Study No.83

"EVALUATION OF THE IMPACT ON PRODUCTION AND EXPORT OF CENTRAL SECTOR SCHEME INTEGRATED PROGRAMME FOR DEVELOPMENT OF SPICES IMPLEMENTED DURING EIGHTH PLAN IN MADHYA PRADESH'

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PREFACE

India is famous for the production of spices. Due to varied type of climate a variety of spices are produced in the country in all the seasons. Although some quantity of spices are exported, there is a limited scope for export due to low productivity. In the five years plans, schemes of spices development programme were implemented. In the eighth five year plan considerable emphasis was laid on the production of spices for earning foreign exchange. A central sector scheme namely, "Integrated Programme for Development of Spices" was initiated. The outlay for the eighth plan was Rs. 125 crores. However the results were not encouraging. The Ministry of Agriculture, Government of India asked five Agro-Economic Research Centres to conduct a study titled "Evaluation of the Impact on Production and Export of Central sector scheme Integrated Programme for Development of Spices". Agro-Economic Research Centre, Allahabad was made the coordinating Centre.

The objectives of the study were :-

1. To evaluate the status of spices cultivation prior to and during the implementation of 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 aspects.

5. To furnish rational guidelines for betterment of the scheme.

This Centre conducted the study for chilli,coriander and ginger in the districts of Khargone, Guna and Tikamgarh respectively. Fifty spices growers were selected in each district so that the total sample comprised of 150 spices growers.

The spices development programme during the eighth plan was not satisfactory in Madhya Pradesh, selected districts and on selected farms. The targets set for different programmes were not achieved. In the case of programmes like seed distribution, minikits distribution and demonstrations the achievements fell short of target. These needed corrective measures on the part of Director of Horticulture, Government of Madhya Pradesh, Deputy Director of Horticulture of selected districts and field workers. In addition the suggestions of the officials and selected farmers have been incorporated at appropriate places.

I hope the study will be of use to all the concerned officials and workers. AERC, Allahabad which was coordinating centre provided background, outline of the study and schedules and common tables for the report. I am thakful to the officials of the Allahabad Centre.

Dr. A.M. Mishra, Research Officer was the Officer Incharge of the study. He planned the field work, tabulation scheme and submitted the draft of the report. He was ably assisted by Mr. J.R. Shinde and Mr. B.S. Patel, Junior Research Investigators in the field work as well as tabulation of data. Mr. S.K. Sharma typed the report and Mr. Sikandar Khan did the computer typing. Mr. Chandrakant Mishra and Mr. Srikant Upadhye did the photocopy work. All of them deserve appreciation. I am also thankful to State and District level officials and selected farmers.

(M.C. Athavale)

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CHAPTER -I

INTRODUCTION

1.1 Spices Development in India

India is known as the land of spices. The unique climatic advantage prevalent in almost every state and union territory enables to grow one or other spice, be it tropical, subtropical or of temperate nature. Spices are aromatic vegetable products, usually dried and used for reasoning and preserving foodstuffs. These play a very important part in human diet by giving an agreeable flavor and aroma to food.

India is the foremost country with regard to the production and consumption as well as export of a wide range of spices. Though spices play an important role in our country's economy productivity has almost been static and certainly not up to the mark. The present production of spices is about 21 lakh tonnes per annum valued at Rs. 5,200 crores. Around 95 per cent of the production of spices is absorbed in the domestic market and the rest 5 per cent is exported. The export earnings from spices during 1992-93 amounted to Rs. 3,820 million. During VIII plan considerable emphasis was laid on the production of spices vis-a-vis earning of foreign exchange. As a boosting measure a central sector scheme, namely, "Integrated Programme for Development of Spices" was lunched country wide during VIII plan. In this programme activities like identification of the spices varieties having high production potential and better export demand; production of quality planting material based on latest technology including tissue culture, import of seeds of improved varieties, rejuvenation of unproductive gardens through scientific cultivation methods, extension facilities, improvements in infrastructure and market network etc. were taken up. The outlay earmarked for implementation of the scheme during VIII plan was Rs.125 crores with cent percent central assistance. At the national level, the scheme was executed by the Directorate of Arecanut and Spices Development, Calicut, covering 25 states and 2 union territories. In the states, it was implemented by the state's Directorate of Horticulture, Agricultural Universities, Agricultural Research Institutes and private institutions, Large scale growers were also involved in the execution of the scheme. Large subsidies and incentives were granted to the farmers and concerted efforts were made to make the scheme a success. Despite all these efforts it has been experienced that the results are still far from the envisaged goals causing serious concern to the policy planners. It is with this background that the Ministry of Agriculture, Government of India has launched a country wide evaluation study of the scheme during 1998-99 to ascertain the detrimental factors so that the corrective measures my be undertaken accordingly.

1.2 Area and Production of Spices in India

From table 1.1 it appears that chilli was the most important spice among 11 major spices and area under it was 40 per cent, while its share in the production ranged between 32 to 38 per cent. In terms of production, turmeric ranked second followed by garlic. In term of area, coriander assumes importance after chilli. Pepper, an important spice crop 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.

Table 1.1 Area and production of major spices in India, 1991-92 to 1996-97

(Area in Hectares, Production in Tonnes)

