288	800	24	1800	1200	1800	6400	31812
12000	2000	1600	350	-	3600	2000	120	400	100	1900	2200	2000	1800	30070

**Tal. TASGAON, Dist. SANGLI**  
**TURMERIC**  
**Cost of Cultivation Per Acre**

[ 1995 - 1996 ]

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrigation Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
13200	4000	400	550	-	1800	1800	300	900	20	800	1600	800	1000	27170
17500	3800	650	300	-	1400	1200	360	600	25	1800	1000	900	-	29535
14000	3400	650	375	-	1400	1400	414	575	22	2160	1100	800	450	26746
12000	3800	1800	275	-	3400	2000	120	350	100	2000	2100	2000	1600	31545
19600	8800	4800	1000	-	2400	2000	420	1600	28	1800	3200	900	1400	47948
9000	3600	1600	-	-	3200	2800	360	1000	24	1800	2200	1800	1600	28984
13200	3800	1800	600	-	4400	3000	240	400	80	2600	2200	2600	1800	36720
14400	5600	2400	320	-	4400	1800	240	800	80	2400	2800	2400	2400	39840
12320	5600	1360	-	-	4000	2400	224	232	144	1440	1120	1920	1040	31800
13600	3800	1800	300	-	4000	1900	160	300	100	2000	2000	2200	1800	33960
13000	3200	1500	400	-	3400	2600	160	300	100	2200	2400	2600	1600	33460
15200	4400	1700	400	-	4000	1800	280	800	100	2400	2200	2400	2600	38280
15600	8000	1600	1800	-	5000	3000	300	1200	40	2000	3200	2000	2400	46140
15600	7600	1400	1400	-	4800	2000	330	1000	50	1800	2800	1800	2200	42780
12300	3400	1800	300	-	3600	2100	120	325	100	2000	2100	1800	1500	31445
13000	4000	1600	400	-	3800	1800	180	500	100	1700	2000	2200	1900	33180
14000	4800	1800	320	-	3800	1800	240	600	100	2200	2000	2200	2200	36060
12600	3800	2000	760	-	3600	2800	-	1000	28	1440	2000	1800	2800	34428
13200	4000	400	550	-	1000	1800	285	550	20	1800	1200	900	900	26605
12000	3400	1500	300	-	3300	1900	160	300	100	1900	2400	2800	2000	31860
12500	4200	800	400	-	3200	1400	300	400	100	2000	1400	1000	1800	29600
14000	4000	1200	600	-	2400	1200	400	400	24	1500	1000	720	1200	28644
20000	6000	14000	900	-	4000	3000	480	700	50	1800	3000	1260	1400	56590
12000	3800	600	340	-	2500	1800	330	700	24	1800	1000	1800	3600	30294
12250	2900	1800	350	-	3800	2100	130	400	100	2000	2400	2000	1850	32080

**Tal. TASGAON, Dist. SANGLI**  
**T U R M E R I C**  
**Cost of Cultivation Per Acre**

[ 1986 - 1997 ]

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irr Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
14000	4000	400	600	-	2000	1333	300	800	20	800	1800	800	1000	27653
18660	4000	666	333	-	1600	1333	400	666	28	2000	1066	800	-	31550
14000	3600	700	400	-	1500	1500	450	800	22	2180	1200	800	500	27432
12250	4000	1800	275	-	3600	2000	120	400	100	2000	2200	2100	1800	32645
21000	10000	4000	2000	-	2400	2000	360	1400	30	1800	3000	900	1600	50490
9600	4000	2000	-	-	3400	2800	360	1000	30	1800	2400	900	1700	29990
14000	3800	1800	600	-	4400	3000	280	800	80	2800	2200	2800	2800	38760
16000	6000	2800	400	-	4800	2000	320	1200	80	2800	3200	2800	3600	46000
13440	6400	1440	-	-	4800	2400	192	240	160	1440	1200	1920	1120	34752
14400	4000	1800	300	-	4000	2000	180	400	100	2000	2200	2400	1900	35680
13600	3600	1600	400	-	3500	2800	180	400	100	2400	1400	3000	1800	34780
16000	4800	1800	400	-	4000	2000	320	800	100	2400	2200	2600	2800	40020
16000	8400	1800	2000	-	5400	3400	300	1500	40	2400	3600	2400	2800	50040
16000	8000	1600	1600	-	5000	2000	300	1000	50	1800	3000	1800	2400	44550
12500	3500	1900	300	-	3700	2100	130	350	100	2000	2200	1800	1500	32080
14000	4200	1700	400	-	2000	1900	200	500	100	1800	2400	2400	2000	33600
15200	5600	1800	400	-	3800	2000	280	600	100	2200	2200	2200	2200	38580
13200	4000	2000	840	-	4000	3000	-	1200	28	1440	2000	1600	3000	36308
14000	4000	450	600	-	2000	2000	300	800	20	1800	1300	900	1000	28970
13000	3600	1600	300	-	3400	2000	170	300	100	2000	2800	3200	2400	34870
13000	4200	800	450	-	3400	1500	330	400	100	2000	1500	1000	2000	30680
15200	4400	1300	700	-	2600	1300	500	500	24	1600	1200	720	1300	31344
16000	4800	1200	800	-	3200	2400	324	800	40	1440	2400	1008	1120	35332
13200	4000	650	350	-	3000	2000	375	700	25	1800	1200	1800	2000	31100
13000	3000	1800	400	-	3800	2200	150	450	100	2100	2500	2000	1900	33400

# Appendix A.6.5 (a)

Tal. JAT, Dist. SANGLI, Crop. TURMARIC

Per acre total output, self consumption, marketed surplus, gross income, cost of cultivation and net income

No. of Farmers	1991 - 1992							1992 - 1993						
	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)
1	24.00	2.00	22.00	2100	46200	27968	18232	20.00	2.00	18.00	2300	41400	30208	11192
2	23.50	1.00	22.50	1800	40500	30800	9700	22.50	1.00	21.50	1900	40550	33060	7790
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	20.00	2.00	18.00	2500	45000	26930	18070	22.00	2.00	20.00	2500	50000	29820	20180
5	25.00	1.00	24.00	1800	43200	31580	11620	27.00	1.00	26.00	1900	49400	34350	15050
6	24.50	0.50	24.00	1800	43200	31000	12200	27.00	1.00	26.00	1900	49400	31220	18180
7	24.00	2.00	22.00	2000	44000	27130	16870	24.00	2.00	22.00	2200	48400	30948	17452
8	23.50	0.50	23.00	1800	41400	28950	12450	21.50	0.50	21.00	2100	39900	30160	9740
9	27.00	1.00	26.00	1800	46800	33880	12920	25.00	1.00	24.00	1900	45600	36700	8900
10	23.50	0.50	23.00	1800	41400	29550	11850	24.50	0.50	24.00	1900	45600	32225	13375
11	20.00	2.00	18.00	2800	50400	22210	28190	17.60	2.00	15.60	2500	39000	20360	18640
12	18.67	4.00	14.67	2300	33733	24786	8947	21.33	4.00	17.33	2400	41600	27186	14414
13	26.50	0.50	26.00	1800	46800	31275	15525	23.50	0.50	23.00	2000	46000	33675	12325
14	20.00	2.00	18.00	2200	39600	25188	14412	18.00	2.00	16.00	2500	40000	27128	12872
15	27.00	1.00	26.00	1800	46800	31720	15080	23.50	0.50	23.00	1900	43700	30800	12900
16	23.00	1.50	21.50	2000	43000	29240	13760	20.00	1.50	18.50	2200	40700	31190	8510
17	24.00	1.00	23.00	2200	50600	28796	21802	22.00	1.00	21.00	2500	52500	30120	22380
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	26.50	0.50	26.00	1800	46800	23300	23500	24.50	0.50	24.00	1900	45600	24750	20850
20	25.00	1.00	24.00	1800	43200	29900	13300	26.00	1.00	25.00	1900	47500	31510	15990
21	25.00	1.00	24.00	1800	43200	29560	13640	27.00	1.00	26.00	1900	49400	33980	15420
22	23.00	1.00	22.00	1800	39600	28690	10910	24.00	1.00	23.00	1900	43700	29925	13775
23	25.00	1.00	24.00	1800	43200	30100	13100	23.00	1.00	22.00	1900	41800	33410	8390
24	16.00	1.00	15.00	3000	45000	27690	17310	20.00	2.00	18.00	3000	54000	31090	22910
25	20.00	1.50	18.50	2200	40700	20252	20448	22.00	1.50	20.50	2400	49200	22472	26728

Tal. JAT, Dist. SANGLI, Crop. TURMARIC

Per acre total output, self consumption, marketed surplus, gross income, cost of cultivation and net income

No. of Farmers	1993 - 1994							1994 - 1995						
	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)
1	20.00	2.00	18.00	2400	43200	32668	10532	28.00	2.00	26.00	2500	65000	34868	30132
2	25.00	1.00	24.00	2000	48000	32120	15880	27.00	1.00	26.00	2100	54600	34130	20470
3	-	-	-	-	-	-	-	24.00	2.00	22.00	2000	44000	24200	19800
4	20.00	2.00	18.00	2700	48600	29098	19504	24.00	2.50	21.50	2500	53750	32810	20940
5	22.00	1.00	21.00	2000	42000	35700	6300	23.00	1.00	22.00	1900	41800	37720	4080
6	29.00	1.00	28.00	1900	53200	33940	19260	25.00	1.00	24.00	2100	50400	35160	15240
7	26.00	2.00	24.00	2400	57600	31268	26334	28.00	2.00	26.00	2500	65000	35404	24596
8	25.00	1.00	24.00	1900	45600	30920	14680	23.00	1.00	22.00	2100	46200	33140	13060
9	30	2	28	2100	58800	35540	23260	26	2	24	2200	52800	38060	14740
10	32.50	5.00	21.00	2100	44100	34150	9950	27.00	1.00	26.00	2300	59800	33880	25920
11	20.00	2.00	18.00	2700	48600	25350	23250	19.20	2.20	17.00	2700	45900	22517	23383
12	20.00	4.00	16.00	2500	40000	28948	11052	22.00	4.00	18.00	2100	37800	31488	6312
13	27.00	1.00	26.00	2100	54600	33580	21020	25.00	1.00	24.00	2200	52800	35950	16850
14	24.00	2.00	22.00	2200	48400	29528	18872	20.00	2.00	18.00	2400	43200	32068	11132
15	29.00	1.00	28.00	2000	56000	33890	22110	25.00	1.00	24.00	2100	50400	34710	15690
16	22.67	1.33	21.34	2500	53350	31892	21458	22.00	2.00	22.00	2400	48000	30150	17850
17	20.00	1.00	19.00	2600	49400	30690	18710	24.00	1.00	23.00	2400	55200	32888	22512
18	20.00	1.00	19.00	2700	51300	32980	18320	20.00	1.50	18.50	3000	55500	35873	19823
19	23.50	0.50	23.00	1900	43700	25968	17734	22.5	0.5	22	1900	41800	27025	14775
20	23.00	1.00	22.00	1900	41800	33020	8780	24.00	1.00	23.00	2000	46000	34480	11520
21	30.00	2.00	28.00	2100	58800	34700	24100	34.00	2.00	32.00	2300	73600	37840	35760
22	27.00	1.00	26.00	2000	52000	32650	19350	22.00	1.00	21.00	2100	44100	31160	12940
23	21.00	1.00	20.00	2000	40000	36630	3370	27.00	1.00	26.00	2100	54600	35280	19320
24	20.00	2.00	18.00	3200	57600	33430	24170	20.00	2.00	18.00	3000	54000	36530	17470
25	24.00	2.00	22.00	2500	55000	25100	29900	19.00	1.00	17.50	2800	49000	25202	23798

**Tal. JAT, Dist. SANGLI, Crop. TURMARIC**

**Per acre total output, self consumption, marketed surplus, gross income, cost of cultivation and net income**

No. of Farmers	1995 - 1996							1996 - 1997						
	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)
1	20.00	2.00	18.00	2700	48600	37688	10912	24.00	2.00	22.00	2400	52800	42128	10672
2	23.00	1.00	22.00	2400	52800	36300	16500	29.00	1.00	28.00	2300	64400	37600	26800
3	24.00	2.00	22.00	2200	48400	29652	18748	24.00	2.00	22.00	2500	55000	37080	17920
4	24.00	2.50	21.50	3000	64500	35810	28690	21.00	1.50	19.50	2800	54800	33458	21144
5	26.00	1.00	25.00	2100	52500	38720	13780	24.00	1.00	23.00	2100	48300	40720	7580
6	23.00	1.00	22.00	2300	50600	36980	13620	23.00	1.00	22.00	2500	55000	38280	16720
7	24.00	2.00	22.00	2400	52800	36310	16490	24.00	2.00	22.00	2500	55000	40710	14290
8	26.00	2.00	24.00	2000	48000	33500	14500	30.00	2.00	28.00	2300	64400	36080	28320
9	23	1	22	2200	48400	39070	9330	28.00	2.00	24	2400	57600	39980	17620
10	25.00	1.00	24.00	2500	60000	35980	24020	23.00	1.00	22.00	2600	57200	38100	19100
11	18.66	2.00	16.66	3100	51667	25248	26420	20.00	2.00	18.00	3200	57600	29690	27910
12	24.00	4.00	20.00	2200	44000	33728	10272	21.33	4.00	17.33	2700	46800	34268	12534
13	23.00	1.00	22.00	2300	50600	38820	11780	22.00	1.00	21.00	2400	50400	40700	9700
14	20.00	2.00	18.00	2500	45000	34428	10572	22.00	2.00	20.00	2800	56000	36308	19692
15	27.00	1.00	26.00	2200	57200	35480	21720	25.00	1.00	24.00	2400	57600	37680	19920
16	23.00	1.50	25.50	2300	49450	35665	13785	20.00	1.33	18.67	2500	46675	35588	11089
17	22.00	1.00	21.00	2700	58700	34080	22620	20.00	1.00	19.00	3000	57000	38628	18372
18	24.00	1.00	23.00	2800	64400	41600	22800	20.00	1.00	19.00	3200	60800	45800	15000
19	23.50	0.50	23.00	2300	52900	28060	24840	24.5	0.50	24.00	2400	57600	29380	28220
20	22.00	1.00	21.00	2200	46200	35690	10510	21.00	1.00	20.00	2400	48000	36550	11460
21	26.00	2.00	24.00	2600	62400	40940	21460	30.00	2.00	28.00	2900	81200	45180	36020
22	24.00	1.00	23.00	2200	50600	32295	18305	25.00	1.00	24.00	2400	57600	35330	22270
23	25.00	1.00	24.00	2400	57600	37710	19890	29.00	1.00	28.00	2600	72800	42220	30580
24	22.00	2.00	20.00	3000	60000	40870	19130	26.00	2.00	24.00	3000	72000	42930	29070
25	20.00	1.50	18.50	2500	46250	27005	19245	25.00	1.50	23.50	2500	58750	29722	29028

### Appendix A.6.5 (b)

Tal. TASGAON, Dist. SANGLI, Crop. TURMARIC

Per acre total output, self consumption, marketed surplus, gross income, cost of cultivation and net income

No. of Farmers	1991 - 1992							1992 - 1993						
	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)
1	20.00	2.00	18.00	2200	39600	22800	16800	20.00	2.00	18.00	2400	43200	24160	19040
2	25	2	23	2000	46000	21865	24135	23	2	21	2200	46200	23120	23080
3	24.00	2.00	22.00	2000	44000	21952	22048	25.00	2.00	23.00	2200	50600	22512	28088
4	20.5	0.5	20	1800	36000	28700	9300	21.5	5	21	1900	39900	28210	11690
5	24.00	2.00	22.00	2200	48400	35390	13010	22.00	2.00	20.00	2400	48000	38270	9730
6	18.00	2.00	16.00	2500	40000	20100	19900	20.00	2.00	18.00	2700	48600	21864	26736
7	27.00	1.00	26.00	1800	46800	31450	15350	25.00	1.00	24.00	1900	45600	33300	12300
8	26.00	2.00	24.00	1800	43200	33980	9220	26.00	2.00	24.00	1900	45600	35820	97800
9	16	2	14	2500	35000	23792	11208	18	2	16	2500	40000	25122	14878
10	23.00	1.00	23.00	1800	39600	27550	12050	24.00	1.00	23.00	1900	43700	28950	14750
11	24.00	1.00	23.00	1800	41400	27400	14000	22.00	1.00	21.00	1900	39900	28600	11300
12	26.00	2.00	24.00	1800	43200	32180	11020	30.00	2.00	28.00	1900	53200	34160	19040
13	22.00	2.00	20.00	2500	50000	33460	16540	24.00	2.00	22.00	2200	48400	36880	11520
14	20	2	18	2500	45000	34450	10550	24	2	22	2500	55000	34890	20110
15	24.00	1.00	23.00	1800	41400	27350	14050	23.00	1.00	22.00	1900	41800	28660	13140
16	23.00	1.00	22.00	1800	39600	28730	12870	25.00	1.00	24.00	1900	45600	28440	17160
17	21.00	1.00	20.00	1900	38000	29620	8380	23.00	1.00	22.00	1900	41800	31730	10070
18	20.00	2.00	18.00	2200	39600	25188	14412	18.00	2.00	16.00	2500	40000	27128	12872
19	22.00	1.00	21.00	2000	42000	20580	21420	20	1	19	2200	41800	22735	19065
20	22.00	1.00	21.00	1800	37800	27200	10600	23.00	1.00	22.00	2000	44000	29410	14590
21	22.00	2.00	20.00	2000	40000	24070	15930	20.00	1.50	18.50	2400	44400	25900	18500
22	22.00	1.50	20.50	2200	45100	22645	22455	20.00	1.00	19.00	2400	45600	24075	21525
23	17.00	1.00	16.00	2500	40000	21360	18640	17.00	1.00	16.00	2500	40000	22160	17840
24	22.00	1.00	21.00	2000	42000	20545	21455	24.00	1.00	23.00	2200	50600	22440	28160
25	23.00	1.00	22.00	1800	39600	27500	12100	24.00	1.00	23.00	2000	46000	28710	17290

**Tal. TASGAON, Dist. SANGLI, Crop. TURMARIC**

**Per acre total output, self consumption, marketed surplus, gross income, cost of cultivation and net income**

No. of Farmers	1993 - 1994							1994 - 1995						
	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)
1	22.00	2.00	20.00	2600	5200	26194	25808	22.00	2.00	20.00	2500	50000	27634	22368
2	22.00	2.00	20	2600	5200	29607	22383	24	2	22	2800	61600	30178	31422
3	23.00	2.00	21.00	2500	52500	24867	27633	22.00	2.00	20.00	2200	44000	25002	18998
4	22.5	0.5	22	2000	44000	29660	14340	20.5	0.5	20	2100	42000	31320	10880
5	24.00	2.00	22.00	2500	55000	41218	13784	20.00	2.00	18.00	2700	48600	44468	44132
6	16.00	2.00	14.00	3000	42000	24118	17884	22.00	2.00	20.00	2200	44000	25854	18148
7	23.00	1.00	22.00	2000	44000	35320	8680	26.00	2.00	24.00	2100	50400	35020	15380
8	26.00	2.00	24.00	2000	48000	38460	9540	26.00	2.00	24.00	2200	52800	41060	11740
9	20.00	2.00	18	2500	45000	27045	17955	16	2	14	3000	42000	36360	5640
10	25.00	1.00	24.00	2000	48000	30770	17230	27.00	1.00	26.00	2100	54600	32540	22060
11	21.00	1.00	20.00	2000	40000	29200	10800	25.00	1.00	24.00	2100	50400	31550	18850
12	30.00	2.00	28.00	2000	56000	36400	19600	26.00	2.00	24.00	2200	52800	38080	14720
13	20.00	2.00	18.00	2700	48600	39880	8720	22.00	2.00	20.00	2600	52000	42404	9598
14	22.00	2.00	20	2700	54000	37714	16286	24	2	22	2600	57200	39938	17262
15	22.00	1.00	21.00	1900	39900	29760	10140	21.00	1.00	20.00	2100	42000	30670	11330
16	21.00	1.00	20.00	2000	40000	30310	9690	19.00	1.00	18.00	2300	41400	31760	9840
17	23.00	1.00	22.00	2000	44000	33400	10600	26.00	2.00	24.00	2100	50400	33980	16420
18	24.00	2.00	22.00	2200	48400	29528	18872	20.00	2.00	18.00	2400	43200	32088	11132
19	18.00	1.00	17.00	2500	42500	24686	17814	21	1	20	2100	42000	26272	15728
20	25.00	1.00	24.00	2100	50400	28720	21680	27.00	1.00	26.00	2200	57200	30440	26760
21	24.00	2.00	22.00	2400	52800	27388	25412	23.00	2.00	21.00	2500	52500	29645	22855
22	23.00	1.00	22.00	2500	55000	24376	30624	21.00	1.00	20.00	2700	54000	26480	27520
23	30.00	2.00	28.00	2200	61600	38400	23200	22.00	2.00	20.00	2800	56000	30816	25184
24	20.00	1.00	19.00	2500	47500	26114	21386	24.00	1.00	13.00	2400	55200	31812	23388
25	26.00	1.00	25.00	2100	52500	29870	22630	22.00	1.00	21.00	2300	48300	30470	17830

**Tal. TASGAON, Dist. SANGLI, Crop. TURMARIC**

**Per acre total output, self consumption, marketed surplus, gross income, cost of cultivation and net income**

No. of Farmers	1995 - 1996							1996 - 1997						
	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)
1	20.00	2.00	18.00	2700	48600	27170	21430	20.00	2.00	18.00	2800	50400	27653	22747
2	22.00	2.00	20	3000	60000	29535	30465	24	2	22	2900	63800	31558	32242
3	23.00	2.00	21.00	2500	52500	28748	25754	21.00	1.50	19.50	2700	52650	27432	25218
4	23.5	0.5	23	2300	52900	31545	21355	22.5	0.5	22	2800	57200	32445	24755
5	28.00	2.00	26.00	2400	62400	47948	14452	24.00	2.00	22.00	2800	61600	49490	12110
6	24.00	2.00	22.00	2400	52800	28984	23816	20.00	2.00	18.00	2800	50400	30890	19510
7	30.00	2.00	28.00	2200	61600	36720	24880	22.00	2.00	20.00	2600	52000	37980	14040
8	28.00	4.00	24.00	2400	57600	39840	17760	32.00	4.00	28.00	2600	72800	46000	26800
9	19.00	2.00	17	2500	42500	31800	10700	21	2	19	3000	57000	34752	22248
10	25.00	1.00	24.00	2300	55200	33960	21240	23.00	1.00	22.00	2600	57200	35680	21520
11	23.00	1.00	22.00	2300	50600	33460	17140	21.00	1.00	20.00	2800	52000	36180	15820
12	22.00	2.00	20.00	2300	46000	38280	7720	26.00	2.00	24.00	2800	67200	40020	27180
13	24.00	2.00	22.00	2800	61600	48140	15460	24.00	2.00	22.00	3000	66000	50040	15960
14	22.00	2.00	20	2800	56000	42780	13220	20	2	18	3000	54000	42950	11050
15	20.00	1.00	19.00	2400	45600	31445	14155	23.00	1.00	22.00	2300	50600	32080	18520
16	21.00	1.00	20.00	2400	48000	33180	14820	23.00	1.00	22.00	2600	57200	35600	21600
17	30.00	2.00	28.00	2300	64400	36060	28340	26.00	2.00	24.00	2600	62400	38580	23820
18	20.00	2.00	18.00	2500	45000	34428	10572	22.00	2.00	20.00	2800	56000	36308	19692
19	19.00	1.00	18.00	2400	43200	27505	15695	20	1	19	2600	49400	28970	20430
20	25.00	1.00	24.00	2400	57600	31860	25740	23.00	1.00	22.00	2600	57200	34870	22330
21	20.00	1.50	18.50	2800	51800	29600	22200	22.00	2.00	20.00	2800	56000	30680	25320
22	20.00	1.00	19.00	2800	53200	28644	24556	22.00	1.00	21.00	3150	66150	31344	34806
23	32.00	2.00	30.00	2500	75000	43990	31010	22.00	2.00	20.00	3000	60000	35332	24668
24	22.00	1.00	21.00	2600	54600	30294	24306	22.00	1.00	21.00	2500	52500	31100	21400
25	21.00	1.00	20.00	2600	52000	32080	19920	19.00	1.00	18.00	2800	50400	33400	17000

### Appendix A.6.6 (a)

#### Yield from Sample Farmers

(Taluka : Jat)

(Crop : Turmeic, Yield : Kg / Hectare)

Jat Taluka	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97
1	1330	1110	1110	1550	1110	<b>1330<sup>1</sup></b>
2	1305	1250	1400	<b>1500<sup>1</sup></b>	1280	1610
3	-	-	-	<b>1330<sup>1</sup></b>	1330	1330
4	1110	1220	1110	<b>1330<sup>2</sup></b>	1330	1185
5	1390	1500	1220	1280	1450	<b>1340<sup>2</sup></b>
6	1360	1500	1610	1400	1280	<b>1280<sup>2</sup></b>
7	1330	1330	1450	<b>1555<sup>1</sup></b>	1330	1330
8	1300	1200	1400	<b>1300<sup>1</sup></b>	1450	1670
9	1500	1400	1670	<b>1440<sup>1</sup></b>	1300	1440
10	1300	1360	1200	<b>1500<sup>1</sup></b>	1400	1300
11	1110	980	1110	<b>1070<sup>1</sup></b>	1040	1110
12	1040	1200	1110	1220	1330	<b>1185<sup>1</sup></b>
13	1475	1305	1500	<b>1400<sup>1</sup></b>	1280	1280
14	1110	1000	1340	<b>1110<sup>1</sup></b>	1110	1000
15	1500	1305	1610	<b>1400<sup>1</sup></b>	1500	1400
16	1280	1110	1260	1220	1280	<b>1110<sup>2</sup></b>
17	1330	1220	1110	1330	1220	<b>1110<sup>1</sup></b>
18	-	-	1110	1110	1330	<b>1110<sup>1</sup></b>
19	1475	1360	1300	<b>1250<sup>1</sup></b>	1300	1360
20	1400	1440	1280	<b>1340<sup>2</sup></b>	1220	1170
21	1400	1500	1670	<b>1900<sup>1</sup></b>	1450	1670
22	1280	1330	1500	<b>1220<sup>1</sup></b>	1330	1400
23	1400	1280	1170	1500	1400	<b>1600<sup>1</sup></b>
24	900	1110	1110	1110	1220	<b>1450<sup>1</sup></b>
25	1110	1220	1330	1040	1110	<b>1400<sup>2</sup></b>

Note: Figures in **Bold** refers to the year availed of subsidy, calculated from field survey

Participated in 1 - Establishment of Demonstration Plot

Participated in 2 - Area Expansion Programme

**Appendix A.6.6 (b)**  
**Yield of Turmeric from Sample Farmers**  
**( Central Sector Scheme)**

(Taluka : Tasgaon)

Tasgaon Taluka	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97
1	1110	1110	1220	1220 <sup>2</sup>	1110	1110
2	1400	1280	1245	1330 <sup>2</sup>	1220	1330
3	1330	1400	1280	1220 <sup>2</sup>	1280	1170
4	1140	1200	1250	1140 <sup>1</sup>	1305	1250
5	1330	1220	1330	1110	1550	1330 <sup>1</sup>
6	1000	1110	890	1220 <sup>2</sup>	1330	1110
7	1500	1390	1280	1450 <sup>1</sup>	1670	1220
8	1450	1450	1220	1440 <sup>1</sup>	1555	2000
9	890	980	1110	890	1070	1160 <sup>1</sup>
10	1280	1335	1400	1500 <sup>2</sup>	1400	1300
11	1340	1220	1170	1400 <sup>1</sup>	1280	1170
12	1450	1670	1670	1450	1220	1450 <sup>2</sup>
13	1220	1330	1110	1330 <sup>1</sup>	1330	1330
14	1110	1330	1220	1330 <sup>2</sup>	1220	1110
15	1340	1280	1220	1170 <sup>1</sup>	1110	1280
16	1280	1400	1170	1055 <sup>1</sup>	1170	1280
17	1170	1280	1280	1450 <sup>1</sup>	1670	1450
18	1110	1000	1340	1110 <sup>1</sup>	1110	1220
19	1220	1110	1000	1170	1055	1110 <sup>1</sup>
20	1220	1280	1400	1500 <sup>1</sup>	1400	1280
21	1220	1110	1340	1280 <sup>1</sup>	1110	1220
22	1220	1110	1300	1185 <sup>1</sup>	1110	1220
23	1110	1110	1330	1250 <sup>2</sup>	1420	1200
24	1220	1330	1110	1330 <sup>1</sup>	1220	1220
25	1280	1340	1440	1220 <sup>1</sup>	1170	1055

Participated in 1 - Establishment of Demonstration Plot

Participated in 2 - Area Expansion Programme

## **CHAPTER VII**

### **Impact of Central Sector Scheme On Production of Ginger (Based On Field Survey)**

Ginger is a tropical plant and its origin is presumed to be in the southeast region of Asia, probably India or China. The crop does well in warm and humid climate, and medium deep well drained fertile soils are most suited for ginger crop. The crop cannot stand water stagnation. Land preparation is an important aspect as ginger grows below the soil. The planting time is 2<sup>nd</sup> week of the May to 1<sup>st</sup> week of June.

Ginger is propagated exclusively by vegetative means because of lack of seed set. The length and weight of rhizomers used, vary from place to place and variety to variety. Seed rhizome pieces should weigh 20-25 gm. In general, the seed rate required varies from 1000 Kg/ha to 1400 Kg/hectare depending upon the variety and soil fertility. Seed treatment with fungicides are advisable to prevent seed – borne disease causing organisms. The seeds germinate after 15 to 20 days of sowing. Irrigation should be given at 6 to 8 days interval depending upon rainfall. Farm yard manure and fertilizers which increase yield are worked out depending upon soil type variety and climate.

The crop is ready for harvest in 7 months; however, for dry ginger it takes about 8.5 to 9 months for harvesting.

In view of the importance of this crop for domestic consumption as well as for exports, its production was encouraged by the Government along with other spice crops. As already noted, the Central Sector Scheme on spice Development was implemented during the Eighth Plan. Under this scheme various programmes were introduced with a view to increase production.

In this chapter we intend to study the impact of the scheme on production of ginger with the help of primary data.

As already explained in chapter III, Satara district has been selected for our survey on ginger. The two talukas selected were Satara taluka and Koregaon which together constituted 60 to 70 per cent of the area under ginger in Satara taluka. A questionnaire was addressed to ginger cultivators who also participated in the Central Sector Scheme. The questionnaires were addressed to 50 beneficiaries (25 beneficiaries

in Koregaon and 25 in Satara taluka). The advantage taken by the ginger cultivators of the subsidies available under the scheme and the impact on yield are observed.

### **7.1 Cropping Pattern of Sample Farmers:**

The cropping pattern of the sample beneficiaries can be observed from Appendix A.7.1. A look at the cropping pattern reveals that cereals and pulses were the main crops among the sample farmers. Cash crop were also cultivated and semi-medium farmers seemed to have a larger area under cash crops.

Most farmers cultivated ginger in an area of 0.10 to 0.20 hectares. In Koregaon taluka however, most of the medium sized farmers cultivated ginger on 0.40 hectares. This was also observed in case of semi-medium farmers in Satara taluka. The other feature relating to ginger cultivation is that farmers seemed to grow only local varieties (i.e. Satari variety)

### **7.2 Socio-Economic Background of Ginger – cultivating Households:**

The socio-economic profile of the ginger – cultivating households who participated in Central Sector Scheme is indicated in Appendix A.7.2. Agriculture was the main occupation of the household while in Koregaon district dairy was a subsidiary occupation for many households. Most of the farmers had some minimum level of school education while most of them had membership of some organization.

The income of the farmers was different for different households depending upon area owned, crops sown, income from subsidiary occupation and number of working members. There were instances when small farmers had higher annual income than medium or semi-medium farmers. This was due to income earned from service or other activities.

### **7.3 Details of Land and Asset Structure :**

It can be observed from Appendix A.7.3 that most of the ginger cultivators were small and semi – medium farmers. Most of them however had a tube well and pumpset. Tractors were owned by very few farmers.

#### **7.4 Cost of Cultivation and Net Income of Sample Beneficiaries :**

Appendix A.7.4 (a) and A.7.4 (b) indicate the cost of cultivation of ginger farmers per acre for the years 1991-92 to 1996-97. The cost of cultivation ranged from Rs 20000 to Rs 45000 per acre across farmers and across years. The cost of seed rhizomers seemed to be the major cost and constituted 35 to 45 per cent of total cost.

Appendix A.7.5(a) and A.7.5(b) show net income of ginger cultivators. The price at which ginger was sold normally varied from Rs 800 to Rs 1200 per quintal. The farmers however found that ginger was a profitable crop and in case of some farmers the net income was around Rs 38000 per acre. The earnings again ranged widely across cultivators and across years. Most often, the net income was in the range of Rs 10000 to Rs 25000 per acre.

As mentioned, farmers when interviewed found that ginger was a profitable crop. However, in case of most of the cultivators the area cultivated under ginger ranged from 0.10 ha to 0.20 ha. Farmers found it difficult to increase area under ginger because of lack of irrigation facilities. Further, they found that ginger was a very risky crop as it was easily susceptible to diseases.

#### **7.5 Participation of Beneficiaries In Central Sector Scheme :**

Before we observe the participation of beneficiaries in different programmes for ginger, it would be worthwhile to observe, the extent to which this scheme is implemented in Satara. This can be observed from Table 7.1

Table 7.1 Central Sector Scheme For Ginger In Satara:

Year	Production of nucleus seeds (tonnes)	Establishment of demonstration plots (nos)	Plant protection programme (hectares)	Distribution of minikits (nos)
1994-95	0	102	80	440
1995-96	0	100	15	500
1996-97	0	50	7	500
Total	0	252	102	1440

Source : Derived from Appendix A.5.2

From Table 7.1, it can be observed that in Satara district, maximum participation was for minikits and during the Eighth Plan Period 1440 cultivators

availed of subsidiaries under this programme. The number of demonstration plots established under the scheme was 252 while 102 hectares were covered by Plant Protection Measures.

After observing the extent to which the Central Sector Scheme was implemented in Satara, we can now group the sample farmers (according to Land Holding Size) according to their participation in the different programmes in the scheme. This is presented in Table 7.2.

**Table 7.2 Participation of Sample Beneficiaries In Central Sector Scheme  
According to Land Holding Size:  
(District : Satara, Taluka : Sarata Vs Koregaon , Crop : Ginger)**

Land holding size	Establishment of demonstration plots	Plant protection programme	Distribution of minikits	Total beneficiaries
Marginal (< 1 hectare)	1	1	4	6
Small (1.01 to 2 ha)	1	1	13	15
Semi-Medium (2.01 to 4 ha)	2	2	15	19
Medium (4.01 to 10 ha)	2	-	8	10
Large (Above 10 ha)	-	-	-	-
Total	6	4	40	50

Source : Yield survey conducted in Satara and Koregaon Taluka

From Table 7.2, it can be observed 80 per cent of the sample beneficiaries availed of minikits, 12 per cent established demonstration plots and 8 per cent participated in plant protection programme. It therefore appears that maximum participation was for minikit scheme. Even if we look at the actual total beneficiaries in Satara and Koregaon talukas we find that the total cultivators who availed of subsidies under this scheme were 782, out of which 620 availed of minikits (80 per cent), 96 cultivators established demonstration plots (12 per cent) while only 66 cultivators ( 8 per cent ) participated in plant protection programme.

#### **7.6 Impact of Central Sector Scheme On Yield of Ginger in case of Sample Farmers:**

The main purpose of implementation of Central Sector Scheme was to increase yield through different strategies such as production of nucleus planting materials of all improved varieties of spices at research institutes, their large scale multiplication at State Horticulture departmental farms, agricultural university farms, area expansion, adoption of plant protection measures against major pests and diseases, transfer of technology through method demonstration, training, etc.

The purpose of our study is therefore to observe whether there was any increase in yield in case of participants of Central Sector Scheme.

Appendix A.7.6 indicates the yield of sample farmers for the period 1991-92 to 1996-97. The year in which the subsidy was availed by the sample farmers has been indicated (*Italic*) along with the programme in which he participated.

The yield rates in Appendix A.7.6 of the sample farmers, indicates that the yield was hardly ever maximum during the year when the farmer participated in the Central Sector Scheme and availed of the subsidy. The point to be noted here however is that the yield for each sample farmer is calculated on the basis of production in the entire area in which he cultivated ginger. For example, under the minikit scheme, the inputs available to the farmers are for 0.01 hectare; but the farmer actually has 0.10 hectares under ginger cultivation. We have therefore calculated yield by considering the production of ginger on 0.10 hectare. To this extent, the exact impact of the Central Sector Scheme on yield is limited.

#### **7.7 Evaluation of Impact of Central Sector Scheme On Ginger and Suggestions:**

In this chapter we have tried to assess the impact of the Central Sector Scheme on production of Ginger by surveying 50 farmers who had availed of subsidies under this scheme. We estimated yield for 6 years (1991-92 to 1996-97) out of which there was only one year in which the cultivator had participated in the Central Sector Scheme. The yield in the year of his participation was most often not the highest yield during the surveyed period. Thus while no major impact was observed in production and therefore yield, during the year of participation in any of the programmes

implemented, certain observations, implications and suggestions come out of our survey. They can be summarized as follows:

1. In Appendix A.7.6 we have indicated the yield of our 50 sample farmers for two talukas, namely Satara and Koregaon which constitute the major area under ginger in Satara. The yield normally ranged from 1800 Kg per hectare to 2300 Kg per hectare across farmers and across the years. These figures which are based on field survey however do not seem to be comparable with the data published by season and crop Reports for Satara district as a whole. In chapter IV (Appendix A.4.6) we observed that the productivity of ginger in Satara district ranged from 900 Kg per hectare to 1200 Kg per hectare. Hence we find that there is a wide divergence in yield when we compare field level data with that from published sources. There may be certain factors which could possibly explain the divergence in yield in Satara district as revealed by primary and secondary sources. Thus the yield in Satara district as quoted in Season Crop Reports represents the average yield of all talukas in Satara district whereas our sample indicates the yields of only 50 ginger cultivators located in Koregaon and Satara taluka (these talukas however account for 60 to 70 per cent of area under ginger in Satara district). Many of these cultivators had other sources of income and were thus in a better position to afford pesticides and insecticides which are costly inputs. They could therefore save the crop from soft rot and other diseases and increase their yield. Secondly, we have already observed that ginger is a very minor crop in Maharashtra and barely constitutes 0.01 per cent of the gross cropped area in Maharashtra. Hence crop cutting experiments are not conducted to estimate the yield of ginger. There could therefore be an element of arbitrariness in Season & Crop Estimates or even in our estimates (in case the cultivator has not furnished exact production estimates)
2. Maximum participation by cultivators was for the minikit scheme which as already noted was to contain 5 Kg seed rhizomes and its requirement of fertilizers and plant protection chemicals for 0.01 hectares. The cost of the kit was limited to Rs 50 and was supplied to farmers at Rs 25 per kit i.e. 50 per cent subsidy.

However on field visit to Satara district, it was observed that beneficiaries received only one bottle of insecticides under the minikit scheme. No seed rhizomes

were distributed. The farmers naturally felt that this subsidy amount was very less and this could hardly have any impact on increasing production.

Further, the list of beneficiaries was obtained from the office of the DSAO in Satara district. Accordingly when some of the cultivators whose name was in the beneficiary list were approached, they claimed not to have received any subsidy under this scheme. This was observed in case of many ginger cultivators. Infact, the names of some cultivators who did not even grow ginger, were in the list. With the above observations, the minikit scheme can hardly be expected to have any impact. The scheme prescribes 5 Kg seed for 0.01 hectare . However, cultivation practices indicated that the minimum seed rhizome rate is 1000 Kg/per hectare which means the minimum seed requirement for 0.01 hectare is 10 Kg. Hence only 5 Kg seed for 0.01 hectare is an insufficient norm. This seed requirement coupled with complement<sup>any</sup> inputs cannot be met in an outlay of Rs 50 (for 0.01 hectare), was common (especially soft rot)<sup>and</sup> farmers incurred huge losses<sup>s</sup>. Otherwise, farmers found Ginger to be a profitable crop.

3. The next programme in terms of participation was that of demonstration cum seed multiplication plot. The main objective of this programme was to popularize improved varieties, agrotechniques and their fast coverage. However, on interview with the farmers, who availed of subsidy under this scheme, it was observed that all of them grew local variety of ginger (i.e Satari variety).

Studies (Ginger – the future scenario vis-à-vis crop improvement – B.S. Panda, S. Edison & D.C. Mohanty, Spice India, July & August, 1993) have shown that unlike cereals, oilseeds and pulses the available high yielding varieties in ginger are very few in number. These high-yielding varieties namely Suprabha, Suruchi and Suravi have been released for cultivation (but are not cultivated in Maharashtra). These varieties have a potential yield of 5000 Kg/ha. However, although these varieties are high yielders, none of them are completely resistant to major diseases such as soft rot / leaf spot and scale insect. Soft rot is a serious disease in many of the ginger growing areas and often more than 50 per cent loss accrue due to soft rot.

Farmers also indicated that they do not have adequate knowledge on agrotechniques involved in ginger cultivation. Post harvest knowledge is also lacking

among ginger cultivators.

Thus the purpose of subsidy for establishing demonstration plot was achieved by farmers as no high yielding varieties were popularised, for establishing a demonstration plot of 0.01 hectare, field survey indicated that this scheme the farmers received 1 bag area, 1 bag neemcake and 100 gms fungicides. No seeds were distributed under this programme, farmers were reluctant to increase area under ginger as they found it to be a risky crop. In case of disease infestation, which was common (especially soft rot), farmers incurred huge losses. Otherwise farmers found ginger to be a profitable crop.

4. Plant protection programme to mainly control soft rot of ginger and other diseases which reduce quantity and quality of yield. As already noted this disease commonly occurs in ginger cultivation. The disease may occur in two stages. If seed rhizomes are infected, the shoots arising from such rhizomes show damping off symptoms in the seedling state. If the infection takes place after germination, usually the fully grown pseudostem withers and dies. The roots arising from the infected rhizome also undergo decay. The disease spreads through diseased rhizomes. If the infected plant debris remains in the field, it forms an important source of infection. The measures suggested for minimizing or controlling the disease include:
  - i) Use of disease free rhizomers for planting.
  - ii) Treating seed rhizomes with Dithane M-45 (0.3%) immediately after harvest and before planing. Soil treatment with streptocycline or bleaching powder is partly effective but not cost effective.
  - iii) Provision of good drainage as poor drainage and water stagnation predisposes the crop to infection.
  - iv) Crop rotation with crops which are not susceptible to bacterial wilt.

However, the measures suggested to make the crop, disease resistant, is location specific and it must be adopted to suit local climate, soil type, farming system and the socio – economic situation.

Under the Central Sector Scheme Rs 1000/- per hectare was given as subsidy to the farmers which was 50 per cent of the cost of plant protection chemicals to the farmers. On interview with the cultivators it was observed that the farmers normally

spent Rs 3500 to Rs 5000 per hectare on pesticides. The subsidy amount was thus insufficient. Discussions with the Directorate of Horticulture indicated that the cost of inputs had been calculated as per their prices in 1991-92. Price of inputs had however escalated over the years and hence the amount available as subsidy was too less to provide incentive to farmers to participate in the scheme.

The overall conclusion relating to ginger crop (dry) from our primary data firstly reveals that yield levels were very high in Satara district as compared to that revealed by secondary data sources. The yield was collected for 6 years (1991-92 to 1996-97) and was not necessarily the highest in the year when the cultivator availed of the subsidy. Finally, the subsidy amount was found to be too small as compared to the actual cost of inputs.

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# Appendix A.7.1

[ 1991 - 1992 ], [Area in Hectare]

Tal. KOREGAON Dist. SATARA  
Cropping Pattern of Sample Farmers

Tal. SATARA Dist. SATARA  
Cropping Pattern of Sample Farmers

No. of Farmer	Crop Group					Spices(Ginger)		Total	No. of Farmer	Crop Group					Spices(Ginger)		Total
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety	(Gross Cropped Area)		Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety	(Gross cropped Area)
1	1.20	-	-	-	-	0.20	Satari	1.40	1	0.20	-	-	-	-	-	-	0.20
2	1.60	0.10	-	-	-	0.10	Satari	1.80	2	0.30	0.15	-	-	-	0.10	Satari	0.55
3	1.20	0.40	-	-	0.10	0.20	Satari	1.90	3	0.20	-	0.20	0.40	-	0.20	Satari	1.00
4	0.70	0.20	-	0.20	-	0.10	Satari	1.20	4	0.60	0.20	-	-	-	-	-	0.80
5	0.90	0.40	-	0.20	-	0.10	Satari	1.60	5	0.80	0.10	0.40	0.30	0.20	-	-	1.80
6	1.20	0.40	-	0.20	-	0.20	Satari	2.00	6	0.20	-	-	0.80	-	0.20	Satari	1.20
7	1.10	0.60	-	0.20	-	0.10	Satari	2.00	7	0.40	0.40	0.40	-	-	-	-	1.20
8	2.20	0.20	-	0.40	-	0.20	Satari	3.00	8	1.00	0.20	0.20	-	-	-	-	1.40
9	1.10	1.10	-	-	-	0.10	Satari	2.30	9	1.20	0.40	-	0.20	-	0.20	Satari	2.00
10	1.20	0.40	-	0.20	-	0.20	Satari	2.00	10	0.80	0.40	-	0.40	-	0.40	Satari	2.00
11	1.20	0.60	-	0.20	-	0.40	Satari	2.40	11	1.20	-	-	0.40	-	0.40	Satari	2.00
12	1.70	0.40	-	0.20	-	0.10	Satari	2.40	12	0.40	-	0.60	1.00	-	-	-	2.00
13	1.60	0.40	-	0.20	-	0.20	Satari	2.40	13	1.80	0.40	-	-	-	0.20	Satari	2.40
14	2.18	2.18	-	-	-	0.20	Satari	4.56	14	0.80	0.20	0.20	0.80	0.10	0.10	Satari	2.20
15	2.00	0.80	-	0.20	-	0.20	Satari	3.20	15	1.60	0.20	1.00	0.40	-	0.20	Satari	3.40
16	1.20	0.60	-	-	-	0.40	Satari	2.20	16	2.00	0.60	-	0.20	-	0.20	Satari	3.00
17	1.05	1.40	-	-	0.05	-	-	2.50	17	1.40	0.40	-	0.80	-	0.40	Satari	3.00
18	2.80	0.80	-	0.20	-	0.20	Satari	4.00	18	2.00	0.40	-	0.40	-	0.40	Satari	3.20
19	2.20	1.20	-	0.40	-	0.20	Satari	4.00	19	1.80	0.40	-	0.40	-	0.40	Satari	3.00
20	1.20	1.60	-	0.60	0.20	0.40	Satari	4.00	20	0.60	0.20	0.40	1.40	-	-	-	2.60
21	1.60	0.40	0.40	2.30	-	0.10	Satari	4.80	21	2.80	0.80	-	0.20	-	0.20	Satari	4.00
22	3.60	1.20	-	0.20	-	0.40	Satari	5.40	22	2.20	0.80	-	0.80	-	0.20	Satari	4.00
23	3.60	1.80	-	0.20	-	0.40	Satari	6.00	23	0.80	0.20	1.40	2.00	-	0.40	Satari	4.80
24	3.60	2.60	0.40	1.20	-	0.40	Satari	8.20	24	2.20	0.40	2.60	4.00	-	-	-	9.20
25	2.80	0.80	0.80	6.60	-	0.20	Satari	11.20	25	1.00	-	4.00	2.00	-	-	-	7.00

[ 1992 - 1993 ], [Area in Hectare]

Tal. KOREGAON Dist. SATARA  
Cropping Pattern of Sample Farmers

Tal. SATARA Dist. SATARA  
Cropping Pattern of Sample Farmers

No. of Farmer	Crop Group					Spices(Ginger)		Total	No. of Farmer	Crop Group					Spices(Ginger)		Total
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety	(Gross Cropped Area)		Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety	(Gross cropped Area)
1	1.20	-	-	-	-	0.20	Satari	1.40	1	0.20	-	-	-	-	-	-	0.20
2	1.60	0.10	-	-	-	0.10	Satari	1.80	2	0.30	0.15	-	-	-	0.10	Satari	0.55
3	1.20	0.40	-	-	0.10	0.20	Satari	1.90	3	0.20	-	0.20	0.40	-	0.20	Satari	1.00
4	0.70	0.20	-	0.20	-	0.10	Satari	1.20	4	0.70	-	-	-	-	0.10	Satari	0.80
5	0.90	0.40	-	0.20	-	0.10	Satari	1.60	5	0.80	0.10	0.40	0.30	0.20	-	-	1.80
6	1.20	0.40	-	0.20	-	0.20	Satari	2.00	6	0.20	-	-	0.80	-	0.20	Satari	1.20
7	1.10	0.60	-	0.20	-	0.10	Satari	2.00	7	0.40	0.40	0.40	-	-	-	-	1.20
8	2.30	0.20	-	0.30	-	0.20	Satari	3.00	8	1.20	0.20	-	-	-	-	-	1.40
9	1.00	1.20	-	-	-	0.10	Satari	2.30	9	1.20	0.40	-	0.20	-	0.20	Satari	2.00
10	1.20	0.40	-	0.20	-	0.20	Satari	2.00	10	0.80	0.40	-	0.40	-	0.40	Satari	2.00
11	1.20	0.60	-	0.20	-	0.40	Satari	2.40	11	1.20	-	-	0.40	-	0.40	Satari	2.00
12	1.70	0.40	-	0.20	-	0.10	Satari	2.40	12	0.60	-	0.60	1.00	-	0.40	Satari	2.60
13	1.60	0.40	-	0.20	-	0.20	Satari	2.40	13	1.80	0.40	-	-	-	0.20	Satari	2.40
14	2.18	2.18	-	-	-	0.20	Satari	4.56	14	0.80	0.20	0.20	0.80	0.10	0.15	Satari	2.25
15	2.00	0.80	-	0.20	-	0.20	Satari	3.20	15	1.40	0.40	1.00	0.40	-	0.20	Satari	3.40
16	1.20	0.60	-	-	-	0.40	Satari	2.20	16	2.00	0.60	-	0.20	-	0.20	Satari	3.00
17	1.05	1.40	-	-	0.05	-	-	2.50	17	1.40	0.40	-	0.80	-	0.40	Satari	3.00
18	2.80	0.80	-	0.20	-	0.20	Satari	4.00	18	2.00	0.40	-	0.40	-	0.40	Satari	3.20
19	2.20	1.20	-	0.40	-	0.20	Satari	4.00	19	1.80	0.40	-	0.40	-	0.40	Satari	3.00
20	1.40	1.20	-	0.60	0.20	0.40	Satari	3.80	20	0.60	0.20	0.40	1.40	-	-	-	2.60
21	1.70	0.40	0.40	2.20	-	0.10	Satari	4.80	21	2.80	0.80	-	0.20	-	0.20	Satari	4.00
22	3.60	1.20	-	0.20	-	0.40	Satari	5.40	22	2.20	0.80	-	0.80	-	0.20	Satari	4.00
23	3.60	1.80	-	0.20	-	0.40	Satari	6.00	23	0.80	0.20	1.40	2.00	-	0.40	Satari	4.80
24	4.00	2.40	0.40	1.20	-	0.40	Satari	8.40	24	2.00	0.40	2.80	4.00	-	-	-	9.20
25	2.80	0.80	0.80	6.60	-	0.20	Satari	11.20	25	0.80	-	3.00	3.00	-	-	-	6.80

[ 1993 - 1994 ], [Area in Hectare]

Tal. KOREGAON Dist. SATARA  
Cropping Pattern of Sample Farmers

No. of Farmer	Crop Group					Spices(Ginger)		Total
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety	(Gross Cropped Area)
1	1.20	-	-	-	-	0.20	Satari	1.40
2	1.60	0.10	-	-	-	0.10	Satari	1.80
3	1.30	0.30	-	-	0.10	0.10	Satari	1.80
4	0.70	0.20	-	0.20	-	0.10	Satari	1.20
5	0.90	0.40	-	0.20	-	0.10	Satari	1.60
6	1.20	0.40	-	0.20	-	0.20	Satari	2.00
7	1.10	0.60	-	0.20	-	0.10	Satari	2.00
8	2.20	0.20	-	0.40	-	0.20	Satari	3.00
9	1.00	1.20	-	-	-	0.10	Satari	2.30
10	1.20	0.40	-	0.20	-	0.20	Satari	2.00
11	1.20	0.60	-	0.20	-	0.40	Satari	2.40
12	1.70	0.40	-	0.20	-	0.10	Satari	2.40
13	1.60	0.40	-	0.20	-	0.20	Satari	2.40
14	2.18	2.18	-	-	-	0.20	Satari	4.56
15	2.00	0.80	-	0.20	-	0.20	Satari	3.20
16	1.20	0.60	-	-	-	0.60	Satari	2.40
17	1.05	1.40	-	-	0.05	-	-	2.50
18	2.80	0.80	-	0.20	-	0.20	Satari	4.00
19	2.20	1.20	-	0.40	-	0.20	Satari	4.00
20	1.20	1.20	-	0.80	0.20	0.40	Satari	3.80
21	1.70	0.40	0.40	2.20	-	0.10	Satari	4.80
22	3.60	1.20	-	0.20	-	0.40	Satari	5.40
23	3.60	1.80	-	0.20	-	0.40	Satari	6.00
24	3.40	2.80	0.40	1.40	-	0.40	Satari	8.40
25	2.80	0.80	0.80	6.60	-	0.20	Satari	11.20

Tal. SATARA Dist. SATARA  
Cropping Pattern of Sample Farmers

No. of Farmer	Crop Group					Spices(Ginger)		Total
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety	(Gross cropped Area)
1	0.20	-	-	-	-	-	-	0.20
2	0.30	0.15	-	-	-	0.10	Satari	0.55
3	0.20	-	0.40	0.40	-	0.20	Satari	1.20
4	0.40	0.20	-	-	-	-	-	0.60
5	0.80	0.10	0.40	0.30	0.20	-	-	1.80
6	0.20	-	-	0.80	-	0.20	Satari	1.20
7	0.40	0.40	0.40	-	-	-	-	1.20
8	1.00	-	0.40	-	-	-	-	-
9	1.20	0.40	-	0.20	-	0.20	Satari	2.00
10	0.80	0.40	-	0.40	-	0.40	Satari	2.00
11	1.00	0.20	-	0.60	-	0.20	Satari	2.00
12	0.80	-	0.80	1.20	-	-	-	2.80
13	1.90	0.40	-	-	-	0.10	Satari	2.40
14	0.80	0.20	0.20	0.80	0.10	0.15	Satari	2.25
15	1.80	-	1.00	0.40	-	0.20	Satari	3.40
16	2.00	0.60	-	0.20	-	0.20	Satari	3.00
17	1.40	0.40	-	0.80	-	0.40	Satari	3.00
18	2.00	0.40	-	0.40	-	0.40	Satari	3.20
19	2.00	0.40	-	0.40	-	0.20	Satari	3.00
20	0.60	0.20	0.40	1.40	-	-	-	2.60
21	2.80	0.80	-	0.20	-	0.20	Satari	4.00
22	2.20	0.80	-	0.80	-	0.20	Satari	4.00
23	1.00	0.20	1.00	2.20	-	0.40	Satari	4.80
24	2.00	0.40	2.80	3.60	-	-	-	8.80
25	1.00	-	2.60	3.00	-	0.40	Satari	7.00

[ 1994 - 1995 ], [Area in Hectare]

Tal. KOREGAON Dist. SATARA  
Cropping Pattern of Sample Farmers

No. of Farmer	Crop Group					Spices(Ginger)		Total
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety	(Gross Cropped Area)
1	1.20	-	-	-	-	0.20	Satari	1.40
2	1.60	0.10	-	-	-	0.10	Satari	1.80
3	1.30	0.30	-	-	0.10	0.10	Satari	1.80
4	0.70	0.20	-	0.20	-	0.10	Satari	1.20
5	0.90	0.40	-	0.20	-	0.10	Satari	1.60
6	1.20	0.40	-	0.20	-	0.20	Satari	2.00
7	1.10	0.60	-	0.20	-	0.10	Satari	2.00
8	2.20	-	-	0.60	-	0.20	Satari	3.00
9	1.10	1.10	-	-	-	0.10	Satari	2.30
10	1.20	0.40	-	0.20	-	0.20	Satari	2.00
11	1.40	0.60	-	0.20	-	0.20	Satari	2.40
12	1.70	0.40	-	0.20	-	0.10	Satari	2.40
13	1.60	0.40	-	0.20	-	0.20	Satari	2.40
14	2.18	2.18	-	-	-	0.20	Satari	4.56
15	2.00	0.80	-	0.20	-	0.20	Satari	3.20
16	1.20	0.60	-	-	-	0.60	Satari	2.40
17	1.05	1.40	-	-	0.05	-	-	2.50
18	2.80	0.80	-	0.20	-	0.20	Satari	4.00
19	2.20	1.20	-	0.40	-	0.20	Satari	4.00
20	1.40	1.60	-	0.80	0.20	0.40	Satari	4.40
21	1.60	0.40	0.40	2.30	-	0.10	Satari	4.80
22	3.60	1.20	-	0.20	-	0.40	Satari	5.40
23	3.40	1.80	-	0.40	-	0.40	Satari	6.00
24	3.80	2.40	0.40	1.40	-	0.40	Satari	8.40
25	2.80	0.80	0.80	6.60	-	0.20	Satari	11.20

Tal. SATARA Dist. SATARA  
Cropping Pattern of Sample Farmers

No. of Farmer	Crop Group					Spices(Ginger)		Total
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety	(Gross cropped Area)
1	0.20	-	-	-	-	-	-	0.20
2	0.30	0.15	-	-	-	0.10	Satari	0.55
3	0.20	-	0.40	0.40	-	0.20	Satari	1.20
4	0.60	0.20	-	-	-	-	-	0.80
5	0.80	0.10	0.40	0.30	0.20	-	-	1.80
6	0.20	-	-	0.88	-	0.20	Satari	1.20
7	0.40	0.40	0.40	-	-	-	-	1.20
8	1.20	0.20	-	-	-	-	-	1.40
9	1.30	0.40	-	0.20	-	0.10	Satari	2.00
10	0.80	0.40	-	0.40	-	0.40	Satari	2.00
11	1.00	0.20	-	0.60	-	0.20	Satari	2.00
12	0.80	-	0.80	1.20	-	-	-	2.80
13	1.90	0.40	-	-	-	0.10	Satari	2.40
14	0.70	0.20	0.20	0.80	0.10	0.10	Satari	2.10
15	1.80	-	1.00	0.40	-	0.20	Satari	3.40
16	2.00	0.60	-	0.20	-	0.20	Satari	3.00
17	1.60	0.40	-	0.80	-	0.20	Satari	3.00
18	2.20	0.40	-	0.40	-	0.20	Satari	3.20
19	2.00	0.40	-	0.40	-	0.20	Satari	3.00
20	0.60	0.20	0.40	1.20	-	0.20	Satari	2.60
21	2.80	0.80	-	0.20	-	0.20	Satari	4.00
22	2.20	0.80	-	0.80	-	0.20	Satari	4.00
23	1.00	0.20	1.00	2.20	-	0.40	Satari	4.80
24	2.20	0.40	2.60	3.60	-	0.10	Satari	8.90
25	0.60	-	2.40	3.40	-	0.60	Satari	7.00

[ 1995 - 1996 ], [Area in Hectare]

Tal. KOREGAON Dist. SATARA  
Cropping Pattern of Sample Farmers

No. of Farmer	Crop Group					Spices(Ginger) Area	Variety	Total (Gross Cropped Area)
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder			
1	1.20	-	-	-	-	0.20	Satari	1.40
2	1.60	0.10	-	-	-	0.10	Satari	1.80
3	1.20	0.40	-	-	0.10	0.20	Satari	1.90
4	0.70	0.20	-	0.20	-	0.10	Satari	1.20
5	0.90	0.40	-	0.20	-	0.10	Satari	1.60
6	1.30	0.40	-	0.20	-	0.10	Satari	2.00
7	1.10	0.60	-	0.20	-	0.10	Satari	2.00
8	2.20	0.20	-	0.40	-	0.20	Satari	3.00
9	1.00	1.20	-	-	-	0.10	Satari	2.30
10	1.20	0.40	-	0.20	-	0.20	Satari	2.00
11	1.40	0.60	-	0.20	-	0.20	Satari	2.40
12	1.70	0.40	-	0.20	-	0.10	Satari	2.40
13	1.70	0.40	-	0.20	-	0.10	Satari	2.40
14	2.18	2.18	-	-	-	0.20	Satari	4.56
15	2.00	0.80	-	0.20	-	0.20	Satari	3.20
16	1.20	0.60	-	-	-	0.60	Satari	2.40
17	1.05	1.40	-	-	0.05	-	-	2.50
18	2.80	0.80	-	0.20	-	0.20	Satari	4.00
19	2.20	1.20	0.1	0.40	-	0.10	Satari	4.00
20	1.40	1.60	-	0.40	0.20	0.40	Satari	4.00
21	1.70	0.40	0.40	2.20	-	0.10	Satari	4.80
22	3.60	1.20	-	0.20	-	0.40	Satari	5.40
23	3.40	1.80	-	0.40	-	0.40	Satari	6.00
24	4.00	2.40	0.40	1.00	-	0.40	Satari	8.20
25	2.80	0.80	0.80	6.60	-	0.20	Satari	11.20