Spice	1991-92		1992-93		1993-94		1994-95		1995-96		1996-97	
	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production
Chilli	8,46,600 (42.93)	6,18,200 (33.00)	9,62,100 (41.98)	8,62,100 (38.20)	9,30,000 (37.99)	8,00,100 (32.23)	8,29,200 (37.43)	7,94,600 (32.10)	8,83,700 (40.32)	8,09,700 (33.88)	9,56,500 (41.23)	9,45,500 (35.30)
Turmeric	1,20,300 (6.10)	3,73,200 (19.92)	1,30,200 (5.68)	4,07,700 (18.07)	1,48,400 (6.06)	7,07,400 (28.49)	1,49,400 (6.74)	6,22,000 (25.13)	1,39,300 (6.36)	4,62,900 (19.37)	134.0 (5.78)	543.0 (20..27)
Ginger	59,830 (3.03)	1,76,950 (9.45)	59,870 (2.61)	2,01,630 (8.94)	60,580 (2.47)	1,86,200 (7.50)	61,090 (2.76)	1,97,650 (7.99)	66,890 (3.05)	2,19,300 (9.18)	70,910 (3.06)	2,32,510 (8.68)
Pepper	1,84,200 (9.34)	52,010 (2.78)	1,89,390 (8.26)	50,760 (2.25)	1,90,990 (7.80)	51,320 (2.07)	1,93,270 (8.72)	60,740 (2.45)	1,98,030 (9.04)	61,580 (2.58)	1,79,590 (7.74)	55,370 (2.07)
Garlic	94,300 (4.78)	3,70,700 (19.79)	85,500 (3.73)	3,55,800 (15.77)	76,200 (3.11)	3,06,000 (12.33)	98,900 (4.46)	4,03,300 (16.29)	1,14,800 (5.24)	4,90,000 (20.50)	96,600 (4.16)	4,51,500 (16.86)
Cardamom small	81,845 (4.15)	5,000 (0.27)	82,392 (3.60)	4,250 (0.19)	82,960 (3.39)	6,600 (0.27)	83,651 (3.78)	7,000 (0.28)	83,802 (3.82)	7,900 (0.33)	73,593 (3.17)	6,625 (0.25)
Cardamom Large	26,300 (1.33)	3,400 (0.18)	26,430 (1.15)	3,550 (0.16)	26,645 (1.09)	3,725 (0.15)	26,131 (1.18)	3,600 (0.15)	26,130 (1.19)	4,750 (0.20)	26,129 (1.13)	5,150 (0.19)
Coriander	3,49,700 (17.73)	1,58,500 (8.46)	4,02,600 (17.57)	1,91,200 (8.47)	4,64,800 (18.99)	2,03,700 (8.21)	4,30,400 (19.42)	1,93,000 (7.80)	4,07,600 (18.60)	1,96,100 (8.21)	4,12,100 (17.76)	2,43,100 (9.08)
Cumin	1,63,575 (8.29)	64,884 (3.46)	3,13,895 (13.70)	1,35,189 (5.99)	4,20,755 (17.19)	1,66,524 (6.71)	2,82,027 (12.73)	1,18,877 (4.80)	2,20,343 (10.05)	75,250 (3.15)	3,07,046 (13.23)	1,17,122 (4.37)
Fennel	19,504 (0.99)	24,851 (1.33)	14,700 (0.64)	19,000 (0.84)	11,100 (0.45)	13,100 (0.53)	16,687 (0.75)	17,438 (0.70)	12,821 (0.58)	15,696 (0.66)	25,107 (1.08)	28,380 (1.06)
Fenugreek	26,050 (1.32)	25,485 (1.36)	24,629 (1.07)	25,372 (1.12)	35,778 (1.46)	37,872 (1.53)	45,133 (2.04)	56,846 (2.30)	38,321 (1.75)	46,668 (1.95)	38,485 (1.66)	49,968 (1.87)
Total	**19,72,204**	**18,73,180**	**22,91,706**	**22,56,611**	**24,48,208**	**24,82,541**	**22,15,889**	**24,75,051**	**21,91,737**	**23,89,844**	**23,20,060**	**26,78,225**

Source : Area and Production of Spices in India and the World, Spice Board, Ministry of Commerce, Govt. of India, 1997.
NOTE : Figures in parentheses indicate the percentage to total

The overall conclusion that emerges regarding the spice economy is that area under major spices increased from19.7 lakh hectares in 1991-92 to 23.20 lakh hectares in 1996-97. In the case of production the increase was from 18.7 lakh tonnes in 1991-92 to 26.78 lakh tonnes in 1996-97 (Table 1.1).

The cultivation of different spices crops is scattered all over the country with various spice crops assuming varied importance in different states. The concentration of production of spice crops across states giving percentage contribution to total for India is as follows.

Chilli	:	Andhra pradesh (49%), Karnataka (13%)
Ginger	:	Kerala (23%), Meghalaya (18%)
Turmeric	:	Andhra Pradesh (56%), 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)

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

1.3 Export of Indian 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. Nearly 94 per cent of the spices production is domestically consumed and barely 6 per cent is exported. India, however has the potential to become a major player in the world trade in spices. It can be observed from table 1.2 that the quantity of spices exported has been increasing over the years. While export were 1.02 lakh tonnes in 1989-90, these increased to 2.28 lakh tonnes in 1997-98. It can be observed from the table that pepper, turmeric and ginger were major in export basket of spices showed a decline in 1995-96 (Table 1.2).

The leading position of pepper was taken up by chilli with the record export of 56,076 tonnes forming 28 per cent of the total spices exports. Crop failure in major chilli producing countries, such as China and Pakistan resulted in the import of substantial quantity of Indian chilli by international markets. The share of pepper was again low in 1997-98 while other spices increased the share due to increased exports of spices such as cumin .

Table 1.2 Cropwise quantity of export of Indian spices

(Qty .in tonnes and value in crore rupee)

Year	Chilli	Turmeric	Ginger	Pepper	Others	Total Export	
	Qty.	Qty.	Qty.	Qty.	Qty.	Qty.	Value
1989-90	11,967 (11.70)	16,900 (16.50)	9,037 (8.80)	34,650 (34.00)	29,616 (29.00)	1,02,170 (100.00)	275.76
1990-91	24,534 (22.40)	13,624 (12.40)	6,555 (6.00)	29,985 (27.30)	34,938 (32.00)	1,09,636 (100.00)	242.14
1991-92	33,398 (25.60)	16,565 (12.70)	14,259 (11.00)	20,535 (15.70)	45,810 (35.00)	1,30,567 (100.00)	362.04
1992-93	16,850 (13.70)	18,950 (15.40)	8,220 (6.70)	23,821 (19.30)	55,424 (45.00)	1,23,265 (100.00)	382.06
1993-94	33,450 (19.00)	25,250 (14.40)	17,150 (9.80)	48,743 (27.80)	50,939 (29.00)	1,75,532 (100.00)	540.12
1994-95	26,279 (17.00)	28,199 (18.30)	11,098 (7.20)	37,264 (24.20)	51,272 (33.00)	1,54,112 (100.00)	607.34
1995-96	56,076 (27.70)	27,376 (13.50)	18,191 (9.00)	24,150 (12.00)	76,407 (38.00)	2,02,197 (100.00)	785.89
1996-97	51,900 (23.60)	21,600 (9.80)	28,350 (13.00)	47,770 (21.80)	69,780 (32.00)	2,19,400 (100.00)	1,180.00
1997-98	42,489 (18.57)	27,204 (11.90)	28,312 (12.40)	35,719 (15.60)	95,098 (41.50)	2,28,821 (100.00)	1,408.30

Source: Spices Export Review, 1997-98, Spice Board
Note: figures in parentheses are the percentages to total exports.

1.4 This Study

The study titled " Evaluation of the impact on production and export of Central Sector Scheme integrated programme for development of spices implemented during VIII plan' was assigned to 5 Agro-Economic Research Centres located at Allahabad; Jabalpur ;Waltair; Pune & Chennai by the Directorate of Economics & Statistics, Ministry of Agricullture, Govt. of India . Agro-Economic Research Centre, Allahabad was made the coordinating Centre. The AERC Allahabad formulated the study design, objectives, methodology, time plan, schedules and common tables for the study.

1.5 Objectives of the Study

The broad objectives of the study are :

1. To evaluate the status of spices cultivation prior to and during the implementation of 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 aspects.

5. To furnish rational guidelines for betterment of the scheme.

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

1.6 Methodology

The effectiveness of the scheme was studied with respect to three crops viz. coriander, chilli and ginger. A district each with maximum area and targets under each crop was selected. Further from each selected district, two blocks having maximum area under the spice crop were selected. At the next stage 2 clusters comprising 2 to 4 best villages from the point of view of spice crop were chosen from each block on the advice of block officials. Lists of spice crop growers were prepared in each cluster and the growers were grouped into 5 groups viz. marginal, small, semi- medium, medium and large according to land holding size. Fifty spice growers were selected from each selected district. Thus, the total sample comprised 150 spice growers from three selected districts. .

The Directorate of Horticulture, M.P. Bhopal was approached and on the suggestion of the concerned officials three districts viz . Khargone for chilli, Guna for coriander and Tikamgarh for ginger were selected respectively.

1.7 Reference period

The reference year of the study was agricultural year 1998-99.

1.8 Data collection and Method of Analysis

Primary as well as secondary data were collected. Primary data was collected from sample farmers and secondary data was collected from Directorate of Horticulture, M. P. Bhopal, Offices of Deputy Directors of Horticulture, Research Stations, various Agricultural Statistics published by Directorate of Agriculture Govt. of Madhya Pradesh, Bhopal.

Data was analysed according to holding groups and statistical measures like averages, percentages, time-series trends, index numbers, etc. were used. Impact was evaluated through comparison of two stage positions, i.e., pre VIII plan and during VIII plan period.

CHAPTER - II

SPICES DEVELOPMENT PROGRAMME IN INDIA, MADHYA PRADESH AND SELECTED DISTRICTS

2.1 Spices Development During Five Year Plans in India

In view of the important place of spices among the agricultural commodities, the Government of India undertook programmes for development of spices in its Five Year Plans. While no systematic programme for development of spices was undertaken in the first five year plan (1951-56), the II 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 the state of Kerala.

In the III five plan (1961-66), the plan outlay was Rs. 35 lakhs and during fourth five year plan (1969-74) the outlay was Rs.13.90 lakhs. The emphasis was again on pepper.

During the VI five year plan (1974-79), provision for spices 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 VI five year plan (1979-84), the annual plan (1984-85) and first two years of the VII 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. 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 chilli 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 extended 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 programmes were mostly implemented through the state Horticulture and Agriculture Departments.

2.1.1 Spices Development Programme During VIII Plan in India

The Integrated Programme for Development of Spices was further expanded substantially with a financial outlay of Rs. 125 crores during the VIII 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 27 commercially important spices grown in the country.

The annual growth rate in the production of spices during the VII plan was four per cent. The production attained the level of 19.5 lakh tonnes by 1991-92. Considering the growing demand for internal consumption and export an over all growth rate of 8 per cent was envisaged during VIII plan and accordingly the production target of 29.35 lakh tonnes was fixed for 1996-97. The VIII plan covered 27 spices crops. These are pepper, chilli, ginger, turmeric, coriander, cumin, fennel, fenugreek, celery, aniseed, bishops-weed, caraway ,dill cinnamon, cassia, garlic, curry leaf, kokam, saffron, tejpatta staranize, clove, nutmeg, tamarind, mace and large cardamom.

2.1.2 Production Constraints

There have been severe production constraints which have come in the way of spices development. Lack of enough programmes for large scale production and distribution of quality planting material of released varieties of different spices are important factors 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 or imbalanced manuring and non adoption of recommended package of practices by the farmers. Plant protection measures being costly are not adopted by majority of farmers. 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. Motivation of farmers to adopt new technology through field demonstrations has not been carried out sufficiently.

Given the importance of spices 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 emphasised in the “Central Sector Scheme Integrated Programme for the Development of Spices in the Eighth Plan”.

2.1.3 Strategy For Development

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

a) Identify spices/varieties available in the country, which have high production potential and better export demand and undertake development.

b) Produce quality planting material on large scale.

c) Import of seed material of improved varieties, to develop the cultivation and increase production.

d) Motivating farmers to follow improved cultivation methods including plant protection measures through field demonstrations and supply of inputs.

e) Educate and encourage farmers to adopt the latest technology for harvesting, processing and storage.

f) Rejuvenation of unproductive gardens by replanting and adopting scientific cultivation methods.

g) Development of water resources and providing irrigation facilities including drip irrigation and sprinkler irrigation.

h) Assist government agencies, co-operatives and voluntary organisations to develop common facilities for quality improvement, product diversification, storage and marketing.

i) 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.

j) 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 and domestic demand etc.

The following is broad classification of the development measures under the central sector scheme "Integrated Programme 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 infrastructure facilities to make available sufficient quantities of nucleus / breeder's seed / planting material of all the released and accredited varieties of spices. The material so produced is being supplied to the state department farms for further multiplication and distribution. The quality planting material 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 subsidised cost.

b) Laying Out Demonstration Plots on Farmers' Fields

This programme is intended to convince and motivate the farmers of the superiority of new varieties and scientific package of practices. The size of demonstration plots in respect of crops like chilli, ginger and turmeric is 0.1 hectare. For tree spices, 25 clove and 100 cinnamon plants are required for a plot. The inputs required for the establishment and maintenance of demonstration plots are given at 50 per cent subsidised cost to the farmers.

c) Area Expansion Programme

The main objective of the programme is to encourage the cultivation of improved varieties of spices so as to maximise the production. The cultivation of export oriented varieties is given top priority in this programme.

d) Distribution of Minikits

This programme is implemented to meet the home requirement of some of the spices besides popularising the improved varieties. Each minikit contains a small quality of seed/planting material as well as fertiliser and plant protection chemicals required. These are provided to the farmers at 50 per cent subsidy.

e) 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 are supplied to the farmers at 50 per cent subsidised cost.

f) Establishment and Maintenance of Demonstration cum progeny gardens in the North-Eastern Region

Keeping in view the vast potential for development of spices 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 spices crops suitable for the area are to be established in the gardens which serve as a centre for education and training on improved agro practices, besides planting material available for spice gardens. The programme also facilitates to assess the performance of new crop varieties in different agro-climatic conditions.

g) 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.3,000 whichever is less), promotion of marketing of spices such as setting up co-operative societies (Rs.5 lakh per unit) and setting up farmers 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 were to be implemented.

Thus the above programmes constituted the “Central Sector Scheme Programme for Development of Spices” implemented during the eighth plan.

2.1.4 Financial Outlay

The financial outlay for the scheme to implement programmes was Rs. 125 crores with full central assistance.

Table 2.1 Financial outlay for spices scheme

S.No.	Spice scheme	Amount (Rs.-Lakhs)	Percentage to total allocation
1	Pepper	6,329.79	50.64
2	Ginger	982.50	7.86
3	Turmeric	779.85	6.24
4	Chilli	1,365.90	10.93
5	Tree spices	110.51	0.88
6	Minor (seed) spices	861.55	6.89
7	Garlic	197.63	1.58
8	Saffron	15.13	0.12
9	Large cardamom	317.10	2.54
10	Progeny garden in Nonth-East Region	190.20	1.52
11	Tamarind	10.00	0.08
12	General Programmes	1,339.84	10.72
Total		**12,500.00**	**100.00**

Source : *Indian Cocoa Arecanut and Spice Journal (1992) "Central Sector Scheme Integrated Programme for the Development of Spices in the Eighth Plan"*

Table 2.1 shows that 50.64 per cent of the financial outlay was for pepper which is concentrated in the state of Kerala. About 25,000 hectares of the pepper gardens had to be rehabilitated, demonstrations of high production technology were to be carried out in 300 hectares at the all India level.