Tal. SATARA Dist. SATARA  
Cropping Pattern of Sample Farmers

No. of Farmer	Crop Group					Spices(Ginger) Area	Variety	Total (Gross cropped Area)
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder			
1	0.20	-	-	-	-	-	-	0.20
2	0.30	0.15	-	-	-	0.10	Satari	0.55
3	0.20	-	0.20	0.60	-	0.20	Satari	1.20
4	0.60	0.20	-	-	-	-	-	0.80
5	0.80	0.10	0.40	0.30	0.20	0.10	Satari	1.90
6	0.20	-	-	0.80	-	0.20	Satari	1.20
7	0.40	0.40	0.40	-	-	-	-	1.20
8	1.20	-	0.20	-	-	-	-	1.40
9	1.30	0.40	-	0.20	-	0.10	Satari	2.00
10	0.60	0.40	-	0.80	-	0.20	Satari	2.00
11	1.00	0.20	-	0.60	-	0.20	Satari	2.00
12	0.80	-	0.80	1.20	-	-	-	2.80
13	1.90	0.40	-	-	-	0.10	Satari	2.40
14	0.60	0.20	0.20	0.60	0.10	0.15	Satari	1.85
15	4.00	-	1.00	0.20	-	0.20	Satari	3.40
16	2.00	0.60	-	0.20	-	0.20	Satari	3.00
17	1.60	0.40	-	0.80	-	0.20	Satari	3.00
18	2.20	0.40	-	0.40	-	0.20	Satari	3.20
19	2.00	0.40	-	0.40	-	0.20	Satari	3.00
20	0.60	0.20	0.40	1.20	-	0.20	Satari	2.60
21	2.80	0.80	-	0.20	-	0.20	Satari	4.00
22	2.20	0.80	-	0.80	-	0.20	Satari	4.00
23	0.60	0.20	1.20	2.20	-	0.40	Satari	4.60
24	2.20	0.40	2.60	4.00	-	-	-	9.20
25	-	-	2.40	4.00	-	0.60	Satari	7.00

[ 1996 - 1997 ], [Area in Hectare]

Tal. KOREGAON Dist. SATARA  
Cropping Pattern of Sample Farmers

Tal. SATARA Dist. SATARA  
Cropping Pattern of Sample Farmers

No. of Farmer	Crop Group					Spices(Ginger)		Total	No. of Farmer	Crop Group					Spices(Ginger)		Total
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety	(Gross Cropped Area)		Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety	(Gross cropped Area)
1	1.20	-	-	-	-	0.20	Satari	1.40	1	-	-	-	-	-	0.10	Satari	0.10
2	1.60	0.10	-	-	-	0.10	Satari	1.80	2	0.30	0.15	-	-	-	0.10	Satari	0.55
3	1.30	0.30	-	-	0.10	0.10	Satari	1.80	3	0.20	-	0.20	0.40	-	0.20	Satari	1.00
4	0.70	0.20	-	0.20	-	0.10	Satari	1.20	4	0.60	0.20	-	-	-	-	-	0.80
5	0.90	0.40	-	0.20	-	0.10	Satari	1.60	5	0.80	0.10	0.40	0.30	0.20	-	-	1.80
6	1.30	0.40	-	-	-	0.10	Satari	1.80	6	0.20	-	-	0.80	-	0.20	Satari	1.20
7	1.10	0.60	-	0.20	-	0.10	Satari	2.00	7	0.40	0.40	0.38	-	-	0.02	-	1.20
8	2.30	0.20	-	0.30	-	0.20	Satari	3.00	8	1.00	0.20	0.20	-	-	-	-	1.40
9	1.10	1.10	-	-	-	0.10	Satari	2.30	9	1.30	0.40	-	0.20	-	0.10	Satari	2.00
10	1.20	0.40	-	0.20	-	0.20	Satari	2.00	10	0.60	0.40	-	0.80	-	0.20	Satari	2.00
11	1.40	0.60	-	0.20	-	0.20	Satari	2.40	11	1.20	-	-	0.60	-	0.20	Satari	2.00
12	1.70	0.40	-	0.20	-	0.10	Satari	2.40	12	0.80	-	0.80	1.20	-	-	-	2.80
13	1.70	0.40	-	0.20	-	0.10	Satari	2.40	13	1.80	0.40	-	-	-	0.20	Satari	2.40
14	2.18	2.18	-	-	-	0.20	Satari	4.56	14	0.70	0.20	0.20	0.60	0.10	0.40	Satari	2.20
15	2.00	0.80	-	0.20	-	0.20	Satari	3.20	15	2.00	-	1.00	0.20	-	0.20	Satari	3.40
16	1.20	0.60	-	-	-	0.60	Satari	2.40	16	2.10	0.60	-	0.20	-	0.10	Satari	3.00
17	1.05	1.30	-	-	0.05	0.1	Satari	2.50	17	1.60	0.40	-	0.80	-	0.20	Satari	3.00
18	2.80	0.80	-	0.20	-	0.20	Satari	4.00	18	2.20	0.40	-	0.40	-	0.20	Satari	3.20
19	2.30	1.20	-	0.40	-	0.10	Satari	4.00	19	1.80	0.40	-	0.40	-	0.40	Satari	3.00
20	1.40	1.40	-	0.40	0.20	0.40	Satari	3.80	20	0.60	0.20	0.40	1.20	-	-	-	2.40
21	1.60	0.40	0.40	2.30	-	0.10	Satari	4.80	21	2.80	0.80	-	0.20	-	0.20	Satari	4.00
22	3.60	1.20	-	0.20	-	0.40	Satari	5.40	22	2.30	0.80	-	0.80	-	0.10	Satari	4.00
23	3.60	1.80	-	0.20	-	0.40	Satari	6.00	23	0.80	0.20	1.20	2.00	-	-	-	4.20
24	3.60	2.60	0.40	1.20	-	0.40	Satari	8.20	24	2.20	0.40	2.60	4.00	-	-	-	9.20
25	2.80	0.80	0.80	6.60	-	0.20	Satari	11.20	25	-	-	3.00	4.00	-	0.60	Satari	7.60

# Appendix A.7.2 (a)

Tal. SATARA, Dist. SATARA  
Soci-economic Background of house hold

No of the Farmers	Caste	Occupation Main Subsidiary	Edu of the Head	No of family members m f c	No of workers m f c	No of non Workers m f c	Reason of Non working. m f c	Lite - Rate m f c	Illiterate m f c	Member ship any organ.	Total Income (Rs)
1	6	1 2	9th	1 1 1	1 1 -	- - 1	- - 3	1 1 -	- - -	2	12000
2	1	1 -	3rd	4 4 7	3 3 -	1 1 7	4 5 2+3	3 2 5	1 2 -	1	64800
3	1	1 1	MSc	1 1 2	1 1 -	- - 2	- - 2	1 1 2	- - -	1	282400
4	1	1 -	M.A	2 2 1	2 2 -	- - 1	- - 3	2 1 -	- 1 -	2	28100
5	6	1 6	B.A	3 3 3	3 3 -	- - 3	- - 2+3	3 3 2	- - -	1	106600
6	1	1 -	B.A	4 4 7	3 3 -	1 1 7	4 5 2	4 4 7	- - -	1	145000
7	1	1 -	7th	3 2 -	3 2 -	- - -	- - -	3 2 -	- - -	1	25900
8	1	1 -	5th	3 1 -	1 1 -	2 - -	2 - -	3 - -	- 1 -	1	19050
9	1	1 1	10th	3 5 6	3 4 -	- 1 6	- 5 2+3	3 3 4	- 2 -	1	53400
10	1	1 -	10th	1 2 2	1 1 -	- 1 2	- 5 2	1 1 2	- 1 -	1	141100
11	1	1 -	7th	2 2 -	2 1 -	- 1 -	- 5 -	2 2 -	- - -	1	75700
12	1	1 -	BA Bed	4 3 1	4 3 -	- - 1	- - 2	4 3 1	- - -	1	313000
13	1	1 -	7th	4 3 2	3 3 -	1 - 2	1 - 2+3	4 2 1	- 1 -	1	41300
14	1	1 7	9th	1 1 2	1 1 -	- - 2	- - 2+3	1 1 1	- - -	1	110700
15	1	1 8	Sy Bcom	4 4 19	4 4 -	- - 19	- - 2+3	4 2 15	- 2 -	1	93500
16	1	1 -	7th	6 4 2	4 2 -	2 2 2	4 5 3	6 3 -	- 1 -	1	91300
17	1	1 -	10th	4 3 1	4 3 -	- - 1	- - 3	3 2 -	1 1 -	1	134500
18	1	1 -	7th	4 3 3	3 3 -	1 1 3	4 5 2+3	4 1 2	- 2 -	1	95450
19	7	1 8	8th	3 4 3	3 3 -	- 1 3	- 5 2	3 3 3	- 1 -	1	176000
20	1	1 -	7th	3 2 2	2 2 -	1 - 2	1 - 2	3 1 2	- 1 -	1	83900
21	1	1 2	9th	1 4 -	1 2 -	- 2 -	- 5 -	1 4 -	- - -	1	53200
22	1	1 7	7th	3 3 4	2 2 -	1 1 4	4 1 3	3 3 4	- - -	1	106950
23	1	1 -	10th	3 1 -	2 1 -	1 - -	2 - -	3 1 -	- - -	1	250200
24	1	1 -	12th	2 2 4	2 2 -	- - 4	- - 2	2 1 4	- 1 -	1	76600
25	1	1 1	10th	4 3 -	2 2 -	2 1 -	1+2 5 -	4 2 -	- 1 -	1	447500

Caste (Code No)	Occupation Main Subsidiary	Reasons (Code No)	Member
Maratha 1	Agri 1 Dairy 1	Old 1	Yes 1
Tell 2	Service 2 Labour 2	Schooling 2	No 2
Sutar 3	Thresher 3	Small 3	
Brahman 4	Agri 4	Service 4	
Mali 5	Hotel 5	H. Work 5	
Kumbhar 6	Flower Mill 6		
Muslim 7	Service 7		
	Other 8		

# Appendix A.7.2 (b)

Tal. KOREGAON, Dist. SATARA  
Soci-economic Background of house hold

No of the Farmers	Caste	Occupation		Edu of the Head	No of family members			No of workers			No of non Workers			Reason of Non working			Lite - Rate			Illiterate			Member ship any organ.	Total Income (Rs)
		Main	Subsidiary		m	f	c	m	f	c	m	f	c	m	f	c	m	f	c	m	f	c		
1	1	1	-	8th	2	2	-	2	2	-	-	-	-	-	-	-	2	1	-	-	1	-	1	60700
2	1	1	1+2	7th	2	2	-	2	2	-	-	-	-	-	-	-	2	2	-	-	-	-	2	37600
3	2	1	3	10th	5	4	4	4	3	-	1	1	4	2	1	2	5	3	3	-	1	1	1	113400
4	1	1	1	-	3	2	2	3	2	-	-	-	2	-	-	2	1	1	2	2	1	-	1	44450
5	1	1	1	10th	3	2	1	2	2	-	1	-	1	4	-	3	3	2	1	-	-	-	1	63150
6	1	1	1	7th	4	5	3	3	3	-	1	2	3	4	5	2	2	3	3	2	2	-	1	59800
7	1	1	1	12th	1	2	1	1	2	-	-	-	1	-	-	2	1	1	1	-	1	-	1	44250
8	1	1	1	10th	3	3	2	2	3	-	1	-	2	1	-	3	2	2	-	1	1	-	1	164000
9	1	2	4	10th	1	2	4	1	1	-	-	1	4	-	1	2	1	1	4	-	1	-	2	97700
10	1	1	5	6th	4	5	6	3	3	-	1	2	6	1	5	2+3	3	3	-	1	2	-	1	89500
11	1	1	1	12th	4	3	2	3	2	-	1	1	2	1	5	2	3	2	2	1	1	-	1	63000
12	1	1	-	8th	2	4	2	2	3	-	-	1	2	-	5	3	2	3	1	-	1	-	1	37450
13	1	1	2	7th	3	3	3	2	3	-	1	-	3	1	-	2+3	2	2	3	1	1	-	1	48000
14	3	1	2	12th	2	2	1	2	2	-	-	-	1	-	-	2+3	2	2	-	-	-	-	1	75200
15	4	1	1	10th	2	2	3	2	-	-	-	2	3	-	5	2	2	2	2	-	-	-	1	53900
16	1	1	-	7th	3	3	3	3	3	-	-	-	3	-	-	2	3	2	2	-	1	-	1	90500
17	1	1	1	10th	2	2	1	2	2	-	-	-	1	-	-	2	2	1	1	-	1	-	2	41400
18	1	1	1	10th	5	4	1	4	3	-	1	1	1	1	5	2	3	2	1	2	2	-	2	53400
19	1	1	2	-	3	3	3	3	2	-	-	1	3	-	5	2	3	2	3	-	1	-	1	58150
20	5	1	1	B.A	2	3	1	1	1	-	1	2	1	2	2	2	2	3	1	-	-	-	1	219300
21	1	1	-	12th	1	1	1	1	1	-	-	-	1	-	-	2	1	1	1	-	-	-	1	119000
22	1	1	1	4th	5	4	3	4	2	-	1	2	3	1	5	2	4	2	3	1	2	-	1	71550
23	1	1	1	7th	4	4	8	3	3	-	1	1	8	1	5	2+3	3	2	5	1	2	-	1	83000
24	5	1	-	4th	4	3	3	4	3	-	-	-	3	-	-	3	4	3	-	-	-	-	1	260400
25	1	1	-	B.A	3	3	3	3	2	-	-	1	3	-	1	2	3	2	3	-	1	-	1	193700

Caste (Code No)		Occupation		Reasons (Code No)		Member	
		Main	Subsidiary				
Maratha	1	Agri	1 Dairy	1	Old	1	Yes 1
Teli	2	Service	2 Labour	2	Edu	2	No 2
Sutar	3		Thresher	3	Small	3	
Brahman	4		Agri	4	Service	4	
Mali	5		Hotel	5	H. Work	5	
Kumbhar	6		Flower Mill	6			
Muslim	7		Service	7			
			Other	8			

**Appendix A.7.3 (a)**  
Tal. SATARA, Dist. SATARA  
Details of Land (Ha)

No of Farmers	Total area Owned (Ha)	Waste Land	Cultivated area (Ha)	Area sold During last 5 years	Area Pur. during last 5 years	Area under Irrigation	Mich Animals	Drought Animals	Poultry	Others	Live Stocks Modern Agri Implements							
											1	2	3	4	5	6	7	8
1	0.12	0.02	0.10	-	-	0.10	-	-	-	-	1	2	-	-	-	-	-	-
2	0.55	-	0.55	-	-	0.55	2	2	50	-	1	2	-	-	-	-	-	-
3	1.00	-	1.00	-	-	1.00	1	-	-	-	-	-	-	-	-	-	-	-
4	1.00	0.60	0.40	-	-	0.40	-	1	-	-	-	-	-	-	-	-	-	-
5	1.13	0.03	1.10	-	-	0.20	2	1	5	2	1	2	3	-	5	-	-	-
6	1.20	-	1.20	-	-	1.20	1	4	50	2	1	2	3	-	-	-	-	-
7	1.40	0.60	0.80	-	-	0.80	-	1	3	-	1	2	-	-	-	-	-	-
8	1.60	0.40	1.20	-	-	1.20	-	1	-	1	-	-	-	-	-	-	-	8
9	2.00	-	2.00	-	-	1.00	2	2	-	2	1	2	3	-	-	-	-	-
10	2.00	-	2.00	-	-	1.00	2	-	-	-	1	2	3	4	-	-	7	8
11	2.00	-	2.00	-	-	1.00	1	2	-	-	1	2	-	-	-	-	-	-
12	2.00	-	2.00	-	-	1.60	-	-	-	-	1	2	-	-	5	-	-	-
13	2.40	-	2.40	-	-	1.00	3	1	20	-	1	2	-	-	-	-	-	-
14	2.40	0.60	1.80	-	-	1.80	-	1	-	1	1	2	-	-	-	-	-	-
15	2.80	0.20	2.60	-	-	2.00	-	2	-	1	1	2	3	-	-	6	7	8
16	3.00	-	3.00	-	-	1.00	2	-	-	2	1	2	3	-	-	-	-	-
17	3.00	-	3.00	-	-	1.00	1	2	-	-	1	2	3	-	5	-	7	-
18	3.20	-	3.20	-	-	3.20	3	2	-	2	1	2	3	-	-	-	-	-
19	3.20	0.20	3.00	-	-	1.00	4	1	50	-	1	2	-	-	-	-	-	-
20	3.60	1.60	2.00	-	-	1.60	1	-	5	2	1	2	3	-	-	-	-	8
21	4.00	-	4.00	-	-	1.00	2	-	-	-	1	2	-	-	-	-	-	-
22	4.20	0.20	4.00	-	-	1.00	1	2	-	-	1	2	-	-	-	-	-	-
23	4.20	0.20	4.00	-	-	4.00	2	1	7	2	1	2	3	-	-	-	-	-
24	7.00	1.00	6.00	-	0.40	6.00	1	3	-	2	1	2	3	-	-	-	7	8
25	7.20	1.20	6.00	-	1.20	6.00	2	2	5	2	-	2	3	-	5	6	7	8
Total	66.20	6.85	59.35		1.60	40.65												

**Code**

Well / Tube well	1
Pump. Set/Engin	2
Ironplough	3
Thresher	4
Dripsystem /Sprinkler	5
Dunlop cart.	6
Tractor / Trolly	7
Others	8

**Appendix A.7.3 (b)**  
Tal. KOREGAON, Dist. SATARA  
Details of Land (Ha)

No of Farmers	Total area Owned (Ha)	Waste Land	Cultivated area (Ha)	Area sold During last 5 years	Area Pur. during last 5 years	Area under Irrigation	Mich Animals	Drought Animals	Poultry	Others	Live Stocks Modern Agri Implements							
											1	2	3	4	5	6	7	8
1	0.80	-	0.80	-	-	0.20	-	1	-	-	1	2	-	-	-	-	-	-
2	1.00	-	1.00	-	-	0.20	1	1	10	2	1	2	-	-	-	-	-	-
3	1.20	-	1.20	-	-	1.20	1	2	-	2	-	-	-	-	-	-	-	-
4	1.20	-	1.20	-	-	0.15	2	1	-	-	1	2	3	-	5	-	-	-
5	1.60	-	1.60	-	-	0.80	2	1	-	2	1	2	3	-	-	-	-	-
6	2.00	-	2.00	-	-	1.00	2	1	20	-	1	2	-	-	-	-	-	8
7	2.00	-	2.00	-	-	1.00	2	2	50	-	-	-	-	-	-	-	-	-
8	2.00	-	2.00	-	-	2.00	1	-	-	-	1	2	3	-	-	-	-	-
9	2.00	-	2.00	-	-	1.20	-	-	2	-	1	2	3	-	-	-	7	8
10	2.20	0.20	2.00	-	-	1.00	2	3	-	2	1	2	3	-	-	-	-	-
11	2.40	-	2.40	-	-	1.00	1	3	-	-	1	2	-	-	-	-	-	-
12	2.60	0.20	2.40	-	-	1.00	1	1	10	-	1	2	-	-	5	-	-	-
13	2.80	0.40	2.40	-	-	1.00	2	-	-	-	1	2	-	-	-	-	-	-
14	3.18	0.80	2.38	-	-	0.80	1	1	-	-	1	2	3	-	-	6	7	8
15	3.20	-	3.20	-	-	1.00	2	1	-	2	1	2	3	-	-	-	-	-
16	3.20	1.20	2.00	-	-	1.60	-	3	-	1	1	2	3	-	5	-	7	8
17	3.20	1.20	2.00	-	-	0.40	3	1	1	5	1	2	3	-	-	-	-	-
18	4.00	-	4.00	-	-	1.00	2	1	25	2	1	2	3	-	-	-	-	-
19	4.00	-	4.00	-	-	1.00	2	1	50	2	1	2	3	-	-	-	-	8
20	4.40	1.20	3.20	-	-	1.40	1	4	7	3	1	2	3	-	-	-	-	-
21	4.80	1.60	3.20	-	-	3.20	1	1	2	1	1	2	-	-	-	-	-	-
22	5.60	0.20	5.40	-	-	1.00	2	2	50	2	1	2	3	-	-	-	-	8
23	6.00	-	6.00	-	-	1.00	2	3	50	2	1	2	3	-	-	6	7	8
24	9.20	2.20	7.00	-	-	4.40	2	4	7	3	1	2	3	-	5	6	7	8
25	9.60	3.20	6.40	-	-	6.40	2	2	4	2	1	2	3	-	5	6	7	8
Total	84.18	12.40	71.78			34.95												

**Code**

Well / Tube well	1
Pump. Set/Engin	2
Ironplough	3
Thresher	4
Dripsystem /Sprinkler	5
Dunlop cart.	6
Tractor / Trolly	7
Others	8

**Appendix A.7.4 (a)**  
Tal. SATARA, Dist. SATARA

[ 1991 - 1992 ]

**Cost of Cultivation of the Spices (per acre)**

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrigation Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12000	3600	1400	-	1200	2400	2000	-	600	40	1400	2400	2000	1600	30640
9600	2500	2000	-	1000	1500	1600	-	800	30	1000	1500	1000	1000	23530
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10000	4200	1800	-	1200	2400	1600	-	700	40	2400	1800	1000	1000	28140
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10000	4200	2200	-	1400	2600	2000	-	900	40	2100	2000	1100	1200	29740
12000	3600	1800	-	1500	2100	1800	-	400	50	1800	2000	1200	1000	29250
12000	3800	1800	-	1700	2000	1800	-	350	50	1800	2000	1500	1200	30000
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10000	3600	1600	-	1600	2800	1600	-	700	40	2000	2000	1400	1400	28740
8800	2000	1000	-	600	2000	2800	-	1000	20	960	3200	1440	1200	25020
9600	4800	4000	-	800	1000	-	1200	500	16	1200	2000	1000	1000	27116
11000	3600	1600	-	1400	2000	1800	-	400	40	1600	2200	1700	1600	28940
11000	4000	1800	-	1400	2000	1400	-	400	50	1800	1600	1200	1300	27950
11000	4000	2000	-	1500	2000	1500	-	500	50	2000	2000	1100	1200	28850
12500	4000	1900	-	1600	2200	1900	-	450	50	2000	2500	1400	1100	31600
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10000	3600	1500	-	1200	2600	1400	-	600	40	2000	2000	1600	1600	28140
11000	3600	1800	-	1400	2400	1600	-	700	40	2000	1600	1000	1400	28540
9600	2000	1200	-	500	1000	1000	-	450	20	1200	1000	600	1000	19570
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0

Tal. SATARA, Dist. SATARA

[ 1992 - 1993 ]

**Cost of Cultivation of the Spices (per acre)**

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrl Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12800	4000	1600	-	1400	2800	1400	-	800	40	1600	2800	2200	1800	33240
10800	3000	2200	-	1300	1600	1700	-	900	30	1000	1600	1100	1300	26530
9600	2000	2000	-	800	4800	2000	-	400	-	1200	2800	800	2800	29200
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10500	4400	2000	-	1400	2600	1800	-	800	40	2500	2000	1100	1200	30340
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12000	4400	2400	-	1500	2800	2200	-	1000	40	2200	2200	1200	1300	33240
12250	3800	2000	-	1600	2200	2000	-	450	50	1900	2000	1200	1000	30450
12500	3900	1850	-	1750	2200	2000	-	400	50	1800	2000	1600	1300	31350
12600	4000	1750	-	1000	3000	2000	-	500	25	1500	1500	725	2000	30600
11000	4000	1800	-	1700	3000	1700	-	700	40	2100	2100	1500	1500	31140
8800	2240	1200	-	667	2000	2667	-	1067	19	960	3200	1280	1334	25434
11200	5600	4400	-	1000	1300	-	1200	500	16	1200	2400	1000	1100	30916
12000	3800	1600	-	1400	2200	2000	-	500	40	1600	2400	1800	1700	31040
11500	4000	1900	-	1500	2200	1600	-	450	50	1900	1800	1250	1400	29550
11500	4000	2100	-	1600	2200	1550	-	525	50	2100	2200	1150	1250	30225
12500	4000	1900	-	1700	2200	2000	-	450	50	2000	2600	1400	1200	32000
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11000	3700	1500	-	1200	2700	1500	-	600	40	2000	2000	1700	1700	29640
11000	3600	2200	-	1600	2500	1700	-	800	40	2200	1800	1100	1600	30140
10000	2250	1400	-	550	1150	1200	-	500	20	1200	1100	600	1100	21070
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0

Tal. SATARA, Dist. SATARA

[ 1993 - 1994 ]

**Cost of Cultivation of the Spices (per acre)**

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrigation Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13600	4000	1600	-	1600	3200	2200	-	800	40	1600	3200	2400	1800	36040
11600	3000	2300	-	1400	1700	1800	-	1000	40	1100	1600	1200	1400	28140
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11000	4600	2200	-	1500	2800	1900	-	850	40	2500	2000	1200	1200	31790
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13000	4400	2400	-	1600	3000	2400	-	1100	40	2400	2300	1200	1300	35140
12500	3800	2100	-	1800	2300	2000	-	450	50	2000	2000	1200	1000	31200
12000	3800	1800	-	1600	2200	2000	-	400	50	1800	2000	1600	1400	30650
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12800	4000	1800	-	1800	3200	1800	-	800	40	2200	2200	1400	1400	33440
9600	2613	1333	-	733	2133	2933	-	1133	19	1200	4000	1600	1133	28430
10800	6000	5000	-	600	1600	-	1500	560	16	1500	2800	1200	1200	32776
13000	4000	1600	-	1500	2400	2000	-	500	40	1600	2400	1800	1700	32540
12000	4000	2000	-	1600	2200	1600	-	450	50	2000	1800	1250	1500	30450
12000	4100	2100	-	1700	2200	1550	-	550	50	2100	2200	1150	1300	31000
13000	4000	2000	-	1600	2400	1600	-	800	40	2000	2600	1100	1000	32140
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12000	3800	1600	-	1300	2800	1500	-	700	40	2000	2000	1800	1700	31240
12000	3800	2200	-	1600	2500	1800	-	800	40	2200	2200	1100	1600	31840
10500	2300	1500	-	600	1200	1250	-	500	20	1320	1200	750	1150	22290
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
9600	3000	1750	500	1850	1500	1500	500	300	25	1440	1000	1200	1000	25165

Tal. SATARA, Dist. SATARA

[ 1994 - 1995 ]

**Cost of Cultivation of the Spices (Ginger)**

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irri Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14400	4000	1600	-	1600	3400	2200	-	800	40	1600	3200	2400	1800	37040
12000	3500	2400	-	1500	1800	1900	-	1100	44	1100	1800	1300	1500	29944
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12000	5000	2400	-	1600	3000	2000	-	900	40	2500	2000	1200	1200	33840
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12800	4400	2400	-	1600	3000	2400	-	1000	40	2400	2200	1200	1400	34840
12500	3800	2200	-	1800	2400	2000	-	450	50	2100	2000	1200	1000	31500
13000	4000	1900	-	1700	2300	2000	-	500	50	1900	2000	1700	1400	32450
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13600	4400	2000	-	1800	3400	1800	-	800	40	2200	2400	1400	1400	35240
9600	3000	2000	-	800	2400	3200	-	1200	20	1200	4000	1800	1600	30820
12000	6400	5400	-	1400	1900	-	1600	560	16	1500	3200	1200	1300	36476
13000	4000	1600	-	1500	2400	2000	-	500	40	1600	2400	1800	1700	32540
12000	4000	2000	-	1600	2000	1600	-	400	40	2000	1800	1200	1400	30040
12000	4000	2300	-	1800	2200	1500	-	500	40	2300	2200	1300	1400	31540
13000	4200	2000	-	1800	2400	1700	-	800	40	2000	2600	1100	1000	32640
9000	4000	1800	-	1000	2000	2400	-	900	30	2600	3000	2600	1600	30930
13000	4000	1700	-	1300	3000	1600	-	700	40	2000	2000	1900	1700	32940
13000	3800	2200	-	1600	2800	1800	-	800	40	2200	2200	1100	1600	33140
11000	2350	1700	-	700	1250	1400	-	525	20	1320	1400	750	1200	23615
14400	4000	2000	-	2000	4000	4000	-	1000	20	960	2000	1200	2000	37580
9600	3500	2000	400	2000	2000	1667	367	267	27	960	800	1200	1000	25788

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[ 1995 - 1996 ]

**Cost of Cultivation of the Spices (Ginger)**

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrigation Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
14400	9600	1600	-	2000	2000	2800	1000	1000	-	1920	2000	960	2000	41280
15200	4000	1600	-	1600	3600	2400	-	800	40	1600	3200	2800	1800	38640
12600	4000	2500	-	1500	1900	2000	-	1200	50	1200	1900	1400	1600	31850
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
15200	6400	2400	-	2400	2800	1600	2800	800	40	1920	2000	960	2000	41320
14000	5200	2400	-	1600	3200	2000	-	900	40	2500	2000	1200	1200	36240
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13200	4800	2500	-	1800	3200	2500	-	1200	40	2500	2200	1400	1600	36940
12800	3600	2200	-	1800	2300	2000	-	500	40	2200	2000	1300	1200	31940
13000	4200	2200	-	1700	2400	2000	-	500	50	1900	2000	1800	1400	33150
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14000	4000	2000	-	1800	3400	1900	-	900	40	2200	2600	1400	1500	35740
9600	2987	1600	-	800	2267	3200	-	1200	19	1200	4000	1600	1600	30073
12600	7200	6000	-	1300	2000	-	2000	600	16	1800	3600	1400	1400	39916
14000	4000	1600	-	1500	2400	2000	-	500	40	1600	2400	1800	1700	33540
13000	4200	2200	-	1700	2200	1700	-	450	40	2200	1900	1300	1400	32290
13000	4200	2400	-	1900	2300	1560	-	550	40	2300	2200	1300	1500	33250
13000	4400	2000	-	1800	2500	1800	-	800	40	2000	2800	1100	1000	33240
9600	4400	2000	-	1100	2400	3000	-	1000	30	2700	3000	2700	2000	33930
13000	4000	1700	-	1400	3000	1700	-	700	40	2000	2000	1900	1700	33140
13000	4000	2200	-	1600	2800	1800	-	800	40	2200	2200	1100	1600	33340
12000	2400	2000	-	750	1300	1500	-	550	20	1400	1500	800	1250	25470
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10800	3333	2133	433	2133	2133	2000	400	300	27	1200	867	1200	1200	28159

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[ 1996 - 1997 ]

**Cost of Cultivation (Per acre)**

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irri Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
14400	9600	1600	-	2000	2000	2800	1000	1000	-	1920	2000	960	2000	41280
15200	4800	1800	-	2000	4000	2400	-	800	40	1800	3600	3000	2000	41440
13000	4000	2600	-	1600	2000	2000	-	1200	50	1200	2000	1400	1700	32750
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
15000	3600	2400	-	1600	3200	2000	-	900	40	2600	2200	1400	1200	38140
10000	4000	5000	-	4000	4000	2000	-	2000	40	1000	2000	1000	3000	38040
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14000	5000	2600	-	2000	3200	2600	-	1400	40	2600	2400	1400	1600	38840
13000	3600	2400	-	1900	2400	2200	-	500	40	2200	2000	1300	1200	32740
14000	4400	2400	-	1800	2400	2000	-	500	50	1900	2000	1800	1500	34750
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14000	4400	2400	-	1800	3200	1800	-	800	40	2200	2400	1600	1600	36240
9600	3600	1500	-	650	2000	3000	-	1200	20	960	4000	1200	1500	29230
13000	8000	7000	-	1400	2000	-	2400	600	16	1800	4000	1400	1500	43116
14000	4400	1600	-	1400	2600	2200	-	600	40	1600	2600	2000	1800	34840
14000	4400	2400	-	1700	2200	1650	-	450	40	2200	1900	1300	1500	33740
14000	4400	2400	-	1900	3000	1600	-	600	40	2300	2200	1400	1500	35340
13500	4500	2000	-	1800	2300	2000	-	550	50	2500	2500	1400	1300	34400
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14000	4008	1800	-	1400	3000	1700	-	700	40	2000	2000	1900	1700	34280
12800	4800	2400	-	1600	2800	2000	-	1000	40	2200	2400	1200	1600	34840
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10800	3333	2200	467	2200	2333	2000	400	333	27	1200	1000	1200	1333	28826