About 11 per cent of the financial outlay was for chilli, the targets being to bring 11,000 hectares under area expansion, distribution of 50,000 mini kits, bringing 3 lakh hectares under plant protection measures and introduction of 40,000 demonstration cum seed multiplication plots.

Again about 11 per cent of the total funds were allocated towards general programmes. The central sector scheme was confined to 25 states and 2 union territories.

2.2 Spices Development during VIII plan in Madhya Pradesh

The total area under spices in the year 1992-93 was 2,04,000 hectares. It increased to 2,62,077 hectares in 1996-97. Thus the increase in area was 28.47 per cent during the eighth plan period. The production of spices in 1992-93 was 1,497 lakh tonnes. It increased from year to year and was 3,256 lakh tonnes in 1996-97. Thus the increase during the eighth plan period was 117.50 per cent. Of the six major spices the area under

coriander was slightly more than half (50.64 per cent) of the spices area in 1992-93. The dominance of coriander in area under spices continued during all the years of the eighth plan. From the point of view of production garlic had the major share. Its contribution in the first year of the plan was 49.43 per cent and continued to dominate till the last year of the eighth plan (42.69 per cent).

Chilli had second highest contribution to area among six major spices (25.05 per cent in the first year). It continued to occupy second position as far as area was concerned during the entire eighth plan period. Its contribution to area in the last year of the plan was 18.49 per cent. Coriander occupied the second position in the production of spices. Its contribution in the first year was 20.71 per cent and in the last year 16.58 per cent (Table 2.2).

Table 2.2 Area and production of major spices in Madhya Pradesh

Unit - Area in hectares
Production in lakh tonnes

Spice	Unit	1992-93	1993-94	1994-95	1995-96	1996-97
Chilli	Area	51,100 (25.05)	49,329 (21.02)	41,321 (17.46)	42,147 (16.87)	48,450 (18.49)
	Production	0.17 (11.36)	0.16 (9.43)	0.14 (6.74)	0.14 (5.68)	0.22 (6.76)
Ginger	Area	2,600 (1.28)	2,550 (1.09)	2,688 (1.14)	3,011 (1.21)	3,699 (1.41)
	Production	0.03 (2.00)	0.03 (1.77)	0.03 (1.45)	0.04 (1.62)	0.67 (20.58)
Turmeric	Area	800 (0.39)	708 (0.30)	699 (0.30)	637 (0.26)	685 (0.26)
	Production	0.007 (0.47)	0.007 (0.41)	0.006 (0.29)	0.006 (0.24)	0.024 (0.74)
Garlic	Area	21,400 (10.49)	22,046 (9.40)	28,892 (12.21)	41,444 (16.59)	33,983 (12.97)
	Production	0.74 (49.43)	0.77 (45.37)	1.01 (48.65)	1.45 (58.80)	1.39 (42.69)
Coriander	Area	1,03,300 (50.64)	1,22,979 (52.41)	1,04,224 (44.04)	1,13,382 (45.38)	1,34,030 (51.14)
	Production	0.31 (20.71)	0.36 (21.21)	0.31 (14.93)	0.34 (13.79)	0.54 (16.58)
Other spices	Area	24,800 (12.15)	37,057 (15.79)	58,810 (24.85)	49,237 (19.21)	41,230 (15.73)
	Production	0.24 (16.03)	0.37 (21.80)	0.58 (27.54)	0.49 (15.87)	0.41 (12.65)
Total spices	Area	2,04,000 (100.00)	2,34,669 (100.00)	2,36,634 (100.00)	2,49.858, (100.00)	2,62,077 (100.00)
	Production	1.497 (100.00)	1.697 (100.00)	2.076 (100.00)	2.466 (100.00)	3.256 (100.00)

Sources - Area and Production of spices in Madhya Pradesh
Note - Figures in parentheses indicate the percentage to total

2.2.1 Funds Received and Utilisation for the Spices Development Programme

The eighth five year plan started from the year 1992-93. However, there remained unspent balance of Rs.0.32 lakh in the year 1991-92. The funds made available for the year 1992-93 were Rs.13.01 lakhs. Thus the total funds available for 1992-93 were Rs.13.33 lakhs. The funds utilised during the year were Rs.12.99 lakhs allowing an unspent balance of Rs.0.34 lakhs. The funds available for the year 1993-94 were Rs.54.48 lakhs and the funds utilised were Rs.36.22 lakhs. In terms of percentage of funds utilised to funds sanctioned the performance in the first year of the grant (1992-93) proved to be quite good as nearly entire amount of funds was utilised (97.45 per cent). In the second year of the plan the percentage dropped down to 66.48 and further to 49.36 in 1994-95. The percentage of utilisation shot up to 84.40 in 1995-96 but again declined to 74.53 in the last year of the plan.

It is thus noted that the percentage of funds utilised to funds allotted was as high as 97.45 in the first year of the plan. However, the percentage dropped to 66.48 in 1993-94 and further to 49.36 in 1994-95. Although the percentage shot up in 1995-96 to 84.40 it came down again in 1996-97 to 74.53 (Table 2.3).

Table 2.3 Yearwise funds received by Madhya Pradesh, Horticultural Department from Central Government during VIII plan.

(Unit - Rs. Lakh)

Year	Funds allotted	Total funds available *	Funds utilized	% of funds utilised to funds available	Unspent balance
1992-93	13.01	13.33	12.99	97.45	0.34
1993-94	54.14	54.48	36.22	66.48	18.26
1994-95	64.73	82.99	40.96	49.36	42.03
1995-96	70.00	112.03	94.55	84.40	17.48
1996-97	10.00	27.48	20.48	74.53	7.00
	212.20		**205.20**		

- Total funds available equal to previous years balance + current year allotment

Source : Directorate of Horticulture (Madhya Pradesh).