**Appendix A.7.4 (b)**  
Tal. KOREGAON, Dist. SATARA

[ 1991 - 1992 ]

**Cost of Cultivation Per Acre**

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrigation Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
9600	3000	2400	-	1200	2400	2800	-	500	50	2400	1600	1920	1200	29070
12000	2400	2000	140	-	2800	1600	-	800	56	1440	2000	960	2000	28196
9600	1000	1000	-	600	1500	1200	-	400	20	1200	1400	1000	1000	19920
12800	4000	2000	-	1600	2400	1800	-	800	40	2000	2000	1200	1400	32040
12000	2600	2240	-	900	3200	2400	-	600	40	1800	2000	1200	2400	31380
11000	3000	2600	-	600	2600	1600	-	400	40	2000	2000	1000	2000	28840
13000	4000	2000	-	1700	2400	1600	-	800	40	2000	1800	1400	1600	32340
9000	3000	2400	80	-	2400	2000	-	400	-	2000	2000	1000	2000	26280
14400	2800	2000	-	1000	2000	2000	-	800	28	960	2000	960	2000	30948
11000	4000	2000	-	3200	2400	1800	-	1600	40	2200	2000	1100	1200	32540
10500	4000	2000	-	1800	2400	1600	-	500	50	2000	2000	1000	2000	29850
8800	2800	2400	-	600	2400	1800	-	800	40	2000	2000	1000	2000	26640
10000	3000	2400	-	600	2400	1600	-	400	40	2000	2000	1000	2000	27440
12000	2000	1000	-	500	2000	2000	-	800	50	1200	1100	600	1000	24250
10000	3000	2400	-	600	2400	1600	-	400	-	2000	2000	1000	2000	27400
14400	2400	1500	-	1000	2000	1000	-	500	25	1000	1500	500	1000	26825
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10500	3200	2400	-	800	2400	1800	-	800	40	2200	2400	1200	2200	29940
11000	4000	2000	-	1900	2600	1800	-	800	40	2000	2400	1200	1200	30940
11200	4000	2000	-	1000	4000	3000	-	500	30	2000	2000	1500	1000	32230
9600	3000	1600	400	300	2000	3000	-	600	40	1200	1200	1500	1200	25640
10000	3000	2400	-	400	2400	1600	-	400	20	2000	2000	1000	2000	27220
11000	3000	2500	-	450	2600	1800	-	450	25	2200	2300	1100	2100	29525
11700	2000	1000	-	600	2000	1200	-	500	40	1600	1000	1600	1500	24740
9600	3000	1600	400	300	2000	3000	-	500	30	1200	1200	1500	1000	25330

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[ 1992 - 1993 ]

**Cost of Cultivation Per Acre**

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrigation Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
9600	3000	2500	-	1500	2800	2900	-	600	50	2400	2000	1920	1400	30670
13200	2600	2200	160	-	3000	1800	-	1000	56	1440	2600	960	2200	31216
10000	1100	1050	-	900	1600	1400	-	400	20	1200	1500	1000	1100	21270
13200	4400	2100	-	1700	2500	2000	-	1000	40	2200	2000	1300	1500	33940
12800	2800	2400	-	1000	3400	2600	-	600	40	1800	2000	1400	2800	33640
11000	3200	2600	-	700	2800	1800	-	500	40	2000	2000	1200	2200	30040
13200	4800	2100	-	1800	2600	1800	-	900	40	2100	2000	1400	1600	34340
9000	3000	2600	100	-	2400	2000	-	400	-	2000	2000	1000	2000	26500
15600	3080	2600	-	1200	2800	2200	-	900	28	960	2200	960	2800	35328
12000	4200	2200	-	1800	2600	1900	-	900	40	2200	2200	1200	1300	32540
11000	4000	2000	-	1800	2500	1600	-	600	50	2000	2000	1000	2000	30550
9200	2900	2600	-	800	2600	2000	-	900	40	2100	2100	1000	2000	28240
11000	3200	2900	-	1400	3100	1900	-	500	40	2500	2200	1000	2200	31940
12000	2200	1150	-	550	2400	2400	-	900	50	1200	1050	700	1300	25900
11000	3200	2900	-	700	3100	1900	-	500	-	2500	2200	1000	2200	31200
15600	3000	1650	-	1050	2200	1200	-	650	25	1200	1700	600	1100	29975
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11000	3400	2500	-	1000	2800	1900	-	1000	40	2200	2400	1200	2200	31640
12000	4200	2200	-	1900	2800	1900	-	800	40	2200	2500	1300	1200	33040
11900	4400	2200	-	1200	5000	3000	-	500	30	2200	2500	1500	1100	35530
10800	3200	1700	440	360	2200	3200	-	800	40	1200	1300	1500	1200	27940
11000	3200	2500	-	425	2450	1650	-	425	20	2000	2000	1100	2000	28770
11250	3200	2600	-	500	2650	1880	-	450	25	2200	2350	1150	2200	30455
13000	2400	1200	-	750	2200	1400	-	600	40	1600	1200	1600	1600	27590
10800	3200	1700	450	350	2200	3200	-	600	30	1200	1300	1500	1300	27830

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[ 1993 - 1994 ]

**Cost of Cultivation Per Acre**

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrigation Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
10800	3600	2800	-	1600	3000	3100	-	700	50	3000	2200	2400	1500	34750
14400	2800	2400	180	-	3200	2000	-	1200	56	1800	2800	1200	2400	34436
10400	1000	1000	-	900	1600	1200	-	400	20	1800	2000	1200	1000	22520
14000	4600	2200	-	1800	2600	2200	-	1000	40	2400	2000	1300	1500	35640
13200	3000	2500	-	1000	3400	2600	-	600	40	2000	2400	1500	3000	35240
12000	3400	2800	-	700	3000	1800	-	600	40	2000	2000	1600	2400	32340
14200	5000	2200	-	1800	2600	1800	-	900	40	2100	2200	1400	1600	35840
12000	3600	2800	100	-	2800	2400	-	500	-	2400	2400	2600	2400	34000
16200	3360	2800	-	1300	4000	2400	-	1000	28	1200	2400	1200	3000	38888
13000	4400	2400	-	1900	2700	1900	-	900	40	2200	2400	1400	1400	34640
11500	4200	2000	-	1800	2600	1800	-	700	50	2100	2200	1100	1200	31250
9400	2900	2600	-	880	2600	2000	-	920	40	2100	2200	1000	2100	28740
11000	3200	3200	-	800	3200	2000	-	600	40	2600	2400	1200	2400	32640
13200	2400	1200	-	600	2700	2800	-	950	50	1400	1000	750	1400	28450
11000	3200	3200	-	800	3200	2000	-	600	-	2600	2400	1200	2400	32600
16800	3000	1866	-	800	2000	1000	-	533	25	1333	1200	666	1067	30290
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11400	3500	2600	-	600	3000	2000	-	500	40	2200	2400	1200	2200	31640
13000	4400	2400	-	1800	3000	1900	-	850	40	2200	2500	1400	1200	34690
12600	4800	2500	-	1300	5500	3200	-	550	30	2400	2500	1700	1200	38280
10800	3400	1800	500	400	2400	3400	-	1000	40	1500	1400	1800	1600	30040
11000	3300	2550	-	450	2500	1700	-	450	20	2000	2000	1100	2000	29070
11500	3300	2700	-	500	2650	1900	-	450	25	2200	2350	1150	2200	30925
14300	2600	1400	-	900	2400	1600	-	750	40	1720	1300	1720	1750	30480
10800	3400	1800	500	400	2400	3400	-	650	30	1500	1400	1800	1600	29680

Tal. KOREGAON, Dist. SATARA

[ 1994 - 1995 ]

**Cost of Cultivation Per Acre**

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrigation Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
12000	3600	2900	-	1700	3200	3400	-	800	50	3000	2600	2400	1600	37250
15600	3000	2600	200	-	3400	2200	-	1400	56	1800	3200	1200	2600	37256
10800	1200	1100	-	1000	1800	1400	-	500	20	1800	2000	1400	1200	24220
14000	4800	2400	-	1800	2600	2400	-	1000	40	2400	2200	1400	1400	36440
13600	3000	2600	-	1100	3500	2600	-	700	40	2000	2400	1500	3000	36040
13000	3400	2900	-	800	3100	1800	-	600	40	2000	2000	1600	2500	33740
14200	5200	2200	-	1900	2600	1800	-	1000	40	2200	2200	1400	2000	36740
12000	3600	2800	120	-	2800	2400	-	500	-	2400	2600	1400	2800	33420
18000	3640	3000	-	1500	4800	2600	-	1100	28	1200	2600	1200	3600	43268
13000	4600	2800	-	1900	2700	2000	-	900	40	2500	2400	1400	1400	35640
11000	4000	2000	-	1900	2400	1800	-	800	40	2000	2000	1100	1200	30240
9400	3000	2800	-	1000	2700	2100	-	960	40	2200	2200	1100	2100	29600
12000	3400	3400	-	900	3400	2900	-	600	40	2650	2500	1300	2500	35590
13800	2600	1250	-	700	2800	3200	-	1000	50	1400	1050	800	1500	30150
12000	3400	3400	-	900	3400	2900	-	600	-	2650	2500	1300	2500	35550
19200	3200	1867	-	833	2333	1200	-	600	25	1467	1233	800	1166	33924
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12000	3600	2600	-	700	3200	2200	-	500	40	2400	2400	1300	2400	33340
14000	4400	2600	-	2000	3000	1900	-	900	40	2200	2500	1400	1300	36240
13300	4900	2700	-	1450	6000	3500	-	600	35	2600	2800	1750	1300	40935
12000	3600	1900	560	440	2600	3500	-	1000	40	1500	1500	1800	2000	32440
12000	3350	2600	-	450	2600	1750	-	450	20	2000	2000	1100	2000	30320
12000	3400	2800	-	525	2700	1950	-	500	25	2300	2350	1200	2200	31950
15600	2800	1600	-	1050	2800	1800	-	800	40	1840	1400	1840	1800	33370
12000	3600	1900	550	450	2600	3500	-	700	30	1500	1500	1800	1900	32030

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**Cost of Cultivation Per Acre**

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrigation Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
14400	4200	3000	-	1800	3600	3600	-	900	50	3600	2800	2880	1800	42630
16800	3200	2800	220	-	3600	2400	-	1600	56	2160	3600	1440	2800	40676
11200	1500	1200	-	1000	1800	1500	-	450	20	1800	2000	1200	1200	24870
14400	4800	2400	-	1800	2800	2400	-	1000	40	2400	2200	1400	1600	37240
14000	3200	2600	-	1100	3500	2600	-	800	40	2000	2400	1500	3200	36940
13200	3600	3000	-	800	3000	2000	-	600	40	2000	2000	1600	2400	34240
14600	5400	2200	-	1900	2800	1800	-	1000	40	2200	2200	1400	2000	37540
15000	4200	3200	120	-	3000	2000	1000	600	-	2880	2800	1500	3000	39300
19200	3920	3200	-	1600	5600	2800	-	1200	28	1440	2800	1440	4000	47228
14000	4800	3000	-	1900	2800	2000	-	1000	40	2500	2400	1400	1400	37240
12000	4000	2200	-	1900	2500	1900	-	800	40	2200	2200	1200	1200	32140
9600	3200	3000	-	1100	2800	2200	-	1000	40	2200	2200	1200	2200	30740
13600	3600	3200	-	900	3200	3000	-	3000	40	2800	2600	1200	2600	39740
14400	2800	1300	-	800	2900	3600	-	1100	50	1600	1100	900	1550	32100
14000	3600	3500	-	900	3700	3000	-	650	-	2700	2500	1400	2500	38450
18000	3400	2133	-	867	2468	1400	-	670	25	1600	1267	933	1167	33930
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12500	3800	2700	-	700	3200	2400	-	500	40	2400	2400	1300	2400	34340
14400	4000	2200	-	1200	3600	2600	-	800	40	2200	2400	1600	3600	38640
15000	5000	3000	-	1500	6500	4000	-	650	35	2800	2900	1800	1400	44585
14400	3800	2000	600	500	2800	3500	-	1100	40	1800	1600	2000	2200	36340
14000	3400	2700	-	500	2700	1800	-	500	25	2000	2000	1150	2100	32875
12500	3500	2850	-	525	2750	2000	-	500	25	2300	2350	1200	2300	32800
18200	3000	1800	-	1200	3000	2000	-	850	40	1750	1500	1800	1900	37040
14400	3800	2000	600	500	2800	3500	-	800	30	1800	1600	2000	2200	36030

Tal. KOREGAON, Dist. SATARA

[ 1996 - 1997 ]

**Cost of Cultivation Per Acre**

Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrigation Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
15600	4200	3200	-	2000	4000	4000	-	1000	50	3600	3000	2880	2000	45530
18000	4000	3000	240	-	4000	2400	-	2000	56	2160	4000	1440	3000	44296
11200	1400	1200	-	1200	2000	1600	-	1200	20	2160	2000	1600	1400	26980
15200	5000	2400	-	2000	2800	2400	-	1000	40	2600	2200	1400	1600	38640
14400	3200	2600	-	1100	3500	2600	-	800	40	2100	2400	1500	3200	37440
13200	3600	3200	-	800	3200	2000	-	800	40	2000	2000	1600	2600	35040
14800	5400	2200	-	1900	2800	1800	-	1000	40	2200	2200	1600	2000	37940
15000	4200	3280	120	-	3000	2000	1000	600	-	2880	3000	1500	3200	39780
19200	4200	3400	-	1800	6000	3200	-	1400	28	1440	3000	1440	4000	49108
15000	5000	3000	-	2000	2800	2000	-	1000	40	2500	2400	1400	1400	38540
13000	4200	2200	-	1960	2600	2000	-	1000	40	2300	2400	1400	1400	34500
10000	3400	3200	-	1200	3000	2200	-	1100	40	2200	2200	1200	2200	31940
14400	3800	3400	-	1000	3800	3000	-	800	40	3000	2600	1300	2600	39740
14400	3000	1400	-	900	3000	4000	-	1200	50	1600	1200	1000	1600	33350
15000	4000	3600	-	1000	3800	3000	-	700	-	2800	2600	1500	2800	40800
19200	3600	2240	-	1000	2667	1467	-	670	25	1667	1333	1000	1200	36069
12000	2400	1600	-	600	2000	2000	-	800	20	960	800	960	2000	26140
14000	3800	2800	-	700	3400	2400	-	500	40	2400	2400	1300	2400	36140
14800	4000	2400	-	1400	3800	2800	-	800	40	2200	2600	1700	3800	40340
17000	5000	3000	-	1550	7000	4000	-	700	40	3000	3000	2000	1500	47790
14400	4000	2000	700	600	3000	3600	-	1200	40	1800	1600	2000	2400	37340
15000	3500	2800	-	550	2800	1850	-	500	25	2200	2100	1200	2100	34625
13000	3800	2900	-	525	2750	2000	-	500	25	2300	2350	1200	2300	33650
18850	3200	2000	-	1400	3200	2200	-	900	40	1750	1500	1800	2000	38840
14400	4000	2000	700	600	3000	3600	-	900	30	1800	1600	2000	2400	37030

## Appendix A.7.5 (a)

**Tal. SATARA, Dist. SATARA**

**Per acre total output, self consumption, marketed surplus, gross income, cost of cultivation and net income**

No. of Farmers	1991 - 1992							1992 - 1993						
	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	42.00	2.00	40.00	900	36000	30640	5360	50.00	2.00	48.00	900	43200	34040	9960
3	40.00	1.00	39.00	1200	46800	23530	23270	50.00	2.00	48.00	1200	57600	26530	31070
4	-	-	-	-	-	-	-	50.00	2.00	48.00	1200	57600	29200	28400
5	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-
6	43.00	1.00	42.00	900	37800	28140	9660	47.00	1.00	46.00	1200	55200	30340	24860
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	45.00	1.00	44.00	950	41800	29740	12060	42.00	2.00	40.00	950	38000	29740	8260
10	46.00	1.00	45.00	800	36000	29250	6750	44.00	1.00	43.00	800	34400	30450	3950
11	42.00	1.00	41.00	900	36900	30000	6900	44.00	1.00	43.00	900	38700	31350	7350
12	-	-	-	-	-	-	-	40.00	1.00	39.00	1000	39000	30600	8400
13	43.00	1.00	42.00	900	37800	28740	9060	47.00	1.00	46.00	900	41400	31140	10260
14	48.00	2.00	46.00	1000	46000	25020	20980	53.20	2.40	50.80	900	45720	25434	20286
15	50.00	1.00	49.00	1200	58800	27116	31684	54.00	1.00	53.00	1200	63600	30916	32684
16	45.00	1.00	44.00	800	35200	28940	6260	47.00	1.00	46.00	900	41400	31040	10360
17	46.00	1.00	45.00	800	36000	27450	8050	43.00	1.00	42.00	900	37800	27950	9850
18	51.00	1.00	50.00	800	40000	28850	11150	53.00	1.00	52.00	900	46800	30225	16575
19	51.00	1.00	50.00	950	47500	31600	15900	46.50	0.50	46.00	1000	46000	32000	14000
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	43.00	1.00	42.00	900	37800	28140	9660	44.00	2.00	42.00	950	39900	29640	10260
22	41.00	1.00	40.00	800	32000	28540	3460	45.00	1.00	44.00	900	39600	30140	9460
23	41.00	1.00	40.00	800	32000	19570	12430	39.00	1.00	38.00	1000	38000	21070	16930
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Tal. SATARA, Dist. SATARA**

**Per acre total output, self consumption, marketed surplus, gross income, cost of cultivation and net income**

No. of Farmers	1993 - 1994							1994 - 1995						
	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	42.00	2.00	40.00	1100	44000	36040	7960	54.00	2.00	52.00	1100	57200	37040	20160
3	30.00	1.00	29.00	1400	600	28140	12460	40.00	1.00	39.00	1400	54800	29944	24656
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	53.00	1.00	52.00	1300	67600	31790	35810	45.00	1.00	44.00	1300	57200	33840	23360
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	46.00	2.00	44.00	900	39600	35140	4460	50.00	2.00	48.00	1100	52800	34840	17960
10	42.00	1.00	41.00	900	35900	31200	5700	41.00	1.00	40.00	1000	40000	31500	8500
11	43.00	1.00	42.00	900	37800	30650	7150	53.00	1.00	52.00	900	46800	32450	14350
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	50.00	2.00	48.00	1100	52800	33440	19360	54.00	2.00	52.00	1100	57200	35240	21960
14	53.20	2.40	50.80	1000	50800	28430	22370	60.00	2.00	58.00	900	52200	30820	21380
15	44.00	-	43.00	1600	68800	32776	36024	48.00	1.00	47.00	1400	65800	36476	29324
16	41.00	-	40.00	900	36000	32540	3460	43.00	1.00	42.00	900	37800	32540	5260
17	48.00	-	47.00	900	423000	30450	11850	47.00	1.00	46.00	900	41400	30040	11360
18	56.00	-	55.00	950	52250	31000	21250	44.00	2.00	42.00	1100	46200	31540	14460
19	43.00	-	42.00	1100	46200	32140	14060	46.00	2.00	44.00	1250	55000	32640	22360
20	-	-	-	-	-	-	-	50.00	1.00	49.00	800	39200	30930	8270
21	46.00	2.00	44.00	900	39600	31240	8360	48.00	2.00	46.00	900	41400	32940	8460
22	51.00	1.00	50.00	800	40000	31840	8160	47.00	1.00	46.00	1100	50600	33140	17460
23	38.00	1.00	37.00	1000	37000	22290	14710	42.00	1.00	41.00	900	36900	23615	13285
24	-	-	-	-	-	-	-	60.00	2.00	58.00	1200	69600	37580	32020
25	61.00	1.00	60.00	800	48000	25165	22835	47.00	1.00	46.00	800	36800	25788	11012

**Tal. SATARA, Dist. SATARA**

**Per acre total output, self consumption, marketed surplus, gross income, cost of cultivation and net income**

No. of Farmers	1995 - 1996							1996 - 1997						
	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)
1	64.00	2.00	62.00	1000	62000	41280	20720	-	-	-	-	-	-	-
2	46.00	2.00	44.00	1200	52800	38640	14160	50.00	2.00	48.00	1400	67200	41440	25760
3	40.00	1.00	39.00	1000	39000	31850	7150	40.00	1.00	39.00	1600	62400	32750	29650
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	80.00	8.00	72.00	1000	72000	41320	30680	-	-	-	-	-	-	-
6	41.00	1.00	40.00	1300	52000	36240	15760	41.00	1.00	40.00	1400	55000	38140	17860
7	-	-	-	-	-	-	-	50.00	5.00	45.00	1200	54000	38040	15960
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	42.00	2.00	40.00	1300	52000	36940	15060	46.00	2.00	44.00	1400	61600	38840	22760
10	41.00	1.00	40.00	1100	44000	31940	12060	45.00	1.00	44.00	1300	57200	32740	24460
11	45.00	1.00	44.00	1100	48400	33150	15250	43.00	1.00	42.00	1200	50400	34750	15650
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	46.00	2.00	44.00	1200	52800	35740	17060	44.00	2.00	42.00	1300	54600	36240	18360
14	54.40	2.40	56.00	1000	56000	30072	25928	45.00	2.00	43.00	900	38700	29230	9470
15	60.00	2.00	58.00	1000	58000	39916	18084	56.00	1.00	55.00	1400	77000	42116	33884
16	39.00	1.00	38.00	1100	41800	33540	8260	50.00	2.00	48.00	1300	62400	34840	27560
17	44.00	2.00	42.00	1200	50400	32290	18110	42.00	2.00	40.00	1300	52000	33740	18260
18	52.00	2.00	50.00	1200	60000	33250	26750	50.00	2.00	48.00	1300	62400	35340	27060
19	45.00	1.00	44.00	1200	52800	33240	19560	46.00	1.00	45.00	1300	58500	34400	24100
20	44.00	1.00	43.00	1000	43000	33930	9070	-	-	-	-	-	-	-
21	50.00	2.00	48.00	1100	52800	33140	19660	44.00	2.00	42.00	1200	50400	34240	16160
22	42.00	2.00	40.00	1200	48000	33340	14460	50.00	2.00	48.00	1400	67200	34840	32360
23	47.00	1.00	46.00	1000	46000	25470	20530	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	47.00	1.00	46.00	900	41400	28160	13240	53.00	1.00	52.00	900	46800	28826	17974

## Appendix A.7.5 (b)

Tal. KOREGAON, Dist. SATARA

Per acre total output, self consumption, marketed surplus, gross income, cost of cultivation and net income

No. of Farmers	1991 - 1992							1992 - 1993						
	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)
1	40.00	2.00	38.00	900	34200	29070	5130	44.00	2.00	42.00	1000	42000	30670	11330
2	48.00	4.00	44.00	1000	44000	28196	15804	52.00	4.00	48.00	900	43200	31216	11984
3	40.00	2.00	38.00	800	30400	19920	110480	40.00	2.00	38.00	900	34200	21270	12930
4	46.00	0.50	44.00	900	39600	32040	7560	50.00	2.00	48.00	1200	57600	33940	23660
5	42.00	2.00	40.00	900	36000	31380	4620	46.00	2.00	44.00	1100	48400	33640	14760
6	44.00	2.00	42.00	900	37800	28840	8960	40.00	2.00	38.00	1000	38000	30040	7960
7	50.00	2.00	48.00	1200	57600	32340	25260	54.00	2.00	52.00	1400	72800	34340	38460
8	30.00	1.00	29.00	1500	43500	26280	17220	30.00	1.00	29.00	1533	44457	26500	17957
9	48.00	1.00	47.00	1000	47000	30948	16052	56.00	1.00	55.00	900	49500	35328	14172
10	39.00	1.00	38.00	1000	38000	32540	5460	41.00	1.00	40.00	1000	40000	32540	7460
11	41.00	1.00	40.00	800	32000	29850	2150	43.00	1.00	42.00	900	37800	29850	7950
12	34.00	2.00	32.00	1000	32000	26640	5360	30.00	2.00	28.00	1200	33600	28240	5360
13	42.00	2.00	40.00	800	32000	27440	4560	46.00	2.00	44.00	900	39600	31940	7660
14	40.00	1.00	39.00	800	31200	24250	6950	44.00	1.00	43.00	800	34400	25900	8500
15	42.00	2.00	40.00	1000	40000	27400	12600	38.00	2.00	36.00	1200	43200	31200	12000
16	50.00	1.00	49.00	800	39200	26825	12375	48.00	1.00	47.00	900	42300	29975	12325
17	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	37.00	1.00	36.00	1100	39600	29940	9660	39.00	1.00	38.00	1200	45600	31640	15660
19	41.00	1.00	40.00	1000	40000	30940	9040	43.00	1.00	42.00	1000	42000	33040	8960
20	60.00	1.00	59.00	800	47200	32230	14970	58.00	1.00	57.00	850	48450	35530	12920
21	52.00	2.00	50.00	800	40000	25640	14360	60.00	2.00	58.00	700	40600	27940	12660
22	41.00	1.00	40.00	800	32000	27220	4780	36.00	1.00	35.00	900	31500	28770	2730
23	52.00	2.00	50.00	800	40000	29525	10475	55.00	2.00	53.00	900	47700	30455	18175
24	50.00	1.00	49.00	800	39200	24740	14460	47.00	1.00	46.00	850	39100	27590	11510
25	50.00	2.00	48.00	800	38400	25330	13070	60.00	2.00	58.00	700	40600	27830	12770

**Tal. KOREGAON, Dist. SATARA**

**Per acre total output, self consumption, marketed surplus, gross income, cost of cultivation and net income**

No. of Farmers	1993 - 1994							1994 - 1995						
	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)
1	50.00	2.00	48.00	800	38400	34750	3650	42.00	2.00	40.00	1000	40000	37250	2750
2	60.00	6.00	48.00	900	43200	34436	8764	64.00	6.00	58.00	800	46400	37256	9144
3	40.00	2.00	38.00	900	34200	22520	11680	40.00	2.00	38.00	900	34200	24220	9980
4	46.00	2.00	44.00	1200	52800	35640	17160	42.00	2.00	40.00	1400	56000	36440	19560
5	50.00	2.00	48.00	1100	52800	35240	17560	50.00	2.00	48.00	1300	62400	36040	26360
6	42.00	2.00	40.00	1100	44000	32340	11660	40.00	2.00	38.00	1150	43700	33740	9960
7	58.00	2.00	56.00	1300	72800	35840	36960	46.00	2.00	44.00	1350	59400	36740	22660
8	36.00	1.00	35.00	1500	52500	34000	18500	32.00	1.00	31.00	1600	49600	33420	16180
9	64.00	1.00	63.00	900	56700	38888	17812	60.00	1.00	59.00	1000	59000	43268	15732
10	43.00	1.00	42.00	1200	50400	34640	15760	46.00	2.00	44.00	1400	61600	35640	25960
11	45.00	1.00	44.00	900	39600	31250	8350	46.00	2.00	44.00	1000	44000	30240	13760
12	26.00	2.00	24.00	1300	31200	28740	2460	34.00	2.00	32.00	1300	41600	29600	12000
13	50.00	2.00	48.00	1000	48000	32640	15360	48.00	2.00	46.00	1000	46000	35590	10410
14	50.00	1.00	49.00	900	44100	28450	15650	54.00	1.00	53.00	9000	47700	30150	17550
15	38.00	2.00	36.00	1300	46800	32600	14200	40.00	2.00	38.00	1350	51300	35550	15750
16	47.00	1.00	46.00	900	41400	30290	11110	48.00	1.00	47.00	850	39950	33924	6026
17	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	41.00	1.00	40.00	1300	52000	31640	20360	41.00	1.00	40.00	1350	54000	33340	20660
19	37.00	1.00	36.00	1100	39600	34690	4910	34.00	1.00	33.00	1200	39600	36240	3360
20	62.00	1.00	61.00	900	54900	38280	16620	65.00	1.00	64.00	900	57600	40935	16665
21	48.00	2.00	46.00	900	41400	30040	11360	64.00	2.00	62.00	800	49600	32440	17160
22	37.00	1.00	36.00	1000	36000	29070	6930	39.00	1.00	38.00	1000	38000	30320	7680
23	52.00	2.00	50.00	1000	50000	30925	19075	53.00	2.00	51.00	1000	51000	31950	19050
24	48.00	1.00	47.00	900	42300	30480	11820	45.00	1.00	44.00	1000	44000	33370	10630
25	44.00	2.00	42.00	900	37800	29680	8128	64.00	2.00	62.00	800	49600	32030	17570

**Tal. KOREGAON, Dist. SATARA**

**Per acre total output, self consumption, marketed surplus, gross income, cost of cultivation and net income**

No. of Farmers	1995 - 1996							1996 - 1997						
	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)
1	50.00	2.00	48.00	900	43200	42630	570	46.00	2.00	44.00	1100	48400	45530	2870
2	56.00	6.00	50.00	1000	50000	40676	9324	60.00	6.00	54.00	1000	54000	44298	9704
3	44.00	2.00	42.00	1000	42000	24870	17130	44.00	2.00	42.00	1000	42000	26980	15020
4	50.00	2.00	48.00	1400	67200	37240	29960	42.00	2.00	40.00	1000	60000	38840	21360
5	52.00	4.00	48.00	1300	62400	36940	25460	48.00	4.00	44.00	1400	61600	37440	24160
6	42.00	2.00	40.00	1200	48000	34240	14160	50.00	2.00	48.00	1400	67200	35040	32160
7	50.00	2.00	48.00	1400	67200	37540	29660	46.00	2.00	44.00	1500	66000	37940	28060
8	40.00	1.00	39.00	1200	46800	39300	7500	36.00	1.00	35.00	1600	56000	39780	16220
9	68.00	1.00	67.00	900	60300	43228	17072	60.00	1.00	59.00	1000	59000	49108	9892
10	42.00	2.00	40.00	1500	60000	37240	25760	40.00	2.00	38.00	1500	57000	38540	18460
11	42.00	2.00	40.00	1100	44000	32140	11860	44.00	2.00	42.00	1200	50400	34500	15900
12	38.00	2.00	36.00	1300	46800	30740	16060	38.00	2.00	36.00	1300	46800	31940	14860
13	50.00	2.00	48.00	1200	57600	39740	17860	42.00	2.00	40.00	1600	64000	39340	24260
14	50.00	1.00	49.00	1000	49000	32100	16900	54.00	1.00	53.00	900	47700	33350	14350
15	40.00	-	40.00	1350	54000	38450	15550	38.00	2.00	36.00	1300	46800	40800	6000
16	50.00	1.50	48.50	900	43650	33930	9720	45.00	1.00	44.00	1000	44000	36069	7931
17	-	-	-	-	-	-	-	60.00	2.00	58.00	800	46400	26140	20260
18	37.00	1.00	36.00	1400	50400	34340	16060	35.00	1.00	34.00	1450	49300	36140	13160
19	42.00	2.00	40.00	1200	48000	38640	9360	46.00	2.00	44.00	1400	61600	40340	21260
20	67.00	1.00	66.00	1000	66000	44585	21415	70.00	1.00	69.00	950	65550	47790	17760
21	68.00	2.00	66.00	850	56100	36340	19760	56.00	2.00	54.00	900	48600	37340	11260
22	41.00	1.00	40.00	1100	44000	32875	11125	40.00	1.00	39.00	1200	46800	34625	12175
23	54.00	2.00	52.00	1000	52000	32800	19200	54.00	2.00	52.00	1000	52000	33650	18350
24	50.00	1.00	49.00	1000	49000	37040	11960	50.00	1.00	49.00	1200	58800	38840	19960
25	70.00	2.00	68.00	850	57800	36030	21770	56.00	2.00	54.00	900	48600	37030	11570

## Appendix A.7.6 (a)

### Yield from Sample Farmers

District : Satara and Taluka : Satara)

(Crop : Ginger, Yield : Kg / Hectare)

Satara Taluka	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97
1	-	-	-	-	<b>2900<sup>1</sup></b>	-
2	1900	2270	1900	2450	<b>2090<sup>1</sup></b>	2270
3	1800	2270	1360	1800	1800	<b>1800<sup>1</sup></b>
4	-	3270	-	-	<b>1650<sup>3</sup></b>	-
5	-	-	-	-	<b>3600<sup>1</sup></b>	-
6	1950	2130	2650	2045	1860	<b>1860<sup>1</sup></b>
7	-	-	-	-	-	<b>2270<sup>1</sup></b>
8	-	-	-	-	<b>1600<sup>2</sup></b>	-
9	2045	1900	2090	2270	<b>1900<sup>1</sup></b>	2090
10	2090	2000	1900	1860	<b>1860<sup>1</sup></b>	2045
11	1900	2000	1900	2400	2000	<b>1900<sup>1</sup></b>
12	-	-	-	-	-	<b>1800<sup>1</sup></b>
13	1950	2130	2270	2450	2090	<b>2000<sup>1</sup></b>
14	2180	2420	2420	2720	<b>2660<sup>1</sup></b>	2045
15	2270	2450	2000	<b>2180<sup>1</sup></b>	2700	2500
16	2045	2130	1860	1950	<b>1770<sup>1</sup></b>	2270
17	2090	1950	1800	2130	2000	<b>1900<sup>1</sup></b>
18	2300	2400	2545	2000	<b>2360<sup>1</sup></b>	2270
19	2300	2110	1950	2090	2045	<b>2090<sup>1</sup></b>
20	-	-	-	2270	<b>2000<sup>2</sup></b>	-
21	1950	2045	2090	2180	<b>2270<sup>1</sup></b>	2000
22	1860	2045	2320	2130	1900	<b>2190<sup>1</sup></b>
23	1860	1770	1720	<b>1900<sup>1</sup></b>	2130	-
24	-	-	-	<b>1360<sup>1</sup></b>	-	-
25	-	-	2700	2120	2120	<b>2420<sup>1</sup></b>

Note: **Bold** represents the year when the beneficiary participated in the Central Sector Scheme

Number 1 - Represents Participation In Minikit

2 - Represents Participation In Demonstration Plot

3 - Represents Participation In Plant Protection Measures.

## Appendix A.7.6 (b)

### Yield from Sample Farmers

District : Satara and Taluka : Koregaon) (Crop : Ginger, Yield : Kg / Hectare)

Satara Taluka	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97
1	1818	2000	2300	1900	2300	2100 <sup>3</sup>
2	1900	2200	1900	2500	2000 <sup>2</sup>	2200
3	1800	1800	1800	1800	2000	2000 <sup>1</sup>
4	-	-	-	-	-	1800 <sup>2</sup>
5	-	-	-	-	-	1900 <sup>1</sup>
6	1900	2100	2409	2000	1900	1900 <sup>1</sup>
7	-	-	-	-	-	1760 <sup>1</sup>
8	-	-	-	-	-	1850 <sup>1</sup>
9	2045	1900	2090	2270	1900 <sup>1</sup>	2090
10	2090	2000	1900	1860	1860 <sup>3</sup>	2045
11	1900	2000	1950	2400	2045	1950 <sup>1</sup>
12	-	-	-	-	-	1820 <sup>1</sup>
13	1950	2130	2270	2450	2090	2000 <sup>3</sup>
14	2200	2420	2420	2700	2660	2045 <sup>1</sup>
15	2270	2450	2000	2180	2700	2500 <sup>1</sup>
16	2045	2130	1860	1950	1770 <sup>1</sup>	2270
17	2090	1950	2180	2130	2000	1900 <sup>1</sup>
18	2300	2400	2540	2000	2360 <sup>1</sup>	2270
19	2300	2100	1950	2090	2045	2090 <sup>1</sup>
20	-	-	-	2270	2000 <sup>1</sup>	-
21	1950	2000	2090	2180	2270	2000 <sup>1</sup>
22	1860	2045	2300	2130	1900	2270 <sup>2</sup>
23	1860	1770	1700	1900 <sup>1</sup>	2130	-
24	-	-	-	2700 <sup>1</sup>	-	-
25	2700	2120	2120	2400 <sup>2</sup>	-	-

Note: Bold represents the year when the beneficiary participated in the Central Sector Scheme

Number 1 - Represents Participation In Minikit

2 - Represents Participation In Demonstration Plot

3 - Represents Participation In Plant Protection Measures.

## **CHAPTER VIII**

### **Impact of Central Sector Scheme on Production of Chilli (Based on Field Survey)**

Chilli is one of the most important spice cum vegetable crop, having tremendous potential in the internal market as well as export trade. Chilli has two important commercial qualities - its red color because of the pigment capsanthin and its pungency attributed by capsaicin. Paprika is a chilli based product rich in capsanthin and poor in capsaicin.

Chilli requires warm and humid climate and can be cultivated as a kharif, rabi as well as summer crop. The most suited soil for chilli are medium to heavy soils. The seed rate normally required for chilli is 1 to 1.5 Kg per hectare. Seed treatment with 3gm thiram per Kg seed is necessary to prevent seed borne diseases. The fertilizer recommendation for chilli varies for each state. Irrigated chilli increases yield but has problem of weeds as menace. Chilli is also affected by a large number of fungal, bacterial and viral diseases such as leaf curl, yellow mosaic. Plant parasitic nematodes also attack the crop. Chilli production, however can be increased by use of hybrid technology, efficient and higher usage of fertilizers and management of diseases. In the recent past a number of high yielding varieties of chilli have been developed which can increase yield if scientific agrotechniques and plant protection measures are applied.

In view of the importance of this crop, a number of programmes had been implemented in the Central Sector Scheme, to promote the production of this crop. In this chapter therefore we propose to study the impact of this scheme on farmers who have availed of subsidies and participated in various programmes initiated of subsidies and participated in various programmes initiated to improve and increase chilli production.

#### **8.1 Cropping Pattern of Sample Farmers:**

The cropping pattern of the chilli farmers is indicated in Appendix A8.1(a) and (b). It can be observed that cereals occupied a major share in the gross cropped area of

the sample farmers, while a small part of the area was devoted to pulses. Fodder and cash crops did not seem to be popular with chilli growers, although many of them cultivated oilseeds.

Farmers cultivated chilli on an area ranging from 1 acre to 1 hectare. A few cultivators had more than 1 hectare under chilli. Different varieties were grown by the cultivators, The local varieties cultivated were Nagini, Nagkanya, Bhivapuri while improved varieties grown were G-4, 235, Jayanti. These improved varieties were mostly introduced to the farmers through Central Sector Scheme.

## **8.2 Socio-Economic Background of Chilli - Cultivating Households:**

The socio-economic background of the chilli cultivating Households is indicated in Appendix A8.2(a) and (b).

Agriculture was the main occupation of the households and very few of them had subsidiary occupations. Most of the farmers had very elementary school education, but some of them were graduates.

The income of the cultivators ranged from about Rs 30,000 to Rs 3,00,000 annually. Income was higher for medium and large farmers. Most cultivators had membership of some organization.

## **8.3 Details of Land and Asset Structure:**

The details of land and asset structure is indicated in Appendix A.8.3(a) and (b). Farmers cultivated almost the entire area owned, although quite a few farmers had 0.10 ha to 0.40 ha as waste land. Most of their area was under irrigation and hence double cropping was possible. Most farmers had a tube well or well.

## **8.4 Cost of Cultivation and Net Income Per Acre:**

The cost of cultivation per acre for chilli for the years 1991-92 to 1996-97 is shown in Appendix A.8.4(a) and (b). The cost per acre normally ranged from Rs 5000 to Rs 10000 per acre and varied across cultivators and years. In some cases the cost exceeded Rs 10,000 per acre. Hired labour and bullock labour were major elements of cost, followed by organic manure and fertilizers.

The net income per acre from chilli is shown in Appendix A.8.5(a) and (b). It can be observed that in Kuhi Taluka, normally the net income per acre was less than Rs 10,000 although there were some cases when farmers earned more. In maula Taluka, there were a number of cases when farmers earned more than Rs 10,000. It also appeared that cost and cultivation and net income were not related to farm size.

### 8.5 Participation of Beneficiaries in Central Sector Scheme:

Before we observe the participation of beneficiaries in different programmes for chilli, we can observe the extent to which the Scheme is implemented in Nagpur. This is indicated in Table 8.1.

Table 8.1 Central Sector Scheme for Chilli In Nagpur

	Production of nuclear seed (tonnes)	Establishment of demonstration plot (nos)	Plant protection programme (ha)	Distribution of mini kits	Area expansion (ha)	Paprika demonstration plots (nos)
1992-93	0	17	373	0	0	0
1993-94	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1994-95	0	170	3691	200	129	0
1995-96	0	200	2681	250	227	0
1996-97	0	185	1500	265	90	20

Source: Derived from Appendix A.5.3

From Table 8.1, it can be observed that in Nagpur district, maximum participation was for plant protection measures. This was followed by distribution of mini kits and establishment of demonstration plots.

After observing the extent to which the Central Sector Scheme was implemented in Nagpur, we can now group the sample farmers (according to Land Holding Size) according to their participation in the different programmes in the scheme. This is presented in Table 8.2.

**Table 8.2 Participation of Sample Beneficiaries In Central Sector Scheme (Nos)**

	<b>Received nucleus seed</b>	<b>Established demonstration plot</b>	<b>Area expansion</b>	<b>Plant protection measures</b>
Marginal	-	3	1	2
Small	1	8	6	4
Semi-Medium	3	5	3	1
Medium	2	2	6	-
Large	1	2	-	-
<b>Total</b>	<b>7</b>	<b>20</b>	<b>16</b>	<b>7</b>

Source: Field Survey

It can be observed from the sample, that maximum beneficiaries availed of subsidies for establishing demonstration plots. Although in Nagpur as a whole, high targets had been fixed for plant protection measures, in the two talukas, which were selected, this programme was implemented only in 1995-96. Hence, in our sample, we had relatively few cases of beneficiaries who participated in plant protection programme. Also, the minikit programme was not implemented in these two talukas; hence in our sample we do not have these beneficiaries.

#### **8.6 Impact of Central Sector Scheme On Yield of Chilli in Case of Sample Farmers:**

The main purpose of implementing the Central Sector Scheme was to increase production by diverting area from local to high yielding varieties and adopting scientific agronomic practices.

We, therefor, calculated yield in the plots of the farmers who participated in various programmes implemented for chilli. The yield of sample farmers for both the selected talukas is shown in Appendix A.8.6 (a) & (b).

In both the talukas atleast half the number of beneficiaries in the sample, who participated in programmes such as establishment of demonstration plots, area expansion programmes, plant protection measures, experienced increase in yield. As already noted, the purpose of demonstration plots and area expansion was to provide

the farmers with high yielding varieties of seeds and the appropriate complementary inputs. A number of farmers when interviewed, said that because of their participation in these programmes they had switched over from local to high yielding varieties of chilli and experienced high yields. They also reported that they would continue to use the higher yielding varieties. Further, in quite a few cases it was observed that farmers continue to experience higher yields after their participation in the programme, which could perhaps suggest that they are responding to better farming techniques. There were, however, cases also where farmers did not experience higher yields despite using better methods of cultivation.

A few chilli farmers who established paprika demonstration plots, reported that their experiment had failed. For example, one cultivate had 0.50 hectares under chilli, out of which a paprika demonstration plot was established in 0.10 hectares. This plot however was not a success. The farmer reported that for establishing a paprika plot successfully chilli crop should not be cultivated in the plots surrounding the paprika plot.

A number of farmers also received nucleus seeds of high yielding varieties which could be used for further seed multiplication.

### **8.7 Evaluation of Impact of Central Sector Scheme on Chilli and Suggestions**

In this chapter, we tried to assess the impact of the Central Sector Scheme on production of chilli by surveying 50 farmers who had availed of subsidies under this scheme. We assessed yield of chilli for the period 1991-92 to 1996-97. A few observations come out from our survey. They are:

- 1) In chapter IV, (Appendix A.4.9) we observed that till 1993-94, the yield in Nagpur was 134 Kg per hectare. This however increased to a little over 200 Kg per hectare in 1994-95 to and 1995-96. These were also the years when the Central Sector Scheme had maximum targets as compared to other years. Also, in our sample, all farmers had yields which were much higher than the district average.
- 2) As already noted, a number of farmers, responded positively to high yielding varieties and continued to grow these varieties. Some of these high yielding varieties, such as Jayanti could be grown even in rain-fed conditions. Since Nagpur

is a region where irrigation facilities are limited, farmers responded well to high yielding varieties which could grow in unirrigated tracts.

- 3) A number of farmers felt that chilli is a profitable crop and their socio-economic status improved after growing chilli.

Thus, although the field survey showed some encouraging results, a number of problems are faced by farmers which limit yield for which there is tremendous potential. They are :

1. The pre-harvest and post harvest operations are laborious. The traditional method of sun drying is facing the problem of availability of area for drying, watching and protection from unfavourable weather condition. This practise does not give good quality produce and the recovery of the dried material is also less due to breakage and loss of seeds. The time taken for drying is also long and colour fades during storage making chilli less attractive.
2. Farmers still do not have enough guidance for improving the quality of the crop. Timely availability and true to type seed and other services are quite often beyond the reach of the farmers.
3. Yield is limited due to a large number of complex diseases such as leaf curl, soft rot, fruit rot. Leaf curl is the most serious disease in chilli and causes complete economic loss. None of the varieties cultivated by the growers showed resistance to this disease. Again, diseases such as fruit rot caused 50 per cent damage to the crop.
4. Further, the farmers themselves lacked quality consciousness . Their sales were in domestic market and they did not have any information on export market and export quality.

Therefore agricultural extension services to farmers, availability of more irrigation facilities and scientific post-harvest technology will increase yield and provide better marketing facilities to farmers.

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# APPENDIX A.8.1(a)

Tel. KUHl , Dist : NAGPUR

## Cropping Pattern of Sample Farmers

[ Area in Hectares ]

No. of Farmer	1991 - 1992					Chilli Spices		Total (G C A)	No. of Farmer	1992 - 93					Chilli Spices		Total (G C A)
	Area In Hectares					Area	Variety			Area In Hectares					Area	Variety	
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder					Cereals	Pulses	Oil Seed	Cash Crops	Fodder			
1	0.40	-	0.55	-	-	0.40	Nagkanya	1.35	1	0.40	-	0.55	-	-	0.40	Nagkanya	1.35
2	0.60	-	0.6	-	-	0.40	Nagkanya	1.40	2	0.30	-	0.6	-	-	0.40	Nagkanya	1.40
3	1.00	0.20	-	-	-	0.20	Nagkanya	1.40	3	1.00	0.2	-	-	-	0.20	Nagkanya	1.40
4	0.90	0.40	-	-	-	0.20	Bhivapuri	1.50	4	0.90	0.40	-	-	-	0.20	Bhivapuri	1.50
5	-	-	0.8	-	-	0.80	Nagkanya	1.60	5	-	-	0.80	-	-	0.80	Nagkanya	1.60
6	0.80	-	1.2	-	-	0.40	Bhivapuri	2.40	6	0.80	-	1.20	-	-	0.40	Bhivapuri	2.40
7	1.20	0.20	0.4	-	-	0.20	Bhivapuri	2.00	7	1.20	0.20	0.40	-	-	0.20	Bhivapuri	2.00
8	0.40	-	0.3	-	-	1.20	Bhivapuri	1.90	8	0.40	-	0.30	-	-	1.20	Bhivapuri	1.90
9	0.90	-	0.9	-	-	1.00	Nagkanya	2.80	9	0.90	-	0.90	-	-	1.00	Nagkanya	2.80
10	0.60	0.20	0.8	-	-	0.40	Bhivapuri	2.00	10	0.60	0.20	0.80	-	-	0.40	Bhivapuri	2.00
11	0.70	-	0.7	-	-	1.20	Nagkanya	2.60	11	0.70	-	0.70	-	-	1.20	Nagkanya	2.60
12	0.40	0.40	0.8	-	-	0.80	Bhivapuri	2.40	12	0.40	0.40	0.80	-	-	0.80	Bhivapuri	2.40
13	1.00	-	0.4	-	-	1.60	Bhivapuri	3.00	13	1.00	-	0.40	-	-	1.60	Bhivapuri	3.00
14	1.90	0.40	-	-	-	0.40	Jainty	2.70	14	1.90	0.40	-	-	-	0.40	Jainty	2.70
15	2.20	-	2	-	-	0.40	Nagkanya	4.60	15	2.20	-	2.00	-	-	0.40	Nagkanya	4.60
16	1.40	0.40	0.8	-	-	0.40	Bhivapuri	3.00	16	1.40	0.40	0.80	-	-	0.40	Bhivapuri	3.00
17	1.80	0.40	1.6	-	-	0.8	Bhivapuri	4.60	17	1.80	0.40	1.60	-	-	0.80	Bhivapuri	4.60
18	4.50	-	0.5	-	-	0.50	Nagkanya	5.50	18	4.50	-	0.50	-	-	0.50	Nagkanya	5.50
19	2.40	0.40	-	0.40	-	0.40	Nagkanya	3.60	19	2.40	0.40	-	0.40	-	0.40	Nagkanya	3.60
20	3.00	0.20	0.4	-	-	0.40	Bhivapuri	4.00	20	3.00	0.20	0.40	-	-	0.40	Bhivapuri	4.00
21	2.20	0.40	0.80	0.40	-	0.40	Bhivapuri	4.20	21	2.20	0.40	0.80	0.40	-	0.40	Bhivapuri	4.20
22	2.60	0.40	-	0.80	-	0.40	G4	4.20	22	2.60	0.40	-	0.80	-	0.40	G4	4.20
23	3.00	1.00	-	-	-	2.00	SadaBahar	6.00	23	3.00	1.00	-	-	-	2.00	SadaBahar	6.00
24	1.80	0.20	6.00	-	-	2.40	Bhivapuri	10.40	24	1.80	0.20	6.00	-	-	2.40	Bhivapuri	10.40
25	11.60	0.80	-	0.80	-	0.80	Nagkanya	14.00	25	11.60	0.80	-	0.80	-	0.80	Nagkanya	14.00

Tal. KUHI, Dist : NAGPUR

Cropping Pattern of Sample Farmers

[ Area in Hectares ]

No. of Farmer	1993 - 1994					Chilli Spices		Total (G C A)	No. of Farmer	1994 - 95					Chilli Spices		Total (G C A)
	Area In Hectares									Area In Hectares							
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety			Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety	
1	0.40	-	0.55	-	-	0.40	Nagkanya	1.35	1	0.40	-	0.55	-	-	0.40	Jainty	1.35
2	0.60	-	0.6	-	-	0.40	Nagkanya	1.40	2	0.20	-	0.2	-	-	0.40	Jainty	1.20
3	1.00	0.20	-	-	-	0.40	Nagkanya	1.40	3	1.00	0.2	-	-	-	0.20	No 235	1.40
4	0.70	0.40	-	-	-	0.40	Bhivapuri	1.50	4	0.70	0.40	-	-	-	0.40	Jainty	1.50
5	-	-	0.8	-	-	0.80	Nagkanya	1.60	5	-	-	0.80	-	-	0.80	Nagkanya	1.60
6	-	0.80	0.8	-	-	0.80	Bhivapuri	2.40	6	-	0.80	0.80	-	-	0.80	Jainty	2.40
7	1.20	0.20	0.4	-	-	0.20	Bhivapuri	2.00	7	1.20	0.20	0.40	-	-	0.20	Bhivapuri	2.00
8	0.80	-	0.3	-	-	0.80	Phule	1.90	8	0.80	-	0.30	-	-	0.80	Phule	1.90
9	0.90	-	0.9	-	-	1.00	Nagkanya	2.80	9	0.70	-	0.70	-	-	1.20	Jainty	2.60
10	0.60	0.20	0.8	-	-	0.40	Bhivapuri	2.00	10	0.20	0.20	0.80	-	-	0.80	Jainty	2.00
11	0.90	-	0.9	-	-	1.00	Nagkanya	2.80	11	0.90	-	0.90	-	-	1.00	No 235	2.80
12	0.40	0.40	0.8	-	-	0.80	Bhivapuri	2.40	12	0.40	0.40	0.80	-	-	0.80	Jainty	2.40
13	1.00	-	0.8	-	-	1.20	Jainty	3.00	13	1.00	-	0.80	-	-	1.20	Jainty	3.00
14	1.50	0.40	-	-	-	0.80	Jainty	2.70	14	1.10	0.80	-	-	-	0.80	Jainty	2.70
15	2.20	-	2	-	-	0.40	235 No	4.60	15	2.20	-	2.00	-	-	0.40	Jainty	4.60
16	1.40	0.40	0.8	-	-	0.40	Bhivapuri	3.00	16	1.40	0.40	0.80	-	-	0.40	Jainty	3.00
17	1.80	0.40	1.6	-	-	0.8	G4	4.60	17	1.80	0.40	1.60	-	-	0.80	G4	4.60
18	4.50	-	0.5	-	-	0.50	Nagkanya	5.50	18	4.50	-	0.50	-	-	0.50	No 235	5.50
19	2.60	0.20	-	0.40	-	0.40	Nagkanya	3.60	19	2.60	0.20	-	0.40	-	0.40	Jainty	3.60
20	3.00	0.20	0.4	-	-	0.40	Bhivapuri	4.00	20	3.00	0.20	0.40	-	-	0.40	Jainty	4.00
21	1.80	0.40	0.80	0.40	-	0.80	Bhivapuri	4.20	21	1.80	0.40	0.80	0.40	-	0.80	No 235	4.20
22	2.20	0.40	-	0.80	-	0.80	G4	4.20	22	2.20	0.40	-	0.80	-	0.80	Jainty	4.20
23	3.00	1.00	-	-	-	2.00	Jainty	6.00	23	3.00	1.00	-	-	-	2.00	Jainty	6.00
24	1.80	0.20	6.00	-	-	2.40	Nagkanya	10.40	24	1.60	0.20	6.00	-	-	2.60	Nagkanya	10.40
25	11.40	0.80	-	0.80	-	1.00	G4	14.00	25	11.40	0.80	-	0.80	-	1.00	G4	14.00

Tal. KUHI, Dist : NAGPUR

Cropping Pattern of Sample Farmers

[ Area in Hectares ]

No. of Farmer	1995 - 1996					Chilli Spices		Total (G C A)	No. of Farmer	1996 - 97					Chilli Spices		Total (G C A)
	Area In Hectares									Area In Hectares							
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety			Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety	
1	0.20	-	0.4	0.15	-	0.40	Jainty	1.15	1	0.20	-	0.4	0.15	-	0.40	No 235	1.15
2	0.20	-	0.2	0.4	-	0.40	Jainty	1.20	2	0.20	-	0.2	0.40	-	0.40	Agrirakha	1.20
3	1.00	0.20	-	-	-	0.20	No 235	1.40	3	1.00	0.2	-	-	-	0.20	No 235	1.40
4	0.70	0.40	-	-	-	0.40	Jainty	1.50	4	0.70	0.40	-	-	-	0.40	Jainty	1.50
5	-	-	0.8	-	-	0.80	Nagkanya	1.60	5	-	-	0.80	-	-	0.80	Jainty	1.60
6	0.80	-	1.2	-	-	0.40	Jainty	2.40	6	0.80	-	1.20	-	-	0.40	Jainty	2.40
7	1.20	0.20	0.4	-	-	0.20	Bhivapuri	2.00	7	1.20	0.20	0.40	-	-	0.20	Bhivapuri	2.00
8	0.40	-	0.3	-	-	1.20	Phule	1.90	8	0.40	-	0.30	-	-	1.20	Jainty	1.90
9	0.70	-	0.7	-	-	1.20	Jainty	2.60	9	0.70	-	0.70	-	-	1.20	Jainty	2.60
10	0.20	0.20	0.8	-	-	0.80	Jainty	2.00	10	0.20	0.20	0.80	-	-	0.80	Jainty	2.00
11	0.30	-	0.3	-	-	1.60	No 235	2.20	11	0.40	-	0.70	-	-	1.20	No 235	2.30
12	0.40	0.40	0.8	-	-	0.80	Jainty	2.40	12	0.40	0.40	0.80	-	-	0.80	Jainty	2.40
13	1.00	-	0.4	-	-	1.60	Jainty	3.00	13	1.00	-	0.40	-	-	1.60	Jainty	3.00
14	1.10	0.80	-	-	-	0.80	Agrirakta	2.70	14	1.10	0.80	-	-	-	0.80	Agrirakha	2.70
15	2.20	-	2	-	-	0.40	Jainty	4.60	15	2.20	-	2.00	-	-	0.40	Agrirakha	4.60
16	1.40	0.40	0.8	-	-	0.40	Jainty	3.00	16	1.40	0.40	0.80	-	-	0.40	Jainty	3.00
17	1.60	0.40	1.6	0.20	-	0.8	Jainty	4.60	17	1.60	0.40	1.60	0.20	-	0.80	No 235	4.60
18	2.80	-	0.5	-	-	0.50	No 235	5.50	18	4.50	-	0.50	-	-	0.50	Jainty	5.50
19	2.40	0.40	-	0.40	-	0.40	Jainty	3.60	19	2.40	0.40	-	0.40	-	0.40	Jainty	3.60
20	3.00	0.20	0.4	-	-	0.40	Jainty	4.00	20	3.00	0.20	0.40	-	-	0.40	No 235	4.00
21	1.80	0.40	0.80	0.40	-	0.80	No 235	4.20	21	1.40	0.40	0.80	0.40	-	1.20	Jainty	4.20
22	2.20	0.40	-	0.80	-	0.80	Jainty	4.20	22	2.20	0.40	-	0.80	-	0.80	Agrirakha	4.20
23	3.00	1.00	-	-	-	2.00	Agrirakta	6.00	23	3.00	1.00	-	-	-	2.00	Jainty	6.00
24	1.60	0.20	6.00	-	-	2.60	Jainty	10.40	24	1.80	0.20	0.60	-	-	2.40	Jainty	10.40
25	10.40	0.80	-	0.80	-	2.00	Jainty	14.00	25	10.40	0.80	-	0.80	-	2.00	Jainty	14.00

**APPENDIX A.8.1(b)**  
Tal. MAUDA, Dist : NAGPUR

**Cropping Pattern of Sample Farmers**

[ Area in Hectares ]

No. of Farmer	1991 - 1992					Chilli Spices		Total (G C A)	No. of Farmer	1992 - 93					Chilli Spices		Total (G C A)
	Area In Hectares									Area In Hectares							
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Vartty			Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Vartty	
1	0.20	0.2	-	-	-	0.40	Jayats	0.80	1	0.20	0.2	-	-	-	0.40	Jayats	0.80
2	0.80	-	-	-	-	-	Jayats	0.80	2	0.80	-	-	-	-	-	Jayats	0.80
3	0.40	-	0.4	-	-	0.40	Nagini	1.20	3	0.40	-	0.4	-	-	0.40	Nagini	1.20
4	-	0.40	0.4	0.20	-	-	Nagini	1.00	4	-	0.40	0.4	0.20	-	-	Nagini	1.00
5	0.50	-	0.5	-	-	0.50	Nagkany	1.50	5	0.50	-	0.5	-	-	0.50	Nagkany	1.50
6	0.80	-	0.4	-	-	0.40	Nagini	1.60	6	0.80	-	0.4	-	-	0.40	Nagini	1.60
7	0.60	0.20	0.9	-	-	0.40	Nagkany	2.10	7	0.60	0.20	0.9	-	-	0.40	Nagkany	2.10
8	0.40	0.30	0.7	-	-	0.80	Nagini	2.20	8	0.40	0.30	0.7	-	-	0.80	Nagini	2.20
9	0.60	0.20	0.8	-	-	0.80	Nagini	2.40	9	0.60	0.20	0.8	-	-	0.80	Nagini	2.40
10	0.80	0.40	0.4	0.20	-	0.60	Nagini	2.40	10	0.80	0.40	0.4	0.20	-	0.60	Nagini	2.40
11	1.20	-	0.8	-	-	0.60	235	2.60	11	1.20	-	0.8	-	-	0.60	Nagini	2.60
12	1.60	-	0.8	-	-	0.40	Nagini	2.80	12	1.60	-	0.8	-	-	0.40	Nagini	2.80
13	0.80	-	-	0.70	-	0.80	Nagini	2.30	13	0.80	-	-	0.70	-	0.80	Nagini	2.30
14	1.20	0.30	-	-	-	0.40	Nagini	1.90	14	1.20	0.30	-	-	-	0.40	Nagini	1.90
15	1.60	0.40	-	-	-	0.60	Nagini	2.60	15	1.40	0.40	-	-	-	0.60	Nagini	2.60
16	2.20	0.40	-	-	-	0.40	Jayats	3.00	16	2.20	0.40	-	-	-	0.40	Jayats	3.00
17	3.40	0.40	-	-	-	0.2	Jayats	4.00	17	3.60	0.40	-	-	-	0.2	Jayats	4.00
18	4.00	-	-	-	-	0.40	Jayats	4.40	18	3.60	-	-	-	-	0.40	Jayats	4.40
19	3.40	0.40	-	-	-	0.80	Jayats	4.60	19	3.40	0.40	-	-	-	0.80	Jayats	4.60
20	3.20	0.80	-	-	-	0.80	Nagini	4.80	20	3.20	0.80	-	-	-	0.80	Nagini	4.80
21	2.80	0.80	-	-	-	1.80	Nagini	5.40	21	3.60	0.80	-	-	-	1.80	Nagini	5.40
22	3.60	0.40	-	-	-	2.00	Nagini	6.00	22	3.40	0.40	-	-	-	2.00	Nagini	6.00
23	2.00	0.80	2.4	0.80	0.4	1.20	Nagini	7.60	23	2.00	0.80	2.4	0.80	0.40	1.20	Nagini	7.60
24	6.40	0.80	-	-	-	0.80	Jayats	8.00	24	6.40	0.80	-	-	-	0.80	Agri.	8.00
25	9.20	0.80	-	-	-	1.00	Agriakha	11.00	25	9.20	0.80	-	-	-	1.00	235	11.00