2.2.2 Cropping Pattern, Madhya Pradesh , 1991-92 to 1997-98

The cropping pattern of the state is food crops dominated. Of the gross cropped area food crops occupied between 71.11 and 74.93 per cent. Total cereals occupied between 49.26 and 53.15 per cent. Total pulses occupied between 19.24 and 20.61 per cent in different years. Oilseeds occupied between 18.99 per cent and 24.00 per cent during various years. Fibres contributed between 0.23 and 2.48 per cent and Fodder crops between 2.84 and 3.60 per cent. Total spices formed only between 0.85 to 1.27 per cent of the cropped area in different years. It is thus clear that spices sector has not made much headway in the cropping pattern of the state. It may be noted that in 1991-92 the percentage under total spices was only 0.85 per cent. The percentage increased gradually and was 1.27 in the year 1997-98 (Table 2.4)

Table 2.4 Cropping pattern, Madhya Pradesh 1991-92 to 1997-98

(Area – thousand hectares)

Crop	1991-92		1992-93		1993-94		1994-95		1995-96		1996-97		1997-98	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
Paddy	5,131.5	22.12	5,160.5	21.57	5,220.3	20.93	5,349.4	21.57	5,344.4	21.25	5,396.4	21.09	5,426.0	20.82
Jowar	1,381.2	5.95	1,423.0	5.95	1.287.6	5.16	1,042.6	4.20	994.2	3.95	922.4	3.60	923.0	3.54
Bajra	158.2	0.68	157.0	0.66	152.1	0.61	141.6	0.57	134.5	0.53	139.8	0.55	142.0	0.54
Maize	877.1	3.78	908.3	3.80	903.6	3.62	858.0	3.46	857.4	3.41	847.4	3.31	861.0	3.30
Wheat	3,547.0	15.30	3,671.9	15.35	4,148.0	16.63	4,193.1	16.91	4,019.8	15.98	4,327.2	16.91	4,598.0	17.64
Barley	85.7	0.37	81.9	0.34	84.7	0.34	86.6	0.35	92.0	0.37	83.9	0.33	92.0	0.35
Other cereals & millets	1,150.2	4.96	1,099.1	4.59	1.053.3	4.22	995.5	4.01	962.0	3.82	923.5	3.61	800.0	3.07
Total cereals	**12,330.9**	**53.15**	**12,501.7**	**52.26**	**12,8.49.6**	**51.51**	**12,666.8**	**51.07**	**12,404.3**	**49.31**	**12,640.6**	**49.40**	**12,842.0**	**49.26**
Gram	2,137.8	9.21	2,345.7	9.81	2,341.9	9.39	2,751.7	11.09	2,660.2	10.57	2,512.6	9.82	2,583.0	9.92
Urad	583.8	2.52	569.8	2.38	574.3	2.30	506.5	2.04	500.0	1.99	534.7	2.09	557.4	2.14
Moong moth	140.7	0.60	148.6	0.62	141.6	0.57	125.0	0.50	121.2	0.48	120.6	0.47	117.7	0.45
Kulthi	157.4	0.68	146.9	0.61	148.5	0.59	146.4	0.59	139.0	0.55	135.0	0.53	122.8	0.47
Teora	625.8	2.70	601.8	2.52	682.5	2.74	707.9	2.86	681.3	2.71	638.4	2.49	599.7	2.30
Pea	115.0	0.49	119.8	0.50	141.9	0.57	169.9	0.68	186.1	0.74	185.9	0.73	175.1	0.67
Lentil	347.5	1.49	375.0	1.57	398.3	1.60	429.2	1.73	499.7	1.99	512.1	2.00	479.4	1.84
Arhar	407.2	1.75	424.2	1.77	428.6	1.72	356.5	1.44	376.5	1.50	372.4	1.45	360.9	1.38
Other pulses	19.2	0.08	20.1	0.08	21.9	0.09	12.0	0.05	19.0	0.08	22.3	0.09	18.4	0.07
Total pulses	**4,534.4**	**19.54**	**4,751.9**	**19.86**	**4,879.5**	**19.57**	**5.205.1**	**20.98**	**5.183.0**	**20.61**	**5,034.0**	**19.67**	**5,014.8**	**19.24**
Sugarcane	49.5	0.21	62.9	0.26	53.2	0.21	66.3	0.27	75.3	0.30	71.6	0.28	69.0	0.26
Total spices	198.0	0.85	203.6	0.85	234.7	0.94	236.7	0.96	249.9	0.99	262.1	1.03	331.0	1.27
Total fruits & Vegetables	220.2	0.95	220.2	0.92	232.1	0.93	241.8	0.98	248.8	0.99	262.4	1.03	273.0	1.05
Other food crops	29.2	0.13	0.6	2.51	0.1	Neg.	0.1	Neg.	--	--	--	--	8.2	0.03
Total food crops	**17,362.2**	**74.83**	**17,740.9**	**74.16**	**18,249.2**	**73.16**	**18,416.8**	**74.25**	**18,161.3**	**72.20**	**18,270.7**	**71.41**	**18,538.01**	**71.11**
Groundnut	280.4	1.21	258.8	1.08	276.9	1.11	266.2	1.07	251.7	1.00	254.7	1.00	254.7	0.98
Sesamum	217.4	0.94	216.0	0.90	234.9	0.94	190.0	0.77	182.5	0.73	178.0	0.70	169.3	0.65
Soybean	2,648.8	11.42	3,054.0	12.77	3,415.0	13.69	3,225.2	13.01	3,849.2	15.30	4,165.8	16.28	4,469.7	17.15
Nigerseed	212.1	0.91	208.1	0.87	220.4	0.88	218.9	0.88	216.4	0.86	210.7	0.82	204.8	0.78
Castorseed	1.1	Neg	7.3	0.03	5.6	0.02	4.8	0.02	2.4	0.01	3.2	0.01	2.7	0.01
Rapeseed &Mustard	606.0	2.62	637.1	2.66	697.4	2.80	665.1	2.68	696.1	2.77	734.7	2.87	704.0	2.70
Sunflower	21.3	0.09	28.6	0.12	18.4	0.07	12.9	0.05	9.9	0.04	10.4	0.04	11.4	0.04
Safflower	2.3	Neg	5.9	0.02	4.6	0.02	2.4	Neg	1.6	Neg	1.6	0.01	1.5	Neg
Linseed	374.3	1.61	397.0	1.66	450.2	1.81	463.0	1.87	422.5	1.68	399.7	1.56	387.7	1.49
Other Oilseed	43.7	0.19	35.6	0.15	37.7	0.15	30.1	0.12	31.0	0.12	32.6	0.13	52.2	0.20
Total Oilseed	**4,407.4**	**18.99**	**4,848.4**	**20.26**	**5,361.1**	**21.49**	**5,078.6**	**20.47**	**5,663.3**	**22.51**	**5,991.1**	**23.42**	**6,258.0**	**24.00**
Total Fibers	**576.0**	**2.48**	**485.1**	**2.03**	**507.2**	**2.03**	**493.1**	**1.99**	**529.3**	**2.10**	**534.5**	**2.09**	**530.0**	**2.03**
Total Drugs	**20.8**	**0.09**	**19.6**	**0.08**	**21.8**	**0.09**	**21.3**	**0.09**	**26.5**	**0.11**	**27.9**	**0.11**	- -	- -
Total Foder	**833.4**	**3.60**	**824.3**	**3.45**	**800.8**	**3.21**	**788.9**	**3.18**	**768.7**	**3.06**	**757.1**	**2.95**	**739.0**	**2.84**
Other Non Food Crops	**3.8**	**0.01**	**3.7**	**0.02**	**3.8**	**0.02**	**4.9**	**0.02**	**5.6**	**0.02**	**5.0**	**0.02**	**5.00**	**0.02**
Total Non – Food rops	**5,841.4**	**25.17**	**6,181.1**	**25.84**	**6,694.7**	**26.84**	**6386.8**	**25.75**	**6,993.4**	**27.80**	**7,315.9**	**28.59**	**7532.0**	**28.89**
Gross Cropped Area	**23,203.6**	**100.00**	**23922.1**	**100.00**	**24943.9**	**100.00**	**24803.6**	**100.00**	**25,154.7**	**100.00**	**25,586.6**	**100.00**	**26,070.0**	**100.00**

2.2.3 Area under Three Selected Spices, 1991-92 to 1997-98.

As mentioned earlier of the six important spices three namely chilli, ginger and coriander were selected for the study. These three together formed between 63 to 75 per cent of the area under spices during the years 1991-92 to 1997-98.