Tal. MAUDA, Dist : NAGPUR

Cropping Pattern of Sample Farmers

[ Area in Hectares ]

No. of Farmer	1993 - 1994						Total (G C A)	No. of Farmer	1994 - 95						Total (G C A)		
	Area In Hectares					Chilli Spices			Area In Hectares					Chilli Spices			
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area			Varity	Cereals	Pulses	Oil Seed	Cash Crops	Fodder		Area	Varity
1	0.40	-	-	-	-	0.40	Jayats	0.80	1	0.60	-	-	-	-	0.20	Nagini	0.80
2	0.40	-	-	-	-	0.40	Agarrekha	0.80	2	0.40	-	-	-	-	0.40	Jayats	0.80
3	0.40	-	0.4	-	-	0.40	Nagini	1.20	3	0.40	-	0.4	-	-	0.40	Jayats	1.20
4	-	0.40	0.4	0.20	-	-	Nagini	1.00	4	-	0.40	0.4	0.20	-	-	-	1.00
5	0.50	-	0.5	-	-	0.50	Nagkanya	1.50	5	-	-	-	-	-	1.00	G4	1.00
6	0.60	-	0.4	-	-	0.60	Nagini	1.60	6	0.60	-	0.4	-	-	0.60	No 235	1.60
7	0.60	0.30	0.8	-	-	0.40	Nagkanya	2.10	7	0.60	0.30	0.8	-	-	0.40	Jayats	2.10
8	0.40	0.30	0.7	-	-	0.80	Nagini	2.20	8	0.40	0.30	0.7	-	-	0.80	No 235	2.20
9	0.60	0.20	0.8	-	-	0.80	Nagini	2.40	9	0.60	0.20	0.8	-	-	0.80	No 235	2.40
10	0.80	0.40	0.4	0.20	-	0.60	Nagini	2.40	10	0.40	0.20	0.4	-	-	1.00	No 235	2.00
11	1.20	-	0.8	-	-	0.60	Nagini	2.60	11	1.20	-	0.8	-	-	0.60	Nagini	2.60
12	1.60	-	0.8	-	-	0.40	Nagini	2.80	12	1.60	-	0.8	-	-	0.40	Nagini	2.80
13	0.80	-	-	0.70	-	0.80	Nagini	2.30	13	0.80	-	-	0.70	-	0.80	No 235	2.30
14	1.20	0.30	-	-	-	0.40	Nagini	1.90	14	1.20	0.30	-	-	-	0.40	No 235	1.90
15	1.60	0.20	-	-	-	0.80	Nagini	2.60	15	1.60	0.20	-	-	-	0.80	Jayats	2.60
16	2.60	0.20	-	-	-	0.20	Jayats	3.00	16	2.60	0.20	-	-	-	0.20	No 235	3.00
17	2.60	0.60	-	-	-	0.8	Jayats	4.00	17	2.40	0.80	-	-	-	0.8	No 235	4.00
18	3.60	-	-	-	-	0.80	Jayats	4.40	18	3.60	-	-	-	-	0.80	No 235	4.40
19	3.20	0.60	-	-	-	0.80	Jayats	4.60	19	3.20	0.60	-	-	-	0.80	No 235	4.60
20	3.60	0.40	-	-	-	0.80	Nagini	4.80	20	3.60	0.40	-	-	-	0.80	No 235	4.80
21	2.60	0.80	-	-	-	2.00	Nagini	5.40	21	3.00	0.60	-	-	-	1.80	No 235	5.40
22	2.80	0.80	-	-	-	2.40	Nagini	6.00	22	3.40	0.40	-	-	-	2.20	No 235	6.00
23	2.00	0.80	2.4	0.80	0.4	1.20	235	7.60	23	2.00	0.80	2.4	0.80	0.40	1.20	No 235	7.60
24	6.80	0.80	-	-	-	0.40	Jayats	8.00	24	6.40	0.80	-	-	-	0.80	Jayats	8.00
25	9.20	0.80	-	-	-	1.00	Jayats	11.00	25	8.40	0.60	-	-	-	2.00	No 235	11.00

Tal. MAUDA, Dist : NAGPUR

Cropping Pattern of Sample Farmers

[ Area in Hectares ]

No. of Farmer	1995 - 1996					Chilli Spices		Total (G C A)	No. of Farmer	1996 - 97					Chilli Spices		Total (G C A)
	Area In Hectares									Area In Hectares							
	Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety			Cereals	Pulses	Oil Seed	Cash Crops	Fodder	Area	Variety	
1	0.40	0.2	-	-	-	0.20	Jayats	0.80	1	0.40	0.2	-	-	-	0.20	Jayats	0.80
2	0.40	-	-	-	-	0.40	Agrirekha	0.80	2	0.60	-	-	-	-	0.20	Jayats	0.80
3	0.40	-	0.4	-	-	0.40	Jayats	1.20	3	0.40	-	0.4	-	-	0.40	Jayats	1.20
4	-	0.40	0.4	0.20	-	0.20	Jayats	1.00	4	-	0.40	0.4	0.20	-	0.20	Jayats	1.00
5	0.50	-	0.5	-	-	0.50	No 235	1.50	5	0.50	-	0.5	-	-	0.50	No 235	1.00
6	0.80	-	0.4	-	-	0.40	No 235	1.60	6	0.80	-	0.4	-	-	0.40	No 235	1.60
7	0.60	0.30	0.8	-	-	0.40	No 235	2.10	7	0.60	0.30	0.8	-	-	0.40	No 235	2.10
8	0.40	0.30	0.7	-	-	0.80	No 235	2.20	8	0.40	0.30	0.7	-	-	0.80	No 235	2.20
9	0.60	0.20	0.8	-	-	0.80	No 235	2.40	9	0.60	0.20	0.8	-	-	0.80	No 235	2.40
10	0.80	0.40	0.4	0.20	-	0.60	No 235	2.40	10	0.80	0.40	0.4	-	-	0.60	No 235	2.00
11	1.20	-	0.8	-	-	0.60	No 235	2.60	11	1.20	-	0.8	-	-	0.60	No 235	2.60
12	1.60	-	0.8	-	-	0.40	No 235	2.80	12	1.60	-	0.8	-	-	0.40	No 235	2.80
13	0.80	-	-	0.70	-	0.80	No 235	2.30	13	0.80	-	-	0.70	-	0.80	No 235	2.30
14	1.20	0.30	-	-	-	0.40	No 235	1.90	14	1.20	0.30	-	-	-	0.40	No 235	1.90
15	2.00	0.20	-	-	-	0.40	Jayats	2.60	15	1.80	0.20	-	-	-	0.40	Jayats	2.60
16	1.80	0.40	-	-	-	0.80	No 235	3.00	16	1.80	0.40	-	-	-	0.80	No 235	3.00
17	2.40	0.80	-	-	-	0.8	No 235	4.00	17	3.20	0.80	-	-	-	0.4	No 235	4.00
18	4.00	-	-	-	-	0.40	No 235	4.40	18	3.60	-	-	-	-	0.80	No 235	4.40
19	3.20	0.60	-	-	-	0.80	No 235	4.60	19	3.20	0.60	-	-	-	0.80	No 235	4.60
20	3.60	0.40	-	-	-	0.80	Jayats	4.80	20	3.20	0.40	-	-	-	0.80	Jayats	4.80
21	2.80	0.80	-	-	-	1.80	Jayats	5.40	21	3.00	0.80	-	-	-	2.00	Jayats	5.40
22	3.60	0.60	-	-	-	1.80	Jayats	6.00	22	3.40	0.60	-	-	-	1.80	Jayats	6.00
23	2.00	0.80	2.4	0.80	0.4	1.20	No 235	7.60	23	2.00	0.80	2.4	0.80	0.40	1.20	No 235	7.60
24	6.40	0.80	-	-	-	0.80	No 235	8.00	24	6.00	0.80	-	-	-	1.20	No 235	8.00
25	8.40	0.60	-	-	-	2.00	No 235	11.00	25	8.20	0.60	-	-	-	2.00	No 235	11.00

# APPENDIX A.8.2 (a)

DIST : NAGPUR , Tal. KUHI  
Soci-economic Background of house hold

No of the Farmers	Caste	Occupation Main Subsidiary	Edu of the Head	No of family members m f c	No of workers m f c	No of non Workers m f c	Reason of Non working m f c	Lite - Rate m f c	Illiterate m f c	Member ship any organ.	Total Income (Rs)
1	2	1 -	9th	1 1 2	1 1 -	- - 2	- - 3	1 1 -	- - -	1	34900
2	2	1 -	10th	1 1 3	1 1 -	- - 3	- - 2+3	1 1 1	- - -	1	34000
3	2	3 -	4th	2 2 -	2 - -	- 2 -	- 5 -	2 1 -	- 1 -	1	23400
4	2	1 3	9th	2 2 -	2 - -	- 2 -	- 5 -	2 1 -	- 1 -	1	52600
5	2	1 -	4th	1 1 5	1 1 -	- - 5	- - 2	1 1 5	- - -	1	36000
6	1	1 -	4th	1 1 1	- - 1	1 1 -	1 1 -	1 1 1	- - -	1	30800
7	2	1 -	-	2 2 1	1 1 -	1 1 1	4 5 3	1 1 -	1 1 -	1	42150
8	2	1 -	-	1 1 -	1 1 -	- - -	- - -	- - -	1 1 -	1	158200
9	2	1 -	B.Com	1 1 2	1 1 -	- - 2	- - 3	1 1 -	- - -	1	72750
10	1	1 -	4th	4 3 3	3 3 -	1 - 3	1 - 2+3	3 2 -	1 1 2	1	64200
11	2	1 -	-	2 3 -	1 1 -	1 2 -	2 2 -	2 3 -	- - -	1	111500
12	2	1 4	4th	3 3 2	3 - -	- 3 2	5 2 3	3 2 1	- 1 -	1	70900
13	2	1 -	7th	3 1 2	1 1 -	2 - 2	2 - 2	3 1 2	- - -	2	88200
14	2	1 -	9th	1 1 1	1 1 -	- - 1	- - 3	1 1 -	- - -	1	53000
15	2	1 -	12th	2 1 -	1 1 -	1 - -	2 - -	2 - -	- 1 -	2	57100
16	8	1 -	-	3 2 2	3 2 -	- - 2	- - 2+3	2 1 1	1 1 -	1	44000
17	2	1 -	11th	2 1 5	1 1 -	1 - 5	2 - 2	2 1 5	- - -	1	66700
18	8	2 5	F.Y	1 2 2	1 2 -	- - 2	- - 2	1 1 2	- 1 -	1	109800
19	8	1 -	B.Sc	2 1 3	1 - -	1 1 3	1 5 2	1 1 3	1 - -	1	41800
20	2	2 -	B.A.	1 1 2	- - -	1 1 2	4 5 2+3	1 1 1	- - -	1	83400
21	2	1 -	B.A.	2 1 1	2 - -	- 1 1	- 5 3	2 1 -	- - -	1	91800
22	2	1 -	B.Com	1 3 2	1 1 -	- 2 2	- 5 2	1 2 2	- 1 -	1	56200
23	2	1 -	12th	1 1 2	1 1 -	- - 2	- - 2+3	1 1 1	- - -	1	125500
24	2	1 1+6	6th	4 4 5	4 2 -	- 2 5	- 5 2	4 3 5	- 1 -	1	283500
25	2	2 5	B.A.Bed	3 4 6	2 - -	1 4 6	4 5 2+3	3 3 4	- - -	1	141000

Caste (Code No)	Occupation Main Subsidiary	Reasons (Code No)	Member
Maratha 1	Agri 1 Dairy	1 Old 1	Yes 1
Tell 2	Service 2 Labour	2 Sch 2	No 2
Sutar 3	H.W. 3 Hotel	3 Small 3	
Brahman 4		4 Service 4	
Mali 5		5 H. Work 5	
Kumbhar 6			
Muslim 7			
Buodh 8			

# APPENDIX A.8.2 (b)

DIST : NAGPUR , Tal. MAUDA  
Soci-economic Background of house hold

No of the Farmers	Caste	Occupation		Edu of the Head	No of family members			No of workers			No of non Workers			Reason of Non working			Lite - Rate			Illiterate			Member ship any organ.	Total Income (Rs)
		Main	Subsidiary		m	f	c	m	f	c	m	f	c	m	f	c	m	f	c	m	f	c		
1	2	1	-	12th	1	1	-	1	1	-	-	-	-	-	-	-	1	-	-	-	1	-	2	35900
2	2	1	1	10th	1	1	1	1	1	-	-	-	1	-	-	3	1	1	-	-	-	-	-	37000
3	2	1	1	7th	1	1	1	1	1	-	-	-	1	-	-	3	1	1	1	-	-	-	2	55200
4	1	1	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	15000
5	1	1	-	12th	1	1	3	1	1	-	-	-	3	-	-	2	1	1	3	-	-	-	-	45050
6	8	1	-	-	1	1	-	1	1	-	-	-	-	-	-	-	-	1	-	1	-	-	-	35800
7	1	1	-	10th	1	1	-	1	1	-	-	-	-	-	-	-	1	1	-	-	-	-	-	44600
8	1	1	-	4th	3	1	-	2	1	-	1	-	-	2	-	-	3	1	-	-	-	-	-	74700
9	1	1	2	4th	4	2	-	4	1	-	-	1	-	-	2	-	4	1	-	-	1	-	2	49200
10	1	1	-	11th	3	2	-	1	1	-	2	1	-	2	2	-	3	2	-	-	-	-	-	52800
11	8	1	-	11th	1	2	2	1	2	-	-	-	2	-	-	2	1	-	2	-	2	-	-	43300
12	1	1	-	11th	2	2	2	2	2	-	-	-	2	-	-	3	2	2	-	-	-	-	-	73700
13	1	1	-	-	1	1	2	1	1	-	-	-	2	-	-	2	1	1	2	-	-	-	-	82500
14	1	1	-	4th	1	1	4	1	1	-	-	-	4	-	-	2	1	-	4	1	1	-	-	26500
15	1	1	-	8th	3	3	4	3	2	-	-	1	4	-	5	2	3	3	4	-	-	-	-	45800
16	3	1	-	9th	1	1	3	1	1	-	-	-	3	-	-	2	1	1	3	-	-	-	-	68700
17	1	1	-	-	1	1	1	1	1	-	-	-	1	-	-	2	-	1	1	1	-	-	-	56600
18	1	1	-	2nd	1	1	3	1	1	-	-	-	3	1	1	3	-	-	-	-	-	-	-	80500
19	1	1	1	B.Com	2	3	2	2	1	-	-	2	2	-	5	2	2	2	2	-	1	-	-	108800
20	3	1	-	-	3	3	2	3	2	-	-	1	2	-	5	2	2	2	2	1	1	-	-	75700
21	1	1	1	10th	2	2	1	2	-	-	-	2	1	-	5	2	2	2	1	-	-	-	-	127500
22	1	1	-	12th	1	1	3	1	1	-	-	-	3	-	-	2	1	1	3	-	-	-	-	128600
23	1	1	-	6th	3	1	2	3	1	-	-	-	2	-	-	2	2	1	2	1	-	-	-	166000
24	3	1	-	-	4	3	6	2	-	-	2	3	6	4	5	2	3	2	6	1	1	-	-	140000
25	5	1	-	11th	1	1	3	1	1	-	-	-	3	-	-	2	1	1	3	-	-	-	-	135000

Caste (Code No)		Occupation		Reasons (Code No)		Member	
		Main	Subsidiary				
Maratha	1	Agri	1 Dairy	1 Old	1	Yes	1
Teli	2	Service	2 Labour	2 Edu	2	No	2
Sutar	3		Thresher	3 Small	3		
Brahman	4		Agri	4 Service	4		
Mali	5		Hotel	5 H. Work	5		
Kumbhar	6		Flower Mill	6			
Muslim	7		Service	7			
Buodh	8		Other	8			

# APPENDIX A.8.3 (a)

Dist. NAGPUR, Tal: KUH  
Details of Land (Ha)

No of Farmers	Total area Owned (Ha)	Waste Land (Ha)	Cultivated area (Ha)	Area sold During last 5 years	Area Pur. during last 5 years	Area under Irrigation	Mich Animals	Drought Animals	Poultry	Others	Live Stocks							
											Modern Agri Implements							
											1	2	3	4	5	6	7	8
1	1.00	0.05	0.95	-	-	0.95	-	1	-	2	-	2	-	-	-	6	-	8
2	1.00	-	1.00	-	-	1.00	-	1	-	2	-	2	-	4	-	6	-	8
3	1.40	-	1.40	-	-	-	1	-	10	-	-	-	-	-	-	-	-	-
4	1.52	0.02	1.50	-	-	1.50	3	2	10	2	-	2	3	-	-	-	-	8
5	1.60	-	1.60	-	-	-	-	-	-	2	-	-	3	-	-	6	-	8
6	1.60	-	1.60	-	-	-	-	5	1	5	-	-	3	-	-	6	-	8
7	2.00	-	2.00	-	-	-	-	-	-	2	-	2	3	-	-	-	-	8
8	2.00	0.10	1.90	-	-	1.90	-	1	-	2	-	2	-	-	-	-	-	8
9	2.00	0.10	1.90	-	-	1.20	-	-	-	-	1	2	-	-	-	-	-	8
10	2.00	-	2.00	-	-	2.00	1	-	10	2	-	2	3	-	-	-	-	8
11	2.00	0.10	1.90	-	-	1.90	-	1	-	2	-	2	3	-	-	-	-	8
12	2.40	-	2.40	-	-	2.40	1	-	-	2	-	2	3	-	-	6	-	8
13	2.40	0.10	2.30	-	1.9	2.30	1	1	-	2	-	2	3	-	-	6	-	8
14	2.70	-	2.70	-	-	2.70	2	-	10	2	1	2	3	4	-	-	-	8
15	2.80	0.20	2.60	-	-	2.60	-	-	-	2	-	2	-	-	-	-	-	8
16	3.00	-	3.00	-	-	2.00	-	-	-	2	-	2	3	-	-	-	-	8
17	3.20	0.20	3.00	-	-	3.00	-	-	-	2	1	2	-	-	-	6	-	8
18	3.20	0.20	3.00	-	-	3.00	-	-	-	-	-	2	-	-	-	-	-	8
19	3.60	-	3.60	-	-	3.60	-	-	-	-	-	2	-	-	-	-	-	8
20	4.00	-	4.00	-	-	2.00	1	-	10	-	-	2	-	-	-	-	-	8
21	4.20	-	4.20	-	-	2.20	2	1	10	2	-	2	3	-	-	-	-	8
22	4.20	-	4.20	-	-	2.20	2	1	10	2	-	2	3	-	-	-	-	8
23	6.40	0.40	6.00	-	-	2.00	1	1	10	2	1	2	3	4	-	-	-	8
24	11.20	0.80	10.40	-	-	-	2	7	9	12	-	-	3	-	-	6	7	8
25	14.00	-	14.00	-	-	10.00	3	4	20	4	-	2	3	4	-	-	7	-

## Code

Well / Tube well	1
Pump. Set/Engin	2
Ironplough	3
Thresher	4
Dripsystem /Sprinkler	5
Dunlop cart.	6
Tractor / Trolly	7
Others	8

# APPENDIX A.8.3 (b)

Dist. NAGPUR, Tal : MAUDA

Details of Land (Ha)

No of Farmers	Total area Owned (Ha)	Waste Land	Cultivated area (Ha)	Area sold During last 5 years	Area Pur. during last 5 years	Area under Irrigation	Mich Animals	Drought Animals	Poultry	Others	Live Stocks							
											Modern Agri Implements							
											1	2	3	4	5	6	7	8
1	0.80	-	0.80	-	-	0.80	1	2	-	2	1	2	3	-	-	-	-	8
2	0.80	-	0.80	-	-	0.80	3	1	20	1	1	2	3	-	-	-	-	-
3	0.80	-	0.80	-	-	0.80	2	3	4	2	1	2	3	-	-	6	-	-
4	1.00	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
5	1.12	0.12	1.00	-	-	1.00	1	-	4	2	1	2	-	-	-	6	-	-
6	1.30	0.10	1.20	-	-	0.80	-	-	-	-	1	2	3	-	-	-	-	8
7	1.40	0.10	1.30	-	-	1.30	-	-	-	-	-	-	-	-	-	-	-	-
8	1.60	0.10	1.50	-	-	0.80	-	1	-	2	1	2	-	-	-	6	-	-
9	1.60	-	1.60	-	-	1.60	-	-	-	2	1	2	3	-	-	6	-	8
10	1.80	0.20	1.60	-	-	1.60	1	-	-	3	1	2	3	-	-	6	-	8
11	1.90	0.10	1.80	-	-	1.80	-	-	-	2	-	-	3	-	-	-	-	8
12	2.00	-	2.00	-	-	2.00	-	-	-	3	1	2	-	-	-	6	-	8
13	2.00	0.10	1.90	-	-	1.90	-	-	-	-	1	2	3	4	-	-	-	8
14	2.00	0.10	1.90	-	-	0.40	-	-	-	2	-	-	-	-	-	-	-	8
15	2.80	0.20	2.60	-	-	1.00	-	-	-	2	1	2	3	-	-	-	-	8
16	3.60	0.60	3.00	-	-	3.00	1	-	5	1	-	2	3	-	-	-	-	-
17	4.00	-	4.00	-	-	2.00	-	-	10	2	1	2	3	-	-	-	-	-
18	4.80	0.40	4.40	-	-	2.00	2	2	-	2	-	2	3	-	-	-	-	-
19	4.80	0.20	4.60	-	-	3.00	4	1	10	4	-	2	3	-	-	-	-	-
20	4.80	-	4.80	-	-	2.00	1	-	12	4	1	2	3	4	-	-	-	-
21	5.40	-	5.40	-	-	2.00	2	2	10	2	1	2	3	-	-	-	-	-
22	6.40	0.40	6.00	-	-	2.00	1	1	-	2	-	2	3	4	-	-	-	-
23	7.20	1.20	6.00	-	-	6.00	1	-	-	4	1	2	-	-	-	6	-	8
24	8.00	-	8.00	-	-	6.00	2	-	-	4	1	2	3	-	-	-	-	-
25	11.20	0.20	11.00	-	-	4.00	2	-	10	4	-	2	3	-	-	-	-	-

## Code

Well / Tube well	1
Pump. Set/Engin	2
Ironplough	3
Thresher	4
Drip system /Sprinkler	5
Dunlop cart.	6
Tractor / Trolly	7
Others	8

# Appendix A.8.4 (a)

Tal. KUHl, Dist. NAGPUR

[ 1991 - 1992 ]

## Cost of Cultivation Per Acre

No. of Farmers	Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irri Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
1	200	1000	1000	400	300	1800	1600	-	300	-	600	1000	240	500	8940
2	200	1200	1000	350	450	1600	1500	-	150	-	144	800	600	400	8394
3	250	700	700	400	300	1400	1000	-	200	-	200	600	180	600	6530
4	300	700	600	300	400	1500	1100	-	200	25	200	700	100	600	6725
5	300	750	610	200	300	1500	1250	-	-	-	180	500	120	250	5960
6	400	800	650	200	400	1800	1600	-	-	10	360	1500	360	500	8580
7	300	750	650	300	400	1600	1400	-	-	-	300	700	200	800	7400
8	200	900	500	250	600	2000	1500	-	250	20	300	500	240	250	7510
9	200	800	600	300	400	1800	1200	600	172	10	240	800	240	200	7562
10	400	700	750	300	400	1500	1300	-	200	25	200	500	250	400	6925
11	300	-	500	200	500	2000	2000	-	400	-	240	1500	120	300	8060
12	350	800	850	450	400	1800	1500	-	300	25	300	750	300	350	8175
13	200	1500	800	400	500	1600	1600	-	170	10	240	800	300	200	8320
14	400	800	750	350	400	1700	1400	-	250	25	300	700	250	600	7925
15	250	1200	700	300	500	1500	1400	-	-	25	360	800	240	300	7575
16	350	700	650	200	250	1400	1200	-	200	-	150	500	150	600	6350
17	200	450	1200	500	300	1600	1600	-	125	13	240	1000	360	300	7888
18	200	560	1600	320	200	1280	1600	-	64	4	640	1200	400	320	8388
19	350	750	700	300	300	1600	1300	-	200	25	250	600	200	500	7075
20	375	800	650	300	325	1600	1300	-	200	25	250	700	150	600	7275
21	375	800	600	300	300	1600	1400	-	200	25	200	700	150	400	7050
22	350	700	600	300	350	1500	1600	-	200	25	250	600	200	500	7175
23	350	750	650	250	300	1500	1200	-	200	25	200	600	100	500	6625
24	400	1200	300	250	400	2000	1500	-	-	12	200	1000	100	300	7662
25	450	800	750	400	400	1800	1600	-	300	25	350	800	350	750	8775

Tal. KUHI, Dist. NAGPUR

[ 1992 - 1993 ]

Cost of Cultivation Per Acre

No. of Farmers	Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrigation Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On. Owned F. Capital	Family Labour	Total Cost
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
1	250	1200	1040	425	350	1900	1800	-	350	-	600	1200	240	525	9880
2	225	1280	1200	400	480	1700	1700	-	150	-	144	900	600	450	9229
3	300	800	700	400	350	1600	1100	-	200	-	200	650	200	600	7100
4	300	750	650	300	450	1600	1200	-	300	25	200	700	180	700	7355
5	350	750	610	225	313	1625	1300	-	-	-	180	550	120	275	6298
6	450	800	700	200	400	2000	1800	-	-	10	360	1600	360	500	9180
7	350	800	700	350	450	1700	1500	-	-	-	350	800	250	850	8100
8	250	960	550	300	650	2000	1600	-	300	20	300	700	240	300	8170
9	220	900	720	320	480	1880	1200	640	172	10	240	880	240	220	8122
10	450	750	800	350	450	1600	1400	-	250	25	250	600	300	500	7725
11	350	-	533	250	500	2500	2000	-	400	-	240	2000	120	300	9193
12	375	850	900	475	425	1850	1550	-	325	25	350	775	350	375	8625
13	220	1500	850	450	500	1700	1700	-	170	10	240	875	300	250	8765
14	450	850	800	400	450	1800	1600	-	300	25	350	800	350	700	8875
15	275	1280	750	325	525	1600	1500	-	-	25	360	1000	240	400	8280
16	350	750	700	250	275	1500	1250	-	200	-	200	550	175	625	6825
17	250	480	1250	525	350	1700	1700	-	125	12	240	1100	360	350	8442
18	220	672	1760	340	220	1400	1760	-	64	4	640	1280	400	360	9120
19	400	800	750	350	400	1700	1400	-	250	25	300	700	300	600	7975
20	400	850	650	325	350	1700	1400	-	200	25	250	750	200	650	7750
21	400	850	650	350	350	1800	1600	-	250	25	250	800	200	450	7975
22	350	750	650	350	400	1600	1700	-	250	25	300	700	300	550	7925
23	360	760	660	270	320	1520	1240	-	210	25	220	620	120	520	6845
24	500	1300	400	250	400	2200	1500	-	-	12	200	1250	100	400	8512
25	450	850	800	425	425	1850	1650	-	325	25	350	825	375	800	9150

Tal. KUHI, Dist. NAGPUR

[ 1993 - 1994 ]

**Cost of Cultivation Per Acre**

No. of Farmers	Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irri Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
1	300	1400	1080	450	375	2000	2000	-	400	-	600	1300	240	550	10695
2	250	1360	1400	425	510	1800	1900	-	175	-	144	1000	600	500	10064
3	340	900	800	450	400	1700	1200	-	200	-	200	650	250	600	7690
4	350	750	650	250	300	1500	1200	-	200	25	200	600	100	500	6825
5	375	900	720	250	325	1750	1400	-	-	-	195	575	130	300	6920
6	500	800	750	250	450	2000	2000	-	-	10	360	1800	360	500	9780
7	400	850	700	350	450	1700	1500	-	-	-	400	800	300	850	8300
8	275	1080	600	350	600	2100	1700	-	300	20	375	700	240	300	8640
9	240	1000	840	360	560	1920	1200	680	172	10	240	1000	240	240	8702
10	475	800	850	400	450	1700	1500	-	250	25	250	650	350	550	8250
11	400	-	480	240	480	2400	3000	-	400	-	240	2400	120	400	10560
12	400	900	950	475	425	1900	1600	-	350	25	400	825	375	400	9025
13	250	1700	900	450	600	1900	1900	-	170	10	240	900	320	300	9640
14	450	800	750	400	400	1800	1600	-	300	25	350	800	350	750	8775
15	300	1360	800	350	550	1700	1600	-	-	25	360	1100	240	500	8885
16	400	750	700	300	300	1550	1300	-	200	-	200	600	200	650	7150
17	275	510	1350	550	350	1900	1800	-	125	13	240	1200	360	400	9073
18	240	725	1920	360	240	1480	1920	-	72	4	800	1440	440	400	10041
19	450	850	800	400	400	1700	1450	-	250	25	350	800	350	650	8475
20	400	850	700	325	350	1800	1450	-	200	25	300	800	200	700	8100
21	400	825	650	350	400	1800	1600	-	275	25	275	800	225	450	8075
22	425	750	700	375	350	1700	1650	-	250	25	300	700	300	650	8175
23	380	780	680	280	340	1540	1260	-	220	25	240	640	140	540	7065
24	533	1400	400	300	500	2200	1600	-	-	12	250	1500	125	400	9220
25	360	780	740	340	380	1400	1400	-	280	25	280	640	160	520	7305

Tal. KUHI, Dist. NAGPUR

[ 1994 - 1995 ]

**Cost of Cultivation Per Acre**

No. of Farmers	Cost of Seed (Rs)	Manure (Rs)	Fertilizer (Rs)	Insecticides (Rs)	Pesticides (Rs)	Hired Labour (Rs)	Bullock Labour (Rs)	Higher Mach. (Rs)	Irrigation Charges (Rs)	Land Revenue (Rs)	Interest on W. Capital (Rs)	Misc Expenses (Rs)	Int. On Owned F. Capital (Rs)	Family Labour (Rs)	Total Cost (Rs)
1	350	1500	1100	500	400	2200	2200	-	400	-	600	1400	240	575	11465
2	300	1520	1600	450	540	1850	2100	-	175	-	144	1100	600	500	10879
3	360	900	800	450	400	1800	1300	-	250	-	300	700	300	650	8210
4	375	800	650	300	325	1600	1300	-	200	25	225	650	150	550	7150
5	400	900	720	300	350	1875	1500	-	-	-	195	600	130	325	7295
6	500	800	800	250	450	2250	2100	-	-	10	360	2000	360	500	10380
7	450	900	700	400	500	1700	1500	-	-	-	450	800	400	900	8700
8	300	1140	650	400	625	2200	1800	-	300	20	375	750	240	325	9125
9	300	1000	800	333	500	1800	1034	667	200	10	240	1000	240	250	8374
10	450	800	825	450	400	1850	1600	-	300	25	325	900	400	750	9075
11	400	-	560	280	480	2800	3000	-	400	-	240	3040	120	400	11720
12	450	950	1000	475	425	1950	1600	-	350	25	450	850	375	425	9325
13	300	1800	1000	500	600	2000	2000	-	170	10	240	900	320	300	10140
14	475	850	800	425	450	1900	1650	-	325	25	375	850	375	800	9300
15	350	1440	850	375	575	1800	1800	-	-	25	360	1200	240	550	9565
16	425	800	725	300	325	1600	1350	-	250	-	225	625	225	650	7500
17	300	540	1400	575	375	2000	1900	-	150	12	240	1300	360	450	9602
18	260	784	2080	380	260	1520	2080	-	72	4	800	1440	440	400	10520
19	475	900	850	450	400	1750	1500	-	300	25	350	900	400	700	9000
20	425	900	750	350	350	1800	1500	-	225	25	300	800	250	700	8375
21	425	875	675	375	425	1850	1650	-	300	25	300	850	250	475	8475
22	450	775	750	400	425	1750	1700	-	275	25	325	750	350	700	8675
23	400	790	700	300	360	1560	1280	-	240	25	250	660	160	560	7285
24	560	1500	500	300	500	2300	1700	-	-	12	250	2000	125	500	10247
25	400	800	760	320	400	1440	1400	-	260	25	260	660	180	560	7465