The trend in area under three selected spices showed that in the case of chilli the percentage area increased from 22.80 in 1991-92 to 25.05 in 1992-93. Thereafter it declined gradually till the end of the reference period. In the case of ginger the percentage in 1991-92 was 1.35. In the next two years the percentage declined. In 1994-95 it increased to 1.14 and was 1.21 in 1995-96 and 1.41 in 1996-97. In the last year of the reference period it again decreased to 1.21 per cent. In the case of coriander the percentage was 47.06 in 1991-92. It increased to 50.64 and 52.41 per cent respectively in the subsequent two years. In 1994-95 the percentage dropped to 44.04. In the last three years of the reference period the percentage increased gradually to 45.38, 51.14 and 59.36 respectively.

Thus it can be concluded that while the percentage contribution of chilli and ginger generally declined that of coriander increased (Table 2.5).

Table 2.5 Area under three selected spices 1991-92 to 1997-98, Madhya Pradesh

(Area- in hectares)

Spices	**1991-92**	**1992-93**	**1993-94**	**1994-95**	**1995-96**	**1996-97**	**1997-98**
1. Chilli	45,270	51,100	49,329	41,321	42,147	48,450	48,933
	(22.80)	(25.05)	(21.02)	(17.46)	(16.87)	(18.49)	(14.78)
2. Ginger	2,689	2,600	2,550	2,688	3,011	3,699	4,014
	(1.35)	(1.28)	(1.09)	(1.14)	(1.21)	(1.41)	(1.21)
3. Coriander	93,424	1,03,300	1,22,979	1,04,224	1,13,382	1,34,030	1,96,513
	(47.06)	(50.64)	(52.41)	(44.04)	(45.38)	(51.14)	(59.36)
4. Total spices (Including above 3)	1,98,538	2,04,000	2,34,669	2,36,634	2,49,858	2,62,077	3,31,028
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)
Gross Cropped area	**2,32,03,000**	**2,39,22,000**	**2,49,44,000**	**2,48,04,000**	**2,51,55,000**	**2,55,85,500**	**2,60,70,000**

2.2.4 Percentage Change in Area of Three Selected Spices

The percentage change in area, (presuming 1991-92 as base year) indicated that there was an increase of 8.09 per cent in the case of chilli, 49.27 per cent in the case of ginger and more than double (110.35 per cent) in the case of coriander (Table 2.6).

Table 2.6 Percentage change in area, three selected spices, Madhya Pradesh

(Figures – Percentages)

Spices	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
1. Chilli	100	112.88	108.97	91.28	93.10	107.02	108.09
2. Ginger	100	96.69	94.83	99.96	111.97	137.56	149.27
3. Coriander	100	110.57	139.13	111.56	121.36	143.46	210.35

2.2.5 Seed Multiplied and Demonstrations Conducted

A total number of five lakh pepper rooted cuttings were planned to be multiplied for the eighth five year plan. Against this the production of rooted cuttings was 52.40 per cent. The target for production of nucleus seed material of ginger was 75 tonnes. The achievement exceeded by 2.67 per cent. The target for the establishment of seed multiplication plots of ginger was 2,070. The achievement, on the other hand was 1,570 or 75.85 per cent. In the case of turmeric the achievement was 85.71 per cent and in the case of chilli, 60 per cent.

It is thus noted that production of rooted cuttings of pepper was only 52.40 per cent of the target. In the case of production of nucleus seed material of ginger the achievement was 2.67 per cent more than the target. In the case of establishment of demonstration-cum-seed multiplication plots of ginger, turmeric and chilli the achievement fell short of target (Table 2.7).

Table 2.7 Yearwise seeds of different spices multiplied by different government farms during VIII plan, Madhya Pradesh

Particulars	Unit	Total target VIII plan	Achievement					Total achievement VIII Plan*
			1992-93	1993-94	1994-95	1995-96	1996-97	
Pepper production of rooted cuttings	No.	5,00,000	--	--	1,00,000	1,50,000	12,000	2,62,000 (52.40)
Production of nucleus seed material of ginger.	Ton	75	--	12	15	15	35	77 (102.67)
Estt. Of demonstration-cum-seed multiplication plots of ginger.	No.	2,070	--	20	300	250	1,000	1,570 (75.85)
Estt. Of Demonstration-cum-seed multiplication plots of turmeric.	No.	2,800	--	--	600	800	1,000	2,400 (85.71)
Estt. Of Demonstration-cum-seed multiplication plots of chilli.	No.	5,000	--	--	1,200	1,300	500	3,000 (60.00)
Production and distribution of planting material of cinnomon/casis (tree spices)	No.	50,000	--	--	10,000	15,000	12,000	37,000 (74.00)
Production of Nucleus seed of minor (seed) spices.	Ton	50	--	--	10	15	12	37 (74.00)

* *Percentage of total achievement to total target during VIII plan*
source : Directorate of Horticulture (Madhya Pradesh)

2.2.6. Financial Targets and Achievements of Seed Multiplication and Demonstrations

The targetted amount for pepper rooted cuttings was Rs.3.00 lakhs. The achievement was Rs.2.25 lakhs or 75.00 per cent of the target. The target amount for the

production of nucleus seed material of ginger was Rs.20.00 lakhs. The entire targetted amount was spent for the purpose. The amount earmarked for demonstrations-cum-seed multiplication plots of ginger was Rs. 15.00 lakhs. The amount spent was Rs.14.32 lakhs or 95.47 per cent of the amount earmarked. In the case of demonstrations-cum-seed multiplication of turmeric the amount spared was Rs.15.00 lakhs. However the amount spent exceeded the amount spared for the purpose by Rs.0.67 lakhs (Table 2.8).