Tal. KUHI, Dist. NAGPUR

[ 1995 - 1996 ]

**Cost of Cultivation Per Acre**

No. of Farmers	Cost of Seed (Rs)	Manure (Rs)	Fertilizer (Rs)	Insecticides (Rs)	Pesticides (Rs)	Hired Labour (Rs)	Bullock Labour (Rs)	Higher Mach. (Rs)	Irrigation Charges (Rs)	Land Revenue (Rs)	Interest on W. Capital (Rs)	Misc Expenses (Rs)	Int. On Owned F. Capital (Rs)	Family Labour (Rs)	Total Cost (Rs)
1	400	1600	1150	550	450	2400	2400	-	450	-	600	1500	240	600	12340
2	350	1600	1800	475	570	1900	2300	-	200	-	144	1200	600	550	11689
3	400	950	800	500	500	1800	1300	-	250	-	300	700	300	650	8450
4	400	800	700	300	350	1600	1350	-	200	25	250	650	200	550	7375
5	450	1050	890	325	375	2000	1600	-	-	-	210	625	140	350	8015
6	500	800	800	300	500	2400	2200	-	-	10	360	2000	360	500	10730
7	500	900	750	400	500	1800	1500	-	-	-	500	850	400	900	9000
8	400	1100	700	500	600	2200	2000	-	300	20	500	700	240	333	9593
9	350	1100	900	400	567	1900	1133	800	200	10	240	1067	240	266	9173
10	475	825	875	475	450	1900	1650	-	325	25	350	950	425	800	9525
11	500	-	550	300	400	2500	2500	-	600	-	300	2975	150	500	11275
12	500	1000	1050	500	425	2000	1650	-	350	25	450	875	375	450	9650
13	300	2000	1200	500	700	2200	2200	-	170	10	240	1000	300	400	11220
14	500	900	875	450	475	2000	1750	-	350	25	425	900	425	850	9925
15	400	1520	900	400	600	1900	1900	-	-	25	360	1250	240	600	10095
16	450	800	750	300	325	1625	1400	-	250	-	250	650	225	650	7675
17	325	570	1450	600	400	2250	1900	-	150	13	240	1400	360	500	10158
18	280	840	2240	400	280	1560	2240	-	80	4	960	1520	480	440	11324
19	500	900	900	500	500	1850	1600	-	300	25	400	900	450	750	9575
20	450	900	750	350	400	1900	1500	-	250	25	325	850	250	700	8650
21	450	900	700	400	450	1900	1800	-	325	25	350	950	275	475	9000
22	475	825	775	425	475	1825	1750	-	300	25	350	775	375	725	9100
23	440	800	720	310	370	1580	1300	-	240	25	260	700	180	600	7525
24	600	1600	500	400	600	2400	1900	-	-	12	300	2500	150	500	11462
25	400	790	720	300	360	1560	1300	-	240	25	250	680	160	520	7305

Tal. KUHI, Dist. NAGPUR

[ 1994 - 1995 ]

Cost of Cultivation Per Acre

No of Farmers	Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrigation Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
1	350	1500	1100	500	400	2200	2200	-	400	-	600	1400	240	575	11465
2	300	1520	1600	450	540	1850	2100	-	175	-	144	1100	600	500	10879
3	360	900	800	450	400	1800	1300	-	250	-	300	700	300	650	8210
4	375	800	650	300	325	1600	1300	-	200	25	225	650	150	550	7150
5	400	900	720	300	350	1875	1500	-	-	-	195	600	130	325	7295
6	500	800	800	250	450	2250	2100	-	-	10	360	2000	360	500	10380
7	450	900	700	400	500	1700	1500	-	-	-	450	800	400	900	8700
8	300	1140	650	400	625	2200	1800	-	300	20	375	750	240	325	9125
9	300	1000	800	333	500	1800	1034	667	200	10	240	1000	240	250	8374
10	450	800	825	450	400	1850	1600	-	300	25	325	900	400	750	9075
11	400	-	550	280	480	2800	3000	-	400	-	240	3040	120	400	11720
12	450	950	1000	475	425	1950	1600	-	350	25	450	850	375	425	9325
13	300	1800	1000	500	600	2000	2000	-	170	10	240	900	320	300	10140
14	475	850	800	425	450	1900	1650	-	325	25	375	850	375	800	9300
15	350	1440	850	375	575	1800	1800	-	-	25	360	1200	240	550	9585
16	425	800	725	300	325	1600	1350	-	250	-	225	625	225	650	7500
17	300	540	1400	575	375	2000	1900	-	150	12	240	1300	360	450	9602
18	250	784	2080	380	260	1520	2080	-	72	4	800	1440	440	400	10520
19	475	900	850	450	400	1750	1500	-	300	25	350	900	400	700	9000
20	425	800	750	350	350	1800	1500	-	225	25	300	800	250	700	8375
21	425	875	675	375	425	1850	1650	-	300	25	300	850	250	475	8475
22	450	775	750	400	425	1750	1700	-	275	25	325	750	350	700	8675
23	400	780	700	300	360	1560	1280	-	240	25	250	660	180	560	7285
24	550	1500	500	300	500	2300	1700	-	-	12	250	2000	125	500	10247
25	400	800	750	320	400	1440	1400	-	250	25	250	650	180	550	7465

Tal. KUHI, Dist. NAGPUR

[ 1995 - 1996 ]

**Cost of Cultivation Per Acre**

No. of Farmers	Cost of Seed (Rs)	Manure (Rs)	Fertilizer (Rs)	Insecticides (Rs)	Pesticides (Rs)	Hired Labour (Rs)	Bullock Labour (Rs)	Higher Mach. (Rs)	Irrigation Charges (Rs)	Land Revenue (Rs)	Interest on W. Capital (Rs)	Misc Expenses (Rs)	Int. On Owned F. Capital (Rs)	Family Labour (Rs)	Total Cost (Rs)
1	400	1600	1150	550	450	2400	2400	-	450	-	600	1500	240	600	12340
2	350	1600	1800	475	570	1900	2300	-	200	-	144	1200	600	550	11689
3	400	950	800	500	500	1800	1300	-	250	-	300	700	300	650	8450
4	400	800	700	300	350	1600	1350	-	200	25	250	650	200	550	7375
5	450	1050	890	325	375	2000	1600	-	-	-	210	625	140	350	8015
6	500	800	800	300	500	2400	2200	-	-	10	360	2000	360	500	10730
7	500	900	750	400	500	1800	1500	-	-	-	500	850	400	900	9000
8	400	1100	700	500	600	2200	2000	-	300	20	500	700	240	333	9593
9	350	1100	900	400	567	1900	1133	800	200	10	240	1067	240	266	9173
10	475	825	875	475	450	1900	1650	-	325	25	350	950	425	800	9525
11	500	-	550	300	400	2500	2500	-	600	-	300	2975	150	500	11275
12	500	1000	1050	500	425	2000	1650	-	350	25	450	875	375	450	9650
13	300	2000	1200	500	700	2200	2200	-	170	10	240	1000	300	400	11220
14	500	900	875	450	475	2000	1750	-	350	25	425	900	425	850	9925
15	400	1520	900	400	600	1900	1900	-	-	25	360	1250	240	600	10095
16	450	800	750	300	325	1625	1400	-	250	-	250	650	225	650	7675
17	325	570	1450	600	400	2250	1900	-	150	13	240	1400	360	500	10158
18	280	840	2240	400	280	1560	2240	-	80	4	960	1520	480	440	11324
19	500	900	900	500	500	1850	1600	-	300	25	400	900	450	750	9575
20	450	900	750	350	400	1900	1500	-	250	25	325	850	250	700	8650
21	450	900	700	400	450	1900	1800	-	325	25	350	950	275	475	9000
22	475	825	775	425	475	1825	1750	-	300	25	350	775	375	725	9100
23	440	800	720	310	370	1580	1300	-	240	25	260	700	180	600	7525
24	600	1600	500	400	600	2400	1900	-	-	12	300	2500	150	500	11462
25	400	790	720	300	360	1560	1300	-	240	25	250	680	160	520	7305

Tal. KUHI, Dist. NAGPUR

[ 1996 - 1997 ]

Cost of Cultivation Per Acre

No. of Farmers	Cost of Seed (Rs)	Manure (Rs)	Fertilizer (Rs)	Insecticides (Rs)	Pesticides (Rs)	Hired Labour (Rs)	Bullock Labour (Rs)	Higher Mach. (Rs)	Irrigation Charges (Rs)	Land Revenue (Rs)	Interest on W. Capital (Rs)	Misc Expenses (Rs)	Int. On Owned F. Capital (Rs)	Family Labour (Rs)	Total Cost (Rs)
1	450	1800	1200	600	500	2600	2500	-	450	-	600	1600	240	650	13190
2	400	1600	2000	500	600	2000	2500	-	200	-	144	1400	600	600	12544
3	450	1000	800	500	500	1900	1300	-	300	-	300	750	350	700	8850
4	425	850	700	300	350	1700	1400	-	200	25	250	700	200	600	7700
5	500	1050	890	350	400	2000	1700	-	-	-	210	650	140	375	8265
6	500	800	850	300	500	2500	2400	-	-	10	360	2000	360	500	11080
7	500	1000	800	500	600	1800	1600	-	-	-	600	900	400	1000	9700
8	450	1200	800	550	633	2300	2000	-	300	20	500	734	240	368	10093
9	400	1200	1100	433	567	2000	1233	900	200	10	240	1167	240	300	9990
10	500	875	925	475	500	1950	1700	-	325	25	375	975	425	850	9900
11	500	-	833	500	600	2667	3333	-	600	-	300	3168	150	500	13149
12	550	1050	1100	500	425	2000	1650	-	375	25	500	900	400	475	9950
13	400	2000	1200	500	750	2500	2500	-	170	10	240	1050	300	400	12020
14	600	1000	825	450	500	2050	1750	-	375	25	450	1000	425	900	10350
15	400	1600	1000	450	650	2000	2000	-	-	25	360	1300	240	600	10625
16	475	825	750	325	350	1650	1450	-	250	-	250	650	250	700	7925
17	350	600	1500	600	400	2500	2000	-	150	12	240	1500	360	500	10712
18	320	896	2400	400	320	1600	2400	-	80	4	960	1600	480	480	11940
19	500	950	950	500	500	1900	1600	-	300	25	425	900	500	800	9850
20	450	950	800	400	400	1900	1600	-	250	25	350	900	300	750	9075
21	600	1300	1000	600	625	2400	2100	-	475	38	475	1325	375	700	12013
22	475	800	800	450	475	1850	1750	-	325	25	375	800	400	750	9275
23	480	840	740	320	370	1600	1300	-	240	25	280	720	200	620	7735
24	620	1667	550	400	600	2500	2000	-	-	12	300	3000	150	550	12349
25	440	800	740	310	370	1580	1300	-	250	25	260	700	180	560	7515

### Appendix A.8.4 (b)

Tal. MAUDA, Dist. NAGPUR

[ 1991 - 1992 ]

#### Cost of Cultivation Per Acre

No. of Farmers	Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrigation Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
1	350	650	700	350	350	1600	1700	-	200	25	300	700	200	500	7625
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
3	200	1000	700	400	500	1500	1400	-	600	15	360	1200	840	500	9215
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
5	240	1800	1600	800	400	1200	960	-	480	-	480	960	960	320	10200
6	150	-	500	300	400	1500	1200	-	200	15	240	700	360	400	5965
7	200	900	400	300	400	1500	1400	-	200	15	360	600	1200	300	7775
8	200	750	1600	500	300	1500	1400	-	300	10	360	1000	600	250	8770
9	150	600	1000	250	350	1600	1500	-	175	10	300	700	300	300	7235
10	200	700	800	333	400	1600	1400	-	300	15	240	800	400	400	7588
11	200	653	466	200	266	800	666	-	-	-	240	533	240	266	4530
12	200	1000	2000	450	300	1500	1600	-	250	19	480	1000	720	400	9919
13	180	800	1500	600	250	1600	1500	-	250	12	300	900	600	250	8742
14	180	-	1200	-	-	1200	1000	-	500	15	240	500	360	400	5595
15	233	733	666	300	326	1533	1600	-	216	-	300	733	233	566	7439
16	300	650	700	350	300	1550	1650	-	180	25	300	650	200	550	7405
17	350	750	600	300	400	1700	1500	-	250	24	380	700	300	900	8154
18	250	400	1400	600	-	1600	1500	-	400	25	800	900	800	900	9575
19	250	400	1400	600	-	1600	1500	-	300	25	700	650	800	700	8925
20	400	700	675	350	325	1650	1600	-	200	25	300	600	400	650	7875
21	288	600	466	277	300	1088	977	-	222	17	222	622	177	333	5589
22	320	720	680	320	300	1400	1200	-	240	24	240	600	240	480	6764
23	200	900	500	300	350	1600	1500	-	66	8	240	1000	280	333	7277
24	300	600	550	225	250	1200	1100	-	150	25	225	600	125	500	5850
25	320	720	640	280	320	1360	1280	-	240	25	220	600	180	480	6665

Tal. MAUDA, Dist. NAGPUR

[ 1992 - 1993 ]

**Cost of Cultivation Per Acre**

No. of Farmers	Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrigation Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
1	375	700	725	360	380	1650	1750	-	225	25	325	750	225	550	8040
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
3	225	1000	800	425	550	1550	1500	-	600	15	360	1200	840	550	9615
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
5	260	2000	1760	880	440	1280	1120	-	480	-	480	1120	960	320	11100
6	180	-	550	350	450	1500	1400	-	200	15	240	800	360	450	6495
7	250	1000	450	350	450	1600	1400	-	200	15	360	700	1200	350	8325
8	225	800	1760	600	350	1600	1500	-	300	10	360	1100	600	300	9505
9	160	640	1100	300	375	1700	1600	-	175	10	300	750	300	375	7785
10	220	746	933	400	433	1666	1466	-	300	15	240	866	400	433	8118
11	233	700	566	233	300	933	800	-	-	-	240	666	240	333	5244
12	220	1200	2200	475	350	1700	1700	-	250	19	480	1100	720	450	10864
13	200	800	1600	700	325	1700	1600	-	250	12	300	1000	600	275	9362
14	200	-	1200	-	-	1300	1200	-	600	15	240	650	360	450	6215
15	275	437	1400	650	300	1500	1600	-	400	-	800	825	800	825	9812
16	350	700	750	350	350	1600	1750	-	200	25	350	700	250	600	7975
17	400	800	700	350	450	1800	1600	-	300	24	400	750	350	1000	8924
18	250	400	1400	600	-	1600	1550	-	400	25	800	900	800	900	9625
19	262	412	1450	612	-	1650	1550	-	325	25	725	675	825	750	9261
20	425	750	700	375	337	1700	1650	-	225	25	325	650	412	700	8274
21	371	742	571	342	357	1371	1200	-	271	21	271	757	214	400	6888
22	330	730	700	340	310	1440	1240	-	260	24	280	620	250	520	7044
23	250	1000	600	300	350	1700	1600	-	68	8	240	1068	280	400	7860
24	325	675	575	250	275	1250	1150	-	175	25	250	625	137	550	6262
25	340	760	680	300	340	1400	1320	-	260	25	260	640	220	520	7065

Tal. MAUDA, Dist. NAGPUR

[ 1993 - 1994 ]

**Cost of Cultivation Per Acre**

No. of Farmers	Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irri Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
1	400	750	740	375	390	1700	1850	-	250	25	350	800	250	600	8480
2	375	750	650	350	300	1500	1650	-	180	-	300	650	200	550	7455
3	250	1200	850	450	600	1600	1600	-	600	15	360	1400	840	600	10365
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
5	280	2160	2000	960	480	1440	1120	-	480	-	480	1440	960	400	12200
6	200	-	600	350	500	1466	1333	-	200	15	240	566	366	433	6269
7	275	1100	500	375	500	1700	1600	-	225	15	390	850	1200	400	9130
8	250	850	1825	650	400	1700	1600	-	300	10	360	1250	600	350	10145
9	170	650	1250	375	400	1750	1700	-	175	10	300	850	300	400	8330
10	233	840	1000	433	466	1800	1600	-	300	15	240	933	400	466	8726
11	233	700	600	233	333	1000	933	-	-	-	240	733	240	466	5711
12	250	1280	2400	500	400	1750	1800	-	250	19	480	1200	720	475	11524
13	225	900	1750	800	350	1800	1700	-	250	12	300	1100	600	300	10087
14	225	-	1400	-	-	1400	1400	-	800	15	240	700	360	500	7040
15	275	450	1450	675	325	1550	1650	-	413	-	850	850	825	850	10163
16	360	600	700	400	300	1500	1600	-	200	24	360	600	800	300	7744
17	425	700	750	350	325	1650	1650	-	250	25	300	700	325	625	8075
18	275	425	1450	625	-	1650	1600	-	425	25	850	925	825	925	10000
19	275	425	1475	625	-	1675	1600	-	350	25	750	700	850	775	9525
20	425	800	750	400	350	1725	1700	-	250	25	350	700	425	750	8650
21	330	730	700	340	310	1440	1240	-	260	24	280	840	260	540	7094
22	308	666	600	316	275	1233	1050	-	250	25	266	550	225	450	6214
23	250	1100	700	350	400	1800	1666	-	66	8	240	1100	280	466	8426
24	350	750	650	250	300	1450	1300	-	200	25	250	650	150	550	6875
25	360	800	720	340	360	1440	1360	-	280	25	280	680	260	560	7465

Tal. MAUDA, Dist. NAGPUR

[ 1994 - 1995 ]

**Cost of Cultivation Per Acre**

No. of Farmers	Cost of Seed (Rs)	Manure (Rs)	Fertilizer (Rs)	Insecticides (Rs)	Pesticides (Rs)	Hired Labour (Rs)	Bullock Labour (Rs)	Higher Mach. (Rs)	Irrigation Charges (Rs)	Land Revenue (Rs)	Interest on W. Capital (Rs)	Misc Expenses (Rs)	Int. On Owned F. Capital (Rs)	Family Labour (Rs)	Total Cost (Rs)
1	380	700	750	360	400	1800	1900	-	240	24	300	800	240	600	8494
2	400	760	675	360	325	1600	1700	-	190	-	350	700	250	600	7910
3	275	1200	900	500	625	1700	1700	-	600	15	420	1500	950	650	11035
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
5	280	2400	2160	960	520	1440	1280	-	480	-	480	1600	960	400	12960
6	250	-	700	533	500	1600	1400	-	200	15	240	600	366	466	6870
7	350	1200	550	400	550	1800	1600	-	225	15	390	950	1200	425	9655
8	275	900	1920	750	450	1800	1700	-	300	10	360	1300	600	375	10740
9	200	700	1350	400	425	1850	1800	-	175	10	300	875	300	425	8810
10	250	864	1200	600	460	1800	1720	-	300	15	240	1000	384	480	9313
11	300	800	666	266	333	1066	1000	-	-	-	240	800	240	533	6244
12	300	1350	2600	500	450	1800	1900	-	250	19	480	1400	720	500	12269
13	250	900	1850	900	375	1900	1800	-	250	12	300	1200	600	325	10662
14	300	-	1400	-	-	1450	1600	-	900	15	240	750	360	550	7565
15	275	475	1500	725	350	1650	1700	-	425	-	900	875	850	900	10625
16	400	700	760	420	340	1600	1700	-	240	24	400	700	360	700	8344
17	438	750	750	375	350	1700	1700	-	275	25	325	750	350	650	8438
18	300	450	1500	650	-	1700	1650	-	425	25	900	950	850	925	10325
19	275	437	1475	650	-	1700	1650	-	375	25	800	725	875	800	9787
20	450	825	800	425	375	1750	1725	-	275	25	375	750	450	800	9025
21	300	622	511	288	311	1111	1000	-	244	16	244	644	200	344	5835
22	309	709	636	336	290	1290	1109	-	263	22	272	581	236	509	6562
23	350	1200	800	350	400	1900	1800	-	66	8	240	1166	280	500	9060
24	350	700	650	250	300	1400	1300	-	200	25	250	650	150	550	6775
25	360	760	700	340	360	1500	1280	-	280	24	280	640	360	500	7384

Tal. MAUDA, Dist. NAGPUR

[ 1995 - 1996 ]

**Cost of Cultivation Per Acre**

No. of Farmers	Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irri Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
1	400	750	760	380	450	1850	1920	-	260	24	350	850	260	700	8954
2	425	775	700	370	350	1700	1750	-	200	-	400	750	300	650	8370
3	300	1400	950	525	650	1800	1800	-	600	15	420	1600	980	700	11740
4	300	-	800	400	600	1600	1600	-	-	-	480	1200	720	400	8100
5	480	2600	2320	1120	560	1600	1440	-	480	-	480	1680	960	480	14200
6	300	-	700	450	550	1600	1500	-	250	15	240	950	360	500	7415
7	400	1250	600	425	600	1900	1800	-	250	15	400	1000	1200	450	10290
8	300	950	2400	850	475	1900	1800	-	300	10	360	1400	600	450	11795
9	225	750	1400	450	450	1900	1900	-	175	10	300	950	300	450	9260
10	300	886	1200	466	500	1866	1833	-	300	15	240	1000	400	500	9506
11	316	933	733	300	366	1200	1133	-	-	-	240	866	240	566	6893
12	350	1400	2800	550	500	1850	2000	-	250	19	480	1500	720	550	12969
13	275	1000	1950	950	425	2000	1900	-	250	12	300	1300	600	350	11312
14	350	-	1600	-	-	1500	1600	-	950	15	240	800	360	600	8015
15	400	450	1400	600	350	1500	1400	-	350	-	800	900	800	950	9900
16	450	775	725	400	375	1800	1650	-	300	25	325	775	350	650	8600
17	450	800	800	400	375	1750	1800	-	300	25	350	800	375	700	8925
18	300	450	1500	650	-	1700	1700	-	400	25	900	1000	900	950	10475
19	287	450	1500	700	-	1725	1700	-	400	25	850	750	900	825	10112
20	475	850	825	450	400	1800	1750	-	300	25	400	800	475	850	9400
21	311	644	533	311	333	1133	1066	-	266	16	266	666	211	355	6111
22	355	844	844	400	366	1555	1333	-	311	26	355	688	300	644	8021
23	400	1200	900	400	466	2000	1900	-	66	8	240	1233	280	533	9626
24	375	775	675	275	325	1500	1325	-	225	25	275	675	175	625	7250
25	380	780	730	350	370	1520	1320	-	290	24	290	660	280	520	7514

Tal. MAUDA, Dist. NAGPUR

[ 1996 - 1997 ]

**Cost of Cultivation Per Acre**

No. of Farmers	Cost of Seed	Manure	Fertilizer	Insecticides	Pesticides	Hired Labour	Bullock Labour	Higher Mach.	Irrigation Charges	Land Revenue	Interest on W. Capital	Misc Expenses	Int. On Owned F. Capital	Family Labour	Total Cost
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
1	500	800	780	400	460	1900	1960	-	300	24	380	900	280	750	9434
2	400	700	700	400	300	1800	1700	-	200	-	400	750	300	700	8350
3	350	1400	1000	500	700	2000	1900	-	600	15	420	1800	980	750	12415
4	400	-	1000	500	800	2000	2000	-	-	-	480	1400	720	500	9800
5	480	2800	2400	1120	560	1600	1600	-	480	-	480	1760	960	480	14720
6	300	-	750	450	550	1600	1600	-	250	15	240	1000	360	500	7615
7	450	1300	600	450	600	2000	1800	-	250	15	400	1050	1200	500	10615
8	325	1000	2500	1000	500	2000	1900	-	300	10	360	1500	600	500	12495
9	250	800	1500	500	500	2000	2000	-	175	10	300	1000	300	500	9835
10	300	933	1333	500	533	2000	2000	-	300	15	240	1066	400	533	10153
11	333	1000	800	333	400	1333	1200	-	-	-	240	933	240	600	7412
12	400	1500	3000	600	500	2000	2200	-	250	19	480	1600	720	600	13869
13	300	1000	2100	1000	450	2100	2000	-	250	12	300	1400	600	375	11887
14	400	-	1600	-	-	1600	1800	-	1000	15	240	900	360	600	8515
15	450	475	1450	650	400	1600	1500	-	400	-	850	950	850	1000	10575
16	463	800	750	425	400	1850	1750	-	325	25	350	800	425	750	9113
17	450	750	650	350	375	1800	1850	-	350	25	375	850	375	800	9000
18	325	500	1550	700	-	1750	1700	-	425	25	925	1000	900	950	10750
19	300	475	1550	725	-	1750	1725	-	425	25	900	775	925	850	10425
20	475	900	850	475	425	1850	1775	-	325	25	425	850	487	925	9787
21	360	760	720	360	340	1460	1280	-	280	24	300	660	290	580	7414
22	377	866	800	411	355	1577	1355	-	322	26	353	688	311	600	8041
23	400	1300	1000	400	466	2100	2000	-	66	8	240	1333	280	566	10159
24	316	733	633	266	316	1200	933	-	183	25	200	600	150	433	5988
25	420	820	760	370	380	1560	1360	-	300	24	300	680	300	560	7834

# Appendix A.8.5 (a)

Tal. KUHI, Dist. NAGPUR, Crop. CHILLI

Per acre total output, self consumption, marketed surplus, gross income, cost of cultivation and net income

No. of Farmers	1991 - 1992							1992 - 1993						
	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)
1	24.00	1.25	22.75	600	13650	8940	4710	25.00	1.00	24.00	500	12000	9880	2120
2	28.00	1.50	26.50	500	13250	8394	4856	24.00	1.25	22.75	600	13650	9229	4421
3	24.00	2.00	22.00	500	11000	6524	4476	26.00	2.00	24.00	550	13200	7100	6100
4	34.00	2.00	32.00	500	16000	6725	9275	36.00	2.00	34.00	550	18700	7355	11345
5	17.50	1.00	16.50	600	9900	5960	3940	17.00	1.00	16.00	600	9600	6298	3302
6	17.00	1.00	16.00	800	12800	8580	4220	18.00	1.00	17.00	700	11900	9180	2720
7	21.00	1.00	20.00	500	10000	7400	2600	25.00	1.00	24.00	550	13200	8100	5100
8	13.00	2.00	28.00	600	16800	7510	9290	32.00	2.00	30.00	600	18000	8170	9830
9	22.00	1.20	20.80	600	12480	7562	4918	24.00	1.40	22.60	500	11300	8122	3178
10	24.00	1.00	23.00	500	11500	6925	4575	25.00	1.00	24.00	550	13200	7725	5475
11	30.00	1.67	28.33	500	14165	8060	6105	32.00	1.75	30.25	600	18150	9193	8957
12	35.00	1.00	34.00	500	17000	8175	8825	30.00	1.00	29.00	600	17400	8625	8775
13	25.00	1.25	23.75	600	14250	8320	5930	24.00	1.25	22.75	700	15925	8765	7160
14	20.00	1.00	19.00	500	9500	7925	1575	22.00	1.00	21.00	600	12800	8875	3725
15	22.00	1.25	20.75	600	12450	7575	4875	22.00	1.25	20.75	600	12450	8280	4170
16	21.00	1.00	20.00	400	8000	6350	1650	18.00	1.00	17.00	500	8500	6825	1675
17	22.00	1.25	21.25	600	12750	7888	4862	21.00	1.25	19.75	700	13825	8442	5383
18	32.00	1.00	31.00	700	21700	8388	13312	33.60	1.00	32.60	600	19560	9120	10440
19	22.00	1.00	21.00	500	10500	7075	3425	23.00	1.00	22.00	550	12100	7975	4125
20	28.00	1.00	27.00	500	13500	7275	6225	29.00	1.00	28.00	600	16800	7750	9050
21	26.00	1.00	25.00	500	12500	7050	5450	28.00	1.00	27.00	550	14800	7975	6875
22	17.00	1.00	16.00	600	9600	7175	2425	19.00	1.00	18.00	700	12800	7925	4675
23	20.60	0.60	20.00	500	10000	6625	3375	24.00	0.40	23.60	550	12980	6845	6136
24	25.00	1.25	23.74	400	9500	7662	1838	24.20	1.20	23.00	500	11500	8512	2988
25	35.00	1.00	34.00	500	17000	8775	8225	36.50	1.50	35.00	600	21000	9150	11850

Tal. KUHI, Dist. NAGPUR, Crop. CHILLI

Per acre total output, self consumption, marketed surplus, gross income, cost of cultivation and net income

No. of Farmers	1993 - 1994							1994 - 1995						
	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)
1	28.00	1.50	26.50	600	15900	10695	5205	30.00	1.50	28.50	650	18525	11465	7060
2	32.00	1.50	30.50	625	19062	10064	8998	34.00	1.75	32.25	650	20962	10879	10083
3	22.00	2.00	20.00	600	12000	7690	4310	28.00	2.00	26.00	650	16900	8210	8690
4	20.00	2.00	18.00	600	10800	6625	4175	22.00	2.00	20.00	650	13000	7150	5850
5	18.00	1.00	17.00	500	8500	6920	1580	16.00	1.00	15.00	700	10500	7295	3205
6	17.50	1.00	16.50	800	13200	9780	3420	19.00	1.12	17.88	700	12516	10380	2136
7	23.00	1.00	22.00	600	13200	8300	4900	27.00	1.00	26.00	650	16900	8700	8200
8	32.50	2.00	30.50	500	15250	8640	6610	30.00	2.00	28.00	700	19600	9125	10475
9	20.00	1.10	18.90	700	13230	8702	4528	26.67	1.50	25.17	600	15102	8374	6728
10	26.00	1.00	25.00	600	15000	8250	6750	25.00	1.00	24.00	650	15600	9075	6525
11	30.00	1.50	28.50	800	22800	10560	12240	32.00	1.80	30.20	750	22650	11720	10930
12	32.50	1.00	31.50	700	22050	9025	13025	31.00	1.00	30.00	650	19500	9325	10175
13	28.00	1.50	26.50	700	18550	9640	8910	28.50	1.50	27.00	600	16200	10140	6060
14	20.00	1.00	19.00	650	12350	8775	3575	19.00	1.00	18.00	700	12600	9300	3300
15	20.00	1.25	18.75	700	13125	8885	4240	24.00	1.50	22.50	600	13500	9565	3935
16	22.00	1.00	21.00	550	11550	7150	4400	23.00	1.00	22.00	600	13200	7500	5700
17	21.50	1.25	20.25	600	12150	9073	3077	25.00	1.40	23.60	600	14160	9602	4558
18	32.80	1.00	31.80	800	25440	10044	15396	36.00	1.20	34.80	900	31320	10520	20800
19	26.00	1.00	25.00	600	15000	8475	6525	23.00	1.00	22.00	650	14300	9000	5300
20	30.00	1.00	29.00	650	18850	8100	10750	32.00	1.00	31.00	600	18600	8375	10225
21	30.00	1.00	29.00	600	17400	8075	9325	29.00	1.00	28.00	600	16800	8475	8325
22	17.50	1.00	16.50	700	11550	8175	3375	18.00	1.00	17.00	750	12750	8875	4075
23	25.00	0.60	24.40	600	14640	7065	7575	26.00	0.60	25.40	650	16510	7285	9225
24	25.80	1.25	24.55	500	12275	9220	3055	27.00	1.40	25.60	600	15360	10247	5113
25	32.00	0.80	31.20	600	18720	7305	11415	32.80	0.80	32.00	600	19200	7465	11735