Table 2.8 Yearwise financial targets and achievements of seeds of spices multiplied by the government farms during VIII plan, Madhya Pradesh

(Figures – Rs. In lakh)

Particulars	Total financial target VIII plan	Achievement					Total financial achievement VIII Plan*
		1992-93	1993-94	1994-95	1995-96	1996-97	
Pepper production of Rooted cuttings	3.00	--	--	0.75	1.50	--	2.25
Production of nucleus seed material of ginger.	20.00	--	4.20	5.20	5.25	5.35	20.00
Estt. of demonstration-cum-seed multiplication plots of ginger seed.	15.00	--	2.40	4.80	4.00	3.12	14.32
Estt. of demonstration-cum-seed multiplication of turmeric.	15.00	--	--	4.95	6.60	4.12	15.67
Estt. of demonstration-cum-seed multiplication of chilli.	15.00	--	4.20	4.20	9.10	--	17.50
Production and distribution of planting material of cinnomon/casis	0.25	--	--	0.10	0.30	--	0.40
Production of Nucleus seed of minor coriander.	0.50	--	--	0.20	0.30	--	0.50

2.2.7 Allocation of Seeds from Outside the Districts

Of the three districts selected only Tikamgarh district received seed from outside the district. Guna and Khargone districts did not receive any seed from outside the districts. In Tikamgarh district no seed was received in 1992-93. In 1993-94 500 grams of chilli seed and 20 qtls. of ginger seed were received. In 1994-95 5kgs. of chilli seed, 22.45 qtls. of ginger seed and 22.00 qtls. of coriander seed were received. In the last year (1996-97) 60 qtls. of ginger seed and 25.25 qtls. of coriander seed were received (Table 2.9).

Table 2.9 Seeds of three spices procured from outside the selected districts, Madhya Pradesh, VIII plan

District	Spices	1992-93		1993-94		19994-95		1995-96		1996-97	
		Qty. (qtls.)	Value (Rs.)	Qty. (qtls.)	Value (Rs.)	Qty. (qtls.)	Value (Rs.)	Qty. (qtls.)	Value (Rs.)	Qty. (qtls.)	Value (Rs.)
Khargone	Chilli	--	--	--	--	--	--	--	--	--	--
	Ginger	--	--	--	--	--	--	--	--	--	--
	Cori ander	--	--	--	--	--	--	--	--	--	--
Guna	Chilli	--	--	--	--	--	--	--	--	--	--
	Ginger	--	--	--	--	--	--	--	--	--	--
	Cori ander	--	--	--	--	--	--	--	--	--	--
Tikamgarh	Chilli	--	--	500 gm	135	0.01	270	0.05	1500	--	--
	Ginger	--	--	20.00	30,000	--	--	22.45	71,548	60.00	1,50,000
	Cori ander	--	--	--	--	--	--	22.00	1,32,000	25.25	50,500

Source : *District Horticulture Department of Madhya Pradesh*

2.2.8 Minikits Distribution

During the VIII plan a total number of 3,000 minikits of ginger were planned to be distributed. Against this a total number of 4,710 minikits were distributed. In the case of chilli it was planned to distribute 5,000 minikits. The target was fully achieved. In the case of coriander the target for eighth plan was 30,000 minikits. Against this the achievement was 16,450 minikits or 54.83 per cent of the target (Table 2.10).

Table 2.10 Yearwise targets and achievements of minikits distributions by the state horticulture department, Madhya Pradesh, during VIII plan

Year	**Spices**					
	Ginger		**Chilli**		**Minor spices**	
	Target	Achievement	Target	Achievement	Target	Achievement
1992-93	--	--	--	--	3,000	3,450
1993-94	--	--	--	--	5,000	--
1994-95	800	800	1,500	1,500	7,000	5,000
1995-96	1,000	1,000	1,500	1,500	7,000	7,000
1996-97	3,000	2,910	2,000	2,000	1,000	1,000
Total	4,800	4,710	5,000	5,000	23,000	16,450
Actual target	3,000		5,000		30,000	

Thus although the minikits distribution programme for ginger and chilli were impressive that for coriander was not satisfactory.

2.2.9 Distribution of planting Material

A total quantity of 50,000 cuttings of cinnamon / casis were planned to be distributed during VIII plan period. Against this the achievement was 20,000 cuttings or 40 per cent of the target. Thus the distribution fell much short of target (Table 2.11).

Table 2.11 Yearwise physical targets and achievements of distribution of planting Material, Madhya Pradesh, during VIII plan

Year	Cinnamon / Casis	
	Target (no.)	Achievement (no.)
1992-93	--	--
1993-94	10,000	--
1994-95	10,000	10,000
1995-96	15,000	10,000
1996-97	15,000	--
Total	50,000	20,000
Actual target	50,000	

2.2.10 Demonstration-cum-Seed Multiplication Plots

In the case of ginger the target for the eighth plan period was 2,070 plots. The achievement, on the other hand, was 1,570 plots or 75.85 per cent of the target. In the case of turmeric the target was 2,800 plots. The achievement was 2,400 plots or 85.71 per cent of the target. In chilli the target was 5,000 demonstration plots. The achievement was 3,000 plots or 60.00 per cent of the target. The achievements in demonstration-cum-seed multiplication plots fell short of targets in all the three crops of ginger, turmeric and chilli. (Table 2.12).

Table 2.12 Yearwise establishment of demonstration –cum-seed multiplication plots, Madhya Pradesh, VIII plan

(Unit in number)

Year	Spices					
	Ginger		Turmeric		Chilli	
	Target	Achievement	Target	Achievement	Target	Achievement
1992-93	50	--	--	--	100	--
1993-94	20	20	600	--	1,200	--
1994-95	300	300	600	600	1,200	1,200
1995-96	250	250	800	1,300	1,300	1,300
1996-97	1,450	1,000	800	500	1,200	500
Total	2,070	1,570	2,800	2,400	5,000	3,000
Actual target	2,070		2,800		5,000	

2.2.11 Plant Protection measures

Under plant protection measures demonstrations of plant protection in chilli and ginger were planned. In chilli 25,000 and in ginger 100 demonstrations were to be conducted. In the case of ginger the target in the five years of plan were revised upwards so that the target for the plan period was 378. The achievement was 313 or 82.80 per cent of the revised target. The percentage of achievement to target was above 80 in both the cases of chilli and ginger. (Table 2.13).

Table 2.13 Year wise performance under plant protection measures, Madhya Pradesh, during VIII plan

(Unit in number)

Year	Demonstration of plant protection			
	Ginger		Chilli	
	Target	Achievement	Target	Achievement
1992-93	--	--	5,000	5,000
1993-94	75	--	6,000	6,000
1994-95	75	75	5,000	4,000
1995-96	28	28	6,000	5,000
1996-97	200	210	3,000	2,000
Total	378	313	25,000	22,000
Actual target	100		25,000	

2.2.12 Demonstrations on High Production Technology

Under this programme 150 field demonstrations for pepper were to be laid. During the programme however the target was increased to 2,090 and the achievement was 1,525 demonstrations or 72.97 per cent. In the case of chilli a total number of 200 demonstrations were to be laid at the beginning of the plan. However the target was reduced to 175 and the achievement was 85 (48.57 per cent). In tree spices 100 demonstrations were planned before the beginning of the eighth plan. During the plan period the target was reduced to 70 and achievement was 50 or 71.43 per cent. For coriander the number of demonstrations planned before the eighth plan period was 8,000. During the plan years the target was revised and reduced to 6,000. The achievement, on the other hand, was 5,000 or 83.33 per cent. The achievement in the case of pepper demonstrations was 72.97 per cent. In the case of chilli the achievement was less than half (48.57 per cent) of the target. In the case of tree spices the achievement was 71.47 per cent of target and in the case of coriander it was 83.33 per cent. (Table 2.14).