Tal. KUHI, Dist. NAGPUR, Crop. CHILLI

Per acre total output, self consumption, marketed surplus, gross income, cost of cultivation and net income

No. of Farmers	1995 - 1996							1996 - 1997						
	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)
1	30.00	1.50	28.50	700	19950	12340	7610	32.00	2.00	30.00	750	22500	13190	9310
2	32.00	1.50	30.50	575	17538	11689	5849	35.00	2.00	33.00	800	26400	12544	1385
3	30.00	2.00	28.00	700	19600	8450	11150	24.00	2.00	22.00	700	15400	8850	6550
4	24.00	1.00	23.00	700	16100	7375	8725	25.00	1.00	24.00	700	16800	7700	9100
5	19.00	1.13	17.87	600	10722	8015	2707	19.50	1.12	18.38	600	11028	8265	2763
6	20.00	1.25	18.75	900	16875	10730	6145	18.00	1.00	17.00	800	13600	11080	2520
7	29.00	1.00	28.00	700	19600	9000	10600	29.00	1.00	28.00	700	19600	9700	9900
8	35.33	1.67	33.66	600	20196	9593	10603	36.67	2.00	34.67	700	24269	10093	14176
9	28.00	1.50	26.50	700	18550	9173	9377	30.00	1.67	28.33	600	16998	9990	7008
10	29.00	1.00	28.00	700	19600	9525	10075	28.00	1.00	27.00	700	18900	9900	9000
11	35.00	1.87	33.13	850	28160	11275	16885	35.00	1.75	33.25	900	29925	13149	16776
12	30.00	1.00	29.00	600	17400	8650	7750	32.50	1.00	31.50	700	22050	9950	12100
13	28.00	1.50	26.50	700	18550	11220	7330	27.50	1.50	26.00	600	15600	12050	3580
14	21.00	1.00	20.00	700	14000	9925	4075	20.00	1.00	19.00	750	14250	10350	3900
15	25.00	1.50	23.50	800	18800	10095	8705	28.00	1.75	26.25	700	18375	10625	7750
16	25.00	1.00	24.00	650	15600	7675	7925	21.00	1.00	20.00	700	14000	7925	6075
17	24.00	1.40	22.60	700	15820	10158	5662	23.00	1.30	21.70	750	16275	10712	5563
18	35.20	1.20	34.00	900	30600	11324	19276	37.60	1.60	36.00	700	25200	11940	13260
19	25.00	1.00	24.00	700	16800	8575	7225	24.00	1.00	23.00	700	16100	9650	6250
20	30.00	1.00	29.00	700	20300	8650	11650	29.00	1.00	28.00	600	16800	9075	7725
21	32.00	1.00	31.00	650	20150	9000	11150	24.00	0.87	23.33	650	15165	12013	3152
22	19.00	1.00	18.00	600	10800	9100	1700	17.00	1.00	16.00	800	12800	9275	3525
23	25.60	0.60	25.00	700	17500	7525	9975	25.00	0.60	24.40	700	17080	7735	9345
24	27.50	1.50	26.00	600	15600	11462	4138	30.00	1.70	28.30	600	16980	12349	4631
25	28.00	0.40	27.60 <sup>79</sup>	700	19320	7305	12015	28.00	0.40	25.60	700	17920	7515	10405

# Appendix A.8.5 (b)

Tal. MAUDA, Dist. NAGPUR, Crop. CHILLI

Per acre total output, self consumption, marketed surplus, gross income, cost of cultivation and net income

No. of Farmers	1991 - 1992							1992 - 1993						
	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)
1	36.00	1.00	35.00	400	14000	7625	6375	38.00	1.00	37.00	450	16650	8040	8610
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	42.00	2.00	40.00	400	16000	9215	6785	40.00	2.00	38.00	450	17100	9615	7485
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	44.00	2.00	40.00	600	24000	10200	13800	46.00	2.00	44.00	500	22000	11100	10900
6	30.00	2.00	28.00	500	14000	5965	8035	32.00	2.00	30.00	600	18000	6485	11505
7	37.00	2.00	35.00	500	17500	7775	9725	36.00	2.00	34.00	600	20400	8325	12075
8	40.00	2.00	38.00	600	22800	8770	14030	42.00	2.00	40.00	500	20000	8505	10495
9	41.00	2.00	39.00	600	23400	7235	16165	43.00	2.00	41.00	500	20500	7785	12715
10	30.00	2.00	28.00	600	16800	7588	9212	28.00	2.00	26.00	600	15600	8121	7479
11	28.00	1.00	27.00	500	13500	4560	8940	29.00	1.00	28.00	400	11200	5246	5954
12	42.00	2.00	40.00	500	20000	9919	10081	45.00	2.00	43.00	600	25800	10864	14936
13	41.00	2.00	39.00	600	23400	8743	14657	42.00	2.00	40.00	500	20000	9363	10637
14	30.00	1.00	20.00	500	14500	5595	8905	28.00	1.00	27.00	600	16200	6215	8985
15	25.00	1.00	24.00	400	9600	7439	2161	40.00	1.00	39.00	500	19500	9813	9687
16	50.00	-	50.00	350	17500	7405	10095	52.00	-	52.00	350	18200	7975	10225
17	36.00	2.00	34.00	400	13600	8154	5446	32.00	2.00	30.00	500	15000	8924	6076
18	36.00	1.00	35.00	400	14000	9575	4425	36.00	1.00	35.00	450	15750	9625	6125
19	37.00	1.00	36.00	400	14400	8925	5475	37.00	1.00	36.00	500	18000	9261	8739
20	36.00	1.00	35.00	400	14000	7875	6125	36.00	1.00	35.00	500	17500	8275	9225
21	28.00	1.00	27.00	400	10800	5589	5211	31.00	1.00	30.00	500	15000	8888	8112
22	32.00	1.00	31.00	500	15500	6764	8736	33.00	1.00	32.00	500	16000	7044	8956
23	36.00	2.00	34.00	700	23800	7278	16522	43.00	2.00	41.00	600	24600	7868	16740
24	35.00	1.00	34.00	350	11900	5850	6050	37.00	1.00	36.00	350	12600	6262	6338
25	36.00	1.00	35.00	400	14000	6665	7335	36.00	1.00	35.00	400	14000	7065	6935

Tal. MAUDA, Dist. NAGPUR, Crop. CHILLI

Per acre total output, self consumption, marketed surplus, gross income, cost of cultivation and net income

No. of Farmers	1993 - 1994							1994 - 1995						
	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)
1	35.00	1.00	34.00	500	17000	8480	8520	36.00	2.00	34.00	550	18700	8494	10206
2	32.00	1.00	31.00	400	12400	7455	4945	30.00	1.00	29.00	450	13050	7910	5140
3	44.00	2.00	42.00	500	21000	10365	10635	46.00	2.00	44.00	550	24200	11065	13135
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	42.00	2.00	40.00	600	24000	12200	11800	45.00	2.00	43.00	500	21500	12960	8540
6	33.00	2.00	31.00	600	18600	8271	12329	36.00	2.00	34.00	500	17000	8871	10129
7	37.00	2.00	35.00	500	17500	9130	8370	38.00	2.00	36.00	600	21600	9655	11945
8	41.00	2.00	39.00	600	23400	10145	13255	50.00	3.00	47.00	500	23500	10740	12760
9	42.00	2.00	40.00	600	24000	8330	15670	46.00	2.00	44.00	700	30800	8810	21990
10	30.00	2.00	28.00	500	14000	8728	5272	44.00	2.00	42.00	600	25200	9312	15888
11	27.00	1.00	26.00	500	13000	5580	7420	31.00	1.00	30.00	400	12000	6248	5754
12	44.00	2.00	42.00	700	29400	11524	17876	50.00	3.00	47.00	700	32800	12269	20631
13	41.00	2.00	39.00	600	23400	10068	13312	40.00	2.00	38.00	500	19000	10663	8337
14	25.00	1.00	24.00	700	16800	7040	9760	26.00	1.00	25.00	700	17500	7565	9935
15	41.00	1.00	40.00	550	22000	10163	11837	42.00	1.00	41.00	600	24600	10625	13975
16	52.00	-	52.00	400	20800	7544	13256	54.00	2.00	52.00	500	28000	8344	17656
17	37.00	1.00	36.00	500	18000	8085	9915	36.00	1.00	35.00	500	17500	8438	9062
18	35.00	1.00	34.00	500	17000	10000	7000	36.00	1.00	35.00	550	19250	10325	8925
19	38.00	1.00	37.00	550	20350	9525	10825	36.00	1.00	35.00	550	19250	9787	9763
20	37.00	1.00	36.00	500	18000	8650	9350	35.00	1.00	34.00	600	20400	9025	11375
21	30.00	1.00	29.00	500	14500	7094	7406	26.00	1.00	25.00	600	15000	5835	9165
22	29.00	1.00	28.00	550	15400	6216	9184	29.00	1.00	28.00	550	15400	6567	6538
23	33.00	1.00	32.00	800	25600	6426	17174	46.00	2.00	44.00	700	30800	9060	21740
24	35.00	2.00	33.00	400	13200	6875	6325	38.00	1.00	37.00	400	14800	6775	8025
25	37.00	1.00	36.00	400	14400	7465	6935	32.00	1.00	31.00	450	13950	7384	6566

**Tal. MAUDA, Dist. NAGPUR, Crop. CHILLI**

**Per acre total output, self consumption, marketed surplus, gross income, cost of cultivation and net income**

No. of Farmers	1995 - 1996							1996 - 1997						
	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)	Total Output Qnt.	Consumption Etc. Q. Kg	Marketed Surplus Qnt	Sale Price (Rs per qtl)	Gross Income (Rs)	Cost of Cultivation (Rs)	Net Income (Rs)
1	34.00	2.00	32.00	600	19200	8954	10246	34.00	2.00	32.00	700	22400	9434	12966
2	34.00	1.00	33.00	500	16500	8370	8130	38.00	2.00	36.00	500	18000	8350	9650
3	44.00	2.00	42.00	600	25200	11740	13460	42.00	2.00	40.00	700	28000	11915	16085
4	32.00	2.00	30.00	500	15000	8100	6900	36.00	2.00	34.00	500	17000	8600	7200
5	52.00	3.00	49.00	600	29400	14200	15200	56.00	3.00	53.00	500	26500	14720	11780
6	35.00	2.00	33.00	600	19800	7415	12385	33.00	2.00	31.00	700	21700	7615	14085
7	40.00	3.00	37.00	600	22200	10290	11910	39.00	3.00	36.00	500	18000	10615	7385
8	45.00	2.00	43.00	700	30100	11795	18305	43.00	3.00	40.00	600	24000	12465	11505
9	46.00	2.00	44.00	600	26400	9260	17140	50.00	2.00	48.00	500	24000	9635	14165
10	33.00	2.00	31.00	700	21700	9508	12192	34.00	2.00	32.00	600	19200	10154	9046
11	32.00	2.00	30.00	400	12000	6896	5104	30.00	1.00	29.00	500	14500	7413	7087
12	55.00	3.00	52.00	500	26000	12969	13031	52.00	3.00	49.00	700	34300	13869	20431
13	43.00	2.00	41.00	700	28700	11313	17387	49.00	3.00	43.00	500	21500	11888	9612
14	32.00	1.00	31.00	500	15500	8015	7485	30.00	1.00	29.00	600	17400	8515	8885
15	40.00	1.00	39.00	650	25350	9900	15450	43.00	1.00	42.00	600	25200	10575	14625
16	42.00	2.00	40.00	450	18000	8600	9400	43.00	2.00	41.00	450	18450	9113	9337
17	37.00	1.00	36.00	550	19800	8925	10875	36.00	2.00	34.00	600	20400	9000	11400
18	34.00	1.00	33.00	600	19800	10475	9325	35.00	1.00	34.00	650	22100	10750	13500
19	37.00	1.00	36.00	600	21600	10112	11488	36.00	1.00	35.00	650	22750	10425	12325
20	35.00	1.00	34.00	650	22100	9400	12700	37.00	1.00	36.00	650	23400	9787	13613
21	27.00	1.00	26.00	600	15600	6111	9489	31.00	1.00	30.00	500	15000	7414	7586
22	34.00	1.00	33.00	500	16500	7937	8563	33.00	1.00	32.00	550	17600	8048	9552
23	49.00	2.00	47.00	500	23500	9626	13874	48.00	2.00	46.00	600	27600	10159	1744
24	39.00	1.00	38.00	450	17100	7250	9850	30.00	1.00	29.00	450	13050	5991	7059
25	33.00	1.00	32.00	500	16000	7514	8486	34.00	1.00	33.00	500	16500	7834	8666

# APPENDIX A.8.6(a)

## Yield Rates for Taluka Kuhi

Kuhi Taluka	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97
1	330	330	300	360	<b>375<sup>PPM</sup></b>	422
2	450	480	490	<b>2450<sup>DP</sup></b>	530	550
3	361	390	330	420	<b>2450<sup>DP</sup></b>	360
4	512	542	300	330	<b>2360<sup>DP</sup></b>	375
5	260	255	271	242	<b>2286<sup>DP</sup></b>	294
6	256	270	263	286	<b>2300<sup>DP</sup></b>	270
7	316	375	345	410	<b>435<sup>PPM</sup></b>	435
8	450	480	490	450	530	<b>2550<sup>DP</sup></b>
9	330	360	300	<b>3400<sup>AE</sup></b>	420	450
10	360	376	390	376	<b>4436<sup>PPM</sup></b>	420
11	452	480	450	<b>2480<sup>DP</sup></b>	<b>4527<sup>PPM</sup></b>	527
12	527	450	490	467	<b>2450<sup>DP</sup></b>	490
13	375	360	420	<b>3430<sup>AE</sup></b>	420	415
14	300	330	300	285	316	<b>1300<sup>NS</sup></b>
15	330	330	300	360	<b>4375<sup>PPM</sup></b>	422
16	316	270	330	345	375	<b>1316<sup>NS</sup></b>
17	340	316	325	<b>2375<sup>DP</sup></b>	360	345
18	480	505	495	542	<b>530<sup>DP</sup></b>	566
19	330	345	390	345	<b>377<sup>DP</sup></b>	360
20	420	438	452	482	452	<b>1436<sup>NS</sup></b>
21	390	420	452	438	482	<b>1360<sup>NS</sup></b>
22	256	287	264	271	287	<b>1256<sup>NS</sup></b>
23	310	360	377	<b>3392<sup>AE</sup></b>	385	376
24	376	364	390	<b>400<sup>AE</sup></b>	415	<b>1452<sup>NS</sup></b>
25	527	550	482	494	<b>2422<sup>DP</sup></b>	390

Note : **Bold** – Represents the year when he participated in the Scheme.

1 – Participated in Nucleus Seed

2 – Dem. Plot

3 – Area Expansion Plot

4 – Plant Protection Measures

# APPENDIX A.8.6(b)

## Yield Rates for Taluka Mauda

Mauda Taluka	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97
1	540	570	527	540	<sup>2</sup> 512 <sup>DP</sup>	512
2	-	-	482	452	<sup>2</sup> 512 <sup>DP</sup>	572
3	180	150	195	225	<sup>2</sup> 210 <sup>DP</sup>	240
4	-	-	-	-	<sup>4</sup> 480 <sup>PPM</sup>	542
5	660	700	638	<sup>3</sup> 675 <sup>AE</sup>	780	840
6	450	480	500	<sup>2</sup> 550 <sup>DP</sup>	527	497
7	557	540	557	572	<sup>4</sup> 602 <sup>PPM</sup>	587
8	600	640	615	<sup>3</sup> 750 <sup>AE</sup>	675	715
9	615	640	630	<sup>2</sup> 690 <sup>DP</sup>	715	750
10	450	430	462	<sup>3</sup> 660 <sup>AE</sup>	502	<sup>1</sup> 522 <sup>NS</sup>
11	420	440	410	<sup>2</sup> 472 <sup>DP</sup>	482	450
12	632	678	660	753	<sup>3</sup> 828 <sup>AE</sup>	783
13	610	640	625	<sup>3</sup> 678 <sup>AE</sup>	610	740
14	452	422	375	<sup>3</sup> 390 <sup>AE</sup>	482	452
15	502	602	617	<sup>3</sup> 632 <sup>AE</sup>	602	650
16	753	783	783	<sup>2</sup> 810 <sup>DP</sup>	640	648
17	542	482	565	<sup>3</sup> 542 <sup>AE</sup>	557	542
18						
19	557	564	572	<sup>3</sup> 542 <sup>AE</sup>	557	542
20	542	550	565	<sup>3</sup> 535 <sup>AE</sup>	527	527
21	418	473	452	<sup>2</sup> 395 <sup>DP</sup>	408	467
22	482	497	440	<sup>3</sup> 438 <sup>AE</sup>	520	510
23	552	650	502	<sup>2</sup> 703 <sup>DP</sup>	745	730
24	527	565	527	<sup>3</sup> 572 <sup>AE</sup>	587	452
25	542	554	566	482 <sup>DP</sup>	497	512

Note : **Bold** – Represents the year when he participated in the Scheme.

1 – Participated in Nucleus Seed

2 – Dem. Plot

3 – Area Expansion Plot

4 – Plant Protection Measures

## **CHAPTER IX**

### **Broad Conclusion and Policy Implications**

The Central Sector Scheme for Spice Development was implemented with a view to promote production of spices. This was to be achieved through different strategies such as production of nucleus planting materials of all improved varieties of spices at research institutes, their large scale multiplication at State – department farms, & Agricultural University farms, area expansion programme, adoption of plant protection measures against major pests and diseases, transfer of technology through method demonstration, training etc.

An increase in production of spices would help to meet domestic requirements as well as the increasing global demand. The extent to which farmers have adopted new technology and increased production has been the main theme of our study.

Our study showed that exports of spices from India which were 1.02 lakh tonnes in 1989-90 increased to 2.19 lakh tonnes in 1996-97. Presently, our spice exports command 49 per cent in global trade in term of quantity and 24 per cent in terms of value. Pepper and chillies – are main exports and these exports alongwith ginger and turmeric normally formed 65 to 70 per cent of the total exports. Export of value added spices are also showing rapid increase.

Our study was unable to estimate the extent to which spices produced in Maharashtra were exported, despite attempts to obtain this data from various sources.

#### **9.1 Main Findings :**

The main findings of our study regarding implementation of the scheme in Maharashtra were:

- 1) In case of turmeric, all three indicators i.e. area, production and yield showed no improvement after implementation of the scheme. The same was observed with respect to ginger. With respect to chilli however, Maharashtra showed marginally better performance after the implementation of the scheme. The yield of chilli which was 513 kg per hectare in period I, increased marginally to 527 kg per hectare in period II.

- 2) The scheme operated on a very small scale in case of all the programmes. In case of turmeric, less than 2 per cent of the area was under demonstration plots, while 6 to 8 per cent was under area expansion programme.

Ginger appeared to be a minor crop and occupied only 0.01 per cent of Maharashtra's gross cropped area. Targets were slightly surpassed in case of demonstration plots, but fell short in case of area expansion programme. While the target was to distribute 3033 minikits, the achievement was only 1972 i.e. 65 per cent. The area under demonstration plots was barely 1.5 to 2.5 per cent of the area under ginger. The plant protection programme covered 9 per cent of the area, and in 1996-97 it was 1.6 per cent. The minikits distributed also covered less than one per cent of the area.

In case of chilli also all targets were not achieved. Also, as in case of ginger and turmeric, the programmes initiated covered a negligible portion of the total area. Demonstration plots covered 0.1 per cent of the area, while less than one per cent was under area expansion programme. Only plant protection measures covered 13 per cent of the area in 1994-95 and 8 to 9 per cent of the area under chilli in 1995-96 and 1996-97.

- 3) Data from field surveys also did not show very encouraging performance of the Central Sector Scheme. In case of turmeric, the yield on sample farms in Sangli district ranged from 1100 kg to 1300 kg per hectare. This was much lower than the overall average yield in Sangli district. Also, farmers did not receive higher yields in the year when they participated in the scheme.

In case of ginger, the sample farms in Satara district showed yields much higher than the district average. Our study however observed that the high yield on the sample farm could not be attributed to Central Sector Scheme. This was because, from the period 1991-92 to 1996-97 for which yield was calculated, it was not the highest in the year when the cultivator participated in the scheme. Also the subsidy amount was negligible (for example, Rs. 25 for 0.01 hectare under the minikit scheme), to have any impact on yield. Also ginger is a crop where production is not estimated by crop cutting experiments. Therefore strict comparison between yield obtained from primary and secondary sources may have an element of arbitrariness.

Chilli is the most dominant spice crop in Maharashtra. Our survey on Nagpur showed that in both talukas, atleast half the number of beneficiaries, who participated in the scheme experienced increase in yield. Farmers who had established demonstration plots and participated in area expansion programme, revealed that they had switched over from local to high yielding varieties. Many farmers in the sample experienced higher yields in the following years after their participation in the programme. This could suggest that they were responding to better farming techniques.

- 4) At the All India level, the scheme envisaged an overall growth rate of 8 per cent in the production of spice crops. The growth rates achieved were however far short of that targeted as can be observed from below:

Spice crop	Average annual growth rate of production (%) (1991-92 to 1996-97)	
	Targeted	Actual
Turmeric	8	6.08
Ginger	10	4.87
Chilli	9	5.5

The actual growth rate is far short of that targeted. The situation is much worse in Maharashtra, where production actually showed declining trend during the VIII Plan Period, due to both area and yield effect.

## 9.2 Policy Implications

Our study on impact of Central Sector Scheme On Development of Spices leads us to the following implications for policy:

**FIRST**, the scheme has been implemented on a very small scale at the state level and covered a negligible area under all the three selected spice crops. Demonstration plots and adoption of plant protection chemicals etc, on such a small area can hardly be expected to create any impact on the overall district yield and thereby state level yield. Hence, for the scheme to have a substantial impact and thereby increase production, it is necessary to fix higher targets so that more beneficiaries can avail of subsidies. This will naturally entail more outlay. The release of grants must also not be delayed by the

central and state government, as sometimes the release is after the commencement of the planting season. Farmers thus could not participate in some programmes such as establishment of demonstration cum seed multiplication plots, area expansion programme etc. as they have already started planting operation. [Attn: Government of India, Ministry of Agriculture, Directorate of Cocoa, Arecanut & Spice Development (Calicut), Kerla, and Directorate of Horticulture, Maharashtra State.]

**SECOND**, the subsidy for various components and sub-components is very less. For example, the subsidy for component of nucleus seed is less. Hence the Agricultural Universities are reluctant to take up the programme of production of nucleus seed. Again, in case of distribution of minikits for ginger, the subsidy amount in the minikit was Rs 25 for a plot size of 0.01 hectare. The minikit, as per norms is supposed to contain 5 Kg seed rhizomes and its requirements of fertilizers and plant protection chemicals. However, from the office of the District Superintendent Agricultural officer, as well as a personal interview with farmers, it was revealed that under minikit distribution only one bottle of pesticide for 0.01 hectare was available. Also, 5 Kg of seed for 0.01 hectare is insufficient, as the seed rate is 1200 Kg to 1800 Kg per hectare for ginger. Therefore, atleast 10 Kg seed are required for 0.01 hectare. The assistance in this programme, therefore, does not provide any incentive to farmers to participate in the scheme. It is, therefore, felt that subsidy amount should be increased as input prices are escalating over the years. In case of other programmes such as plant protection measures also the subsidy amount was less. [Attn : Government of India, Ministry of Agriculture, Directorate of Cocoa, Arecanut and Spices Development, Kerala.]

**THIRD**, the purpose of establishment of demonstration plots and of area expansion programme is to encourage farmers to switch over from local varieties to high yielding varieties. In case of ginger and turmeric however, all farmers who had availed of subsidies under the programmes, were still cultivating local varieties.

There have been major constraints in ginger cultivation due to non-availability of sufficient quantity of quality planting materials of high yielding varieties, as well as low fibre content varieties. Ginger is propagated exclusively by vegetative means because of lack of seed set. Hence, the conventional approach in ginger breeding and

selection for disease resistance are especially difficult. Poor genetic base and absence of seed set are a few hurdles in the crop improvement programme. However, three high yielding varieties developed in Orissa, namely, Suprabha, Suruchi and Suravi have been released by All India Co-ordinate Research Project on Spices. These varieties have a potential yield of 5000 Kg per hectare. These varieties however do not seem to be cultivated in Maharashtra. Studies on ginger have revealed that although these varieties are high yielders, none of them are completely resistant to major diseases such as soft rot or rhizome rot which results in total loss of the affected clumps. Research in this direction is limited due to lack of seed set. The maturity range of these varieties ranges from 218 to 229 days. However for rainfed situations, early maturing varieties would suit, while for irrigated conditions, late maturing varieties would adapt well. Thus, there is need to develop varieties to suit different situations.

Research on ginger by plant breeders also reveals that ginger under irrigated conditions gives maximum yields. A high input technology for achieving maximum yields will benefit ginger farmers, if affordable. Further, ginger has seed rhizome dormancy and therefore there is need to evolve non-dormancy varieties. Micro-propagation through tissue-culture is also possible in ginger, though it requires two crop seasons.

Since ginger is a crop with high export potential, while releasing varieties, due attention should be given on quality aspect i.e. low crude fibre content, high oleoresin and high essential oil.

As in the case of ginger, even turmeric is susceptible to diseases and resistant varieties are not available.

Thus as far as ginger and turmeric are concerned, any progress in research work in the directions outlined would be a boon to these cultivators. Ofcourse, high production technology developed at research stations must also be transferred to the fields. [Attn : National Research Centre for Spice, Calicut, and State Agricultural Universities]

**FOURTH**, it was observed that the production of paprika seeds, (a chilli based substance rich in capsanthin – the colouring pigment) had limitations. Mahatma Phule Krishi Vidyapeeth, Rahuri, was involved in the production of paprika varieties. The performance of all varieties was satisfactory till the flowering state. Then all varieties

got affected by powdery wilt, die-back and leaf curl diseases, despite use of recommended insecticides and fungicides. Hence production of paprika seeds was not viable. Since paprika has good demand in export market, further research in these varieties assumes importance. [Attn: Indian Council of Agricultural Research; Department of Horticulture/Vegetable crops in State Agricultural Universities; Regional Agricultural Research Station Guntur (Andhra Pradesh); Private Seeds Company; National Research Centre for Spice]

**FIFTH**, the Mahatma Phule Agricultural University released four varieties of chilli. The University however felt the need for more research staff in order to undertake concentrated research programme regarding breeding, agro-techniques, plant protection, post-harvest technology and seed production. The university was undertaking research work under the "Integrated Programme for Development of Spices". The University felt the need for establishment of an independent project on chillies where the research work regarding the development of new varieties of chilli can be undertaken. [Attn: Government of India, Ministry of Agriculture, and State government, Maharashtra]

**SIXTH**, the Agricultural Universities felt that there is lack of post harvest infrastructure for drying of chilli in kharif season which reduced the quality of seed. The traditional method of sundrying is facing the problem of availability of area for drying, watching and protection from unfavourable weather conditions. This practice does not give quality produce and the recovery of the dried material is also less, due to breakage and loss of seeds. The time taken for drying is also long and colour fades during storage, making chilli less attractive. MPKV, Rahuri, therefore felt that there was urgent need for availability of chilli drier and seed extracting machine for quicker extraction of seed. [Attn: Government of India, Ministry of Agriculture and State Government, Maharashtra].

**SEVENTH**, a new climate for world trade has been created as a result of the GATT negotiations (also known as Uruguay Round ) which is likely to have an impact on agricultural commodities having competitive edge over other exporting countries. Spices could possibly emerge as agricultural commodities with high export potential.

However, the consumers of spices all over the world are becoming more and more quality conscious. The importing countries are stipulating very stringent quality

requirements and hygienic standards of spices. There is therefore need to maintain international norms. For example, there is need to produce chillies free from pesticides residue, aflatoxins and unfavourable microbial contamination (Singh Paramjit (Dept. of Agriculture and Co-operation, Krihi Bhavan, New Delhi) - An Overview of Chilli Production and Export in India, Arecanut and Spice Journal, 1996). Notified viruses in ginger and turmeric rhizomes have forced importing countries to enforce 'Quality Policies'(Bose and others – Tropical Horticulture, published by Naya Prakash, Calcutta, P.644).

As already noted India has vast potential for export. The world demand for ginger is increasing; the yellow colouring factor 'curcumin' from turmeric is gaining importance in food industry, pharmaceuticals, in preservatives and body care (Bose and others, Tropical Horticulture, published by Naya Prakash, Calcutta). There is also demand for high colour and low pungency chillies. In view of the above, there is need to increase yield of our spice crops so that surpluses are generated for export. Studies have indicated that there is a wide gap in potential yield of spice crops and their performance at the farmer's field. As already discussed the important limiting factor in yield increase is major pests and diseases.

The policy prescription to boost exports would therefore be to increase production and productivity of varieties of spice crops which have demand in the global market. Also, attempts should be made to attain international standards. Ofcourse, the Spice Board has launched various quality upgradation programmes for educating farmers, traders and exporters for improving quality and maintaining international standards. Our field surveys, however showed that farmers lacked quality consciousness and hence extension agencies have to make more efforts. **[Attn : Export Inspection Agency; Directorate of Marketing and Inspection; Agricultural Universities and Department of Horticulture / Agriculture in spice growing states]**

Thus the broad conclusion that emerge from our study can be briefly summarized. In case of ginger, availability of high yielding varieties are limited but in case of turmeric efforts have been made to identify and select a number of turmeric type which combine high yield potential and superior rhizome quality. The varieties developed should be popularized in Maharashtra. In case of chilli, a number of high

yielding varieties have been developed and are becoming popular among farmers. However, all three crops are extremely susceptible to diseases, which causes great economic losses. Schemes such as Central Sector Scheme for Development of Spices are therefore useful in encouraging farmers to increase yield and thus production. However, such schemes have to be implemented on a larger scale to promote production. Farmers must also be quality conscious to be competitive in the export market.

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