Table 2.14 Yearwise performance under demonstrations of high production technology, Madhya Pradesh, VIII plan

(Unit in number)

Year	Spice							
	Pepper		Chilli		Tree spice		Coriander	
	Target	Achievement	Target	Achievement	Target	Achievement	Target	Achievement
1992-93	--	--	--	--	--	--	--	--
1993-94	20	--	--	--	--	--	1,000	--
1994-95	20	25	25	20	20	20	2,000	2,000
1995-96	50	--	50	15	20	20	2,000	2,000
1996-97	2,000	1,500	100	50	30	--	1,000	1,000
Total	2,090	1,525	175	85	70	50	6,000	5,000
Actual target	2,090		200		100		8,000	

2.2.13 Area Expansion Programme

Under the area expansion programme of ginger 500 hectares were to be brought as per programme during five year plan. During the plan period, however, the target was increased to 550 hectares. The achievement was 475 hectares or 86.36 per cent of the target. In chilli the target set before the plan period was 800 hectares. During the plan period the target was increased to 875 hectares. Against this the achievement was 500 hectares or 57.14 per cent (Table 2.15).

Table 2.15 Performance under area expansion programme, Madhya Prades

(Area in hectare)

Year	Ginger		Chilli	
	Target	Achievement	Target	Achievement
1992-93	--	--	--	--
1993-94	50	--	500	--
1994-95	100	100	50	50
1995-96	150	125	200	200
1996-97	250	250	125	250
Total	550	475	875	500
Actual target	500		800	

2.2.14 Establishment of Spices Nurseries

It was planned to establish four nurseries during the eighth plan period. Actually two nurseries were established one each in 1994-95 and 1995-96 (Table 2.16). Thus the programme of establishment of spices nurseries was not very successful.

Table 2.16 Establishment of spices nurseries, Madhya Pradesh, during VIII plan

Year	Target (No.)	Achievement (No.)
1992-93	--	--
1993-94	--	--
1994-95	1	1
1995-96	1	1
1996-97	--	--
Total	2	2
Actual target	4	

2.2.15 Pre, Within and Post VIII Plan Spices Production

It was observed that in the pre eighth plan year (1991-92) the production of spices was 1,75,500 tonnes. In the first year of the eighth plan the production got reduced to 1,49,700 tonnes. In the subsequent four years of the eighth plan the production increased from year to year, so that it was 1,69,700 tonnes in 1993-94, 2,07,600 tonnes in 1994-95, 2,46,600 tonnes in 1995-96 and 2,80,222 tonnes in 1996-97. Thus the average for the eighth plan period was 2,10,764. In the post plan year the production was 2,69,155 tonnes.

It can be concluded that the production of spices generally increased from year to year during the five years of the eighth plan. In the post plan year, however, the production decreased (Table 2.17).

Table 2.17 Pre, Within and Post VIII Plan Spices Production, Madhya Pradesh

(Production in tonnes)

Spices	Pre	During VIII Plan					Post
	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Chillies	14,088	16,200	17,598	14,000	14,000	17,371	23,661
Ginger	3,652	3,600	3,576	3,000	4,000	5,350	5,341
Coriander	33,776	38,400	43,405	31,000	34,000	50,765	73,534
Turmeric	539	700	673	600	600	699	750
Garlic	1,12,263	83,900	89,439	1,01,000	1,45,000	1,55,837	1,65,869
Other spices	11,182	6,900	15,009	58,000	49,000	50,200	0
Total Spices	1,75,500	1,49,700	1,69,700	2,07,600	2,46,600	2,80,222	2,69,155

2.2.16 Important Points Emerging

In Madhya Pradesh following points emerged w.r.t. implementation of Spice Development Programme during VIII plan.

1. Funds were received for various items of the programme. These were expected to be used for the purpose for which these were sanctioned. The funds were ear marked for 5 years of the plan. It was noted that the percentage of funds utilised to funds allotted was as high as 97.45 in the first year of the plan. However the percentage was only 66.48 in 1993-94 and further low (49.36) in 1994-95. The percentage increased to 84.40 in 1995-96 but came down to 74.55 in 1996-97.

2. While the percentage contribution to area under spices of chilli and ginger generally declined that under coriander increased.

3. Production of rooted cuttings of pepper was 52.40 per cent of the target. In the case of production of nucleus seed material of ginger the achievement was 2.67 per cent more than the target. In the case of establishment of demonstration-cum-seed multiplication plots of ginger, turmeric and chilli the achievement fell short of target.

4. Although the minikits distribution programmes for ginger and chilli were impressive that for coriander was not satisfactory.

5. In the case of distribution of cutting of cinnomon/casis the achievement fell much short of target.

6. The achievements in demonstration-cum-seed multiplication plots fell short of targets in all the three crops of ginger, turmeric and chilli.

7. In the case of plant protection measures the percentage of achievement to target was above 80 in both the cases of chilli and ginger.

8. In the cases of demonstrations on high production technology the achievement was 72.97 per cent in pepper. In the case chilli it was less than half (48.57 per cent) of the target. In the case of coriander it was 83.33 per cent.

9. Under the area expansion programme of ginger the achievement was 86.36 per cent of the target. In chilli the percentage of achievement to target was only 57.14 per cent.

10. The programme of establishment of spices nurseries was not very successful.

11. The production of spices generally increased from year to year during the five years of the eighth plan. In the post plan year, however, the production decreased.

2.3 Cropping Pattern in the Selected Districts

In the following paragraphs cropping pattern in the selected three districts is described.

2.3.1 Khargone District

In 1991-92 the gross cropped area of the district was 714.7 thousand hectares. The cropping pattern was cereals dominated as the cereals contributed 44.58 per cent of the gross cropped area. Pulses contributed 14.68 per cent and oilseeds, 9.47 per cent. The spices contributed 1.74 per cent. Among spices chilli, ginger and coriander together contributed 1.70 per cent. Among selected spices chilli contributed highest percentage. Over the period 1991-92 to 1997-98 the proportion of total cereals did not vary much. The proportion of total pulses reduced from 14.68 per cent to 12.28 per cent. The percentage of oilseed crops increased slightly from 9.47 to 11.75. The proportion of spices increased negligibly from 1.74 in 1991-92 to 2.16 in 1997-98 (Table 2.18).

Table 2.18 Cropping pattern, Khargone district, M.P.

(Area – '000 hectares)

rop	1991-92		1992-93		1993-94		1994-95		1995-96		1996-97		1997-98	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
Paddy	13.10	1.83	12.60	1.77	12.70	1.74	11.90	1.61	13.30	1.84	10.80	1.46	10.40	1.39
Jowar	182.80	25.58	187.10	26.31	183.10	25.05	181.20	24.54	173.90	24.11	170.20	22.95	164.70	22.00
Bajra	23.90	3.34	23.70	3.33	22.90	3.13	20.00	2.70	18.30	2.54	17.60	2.37	16.10	2.15
Maize	45.80	6.41	45.50	6.40	47.00	6.43	47.60	6.45	49.00	6.79	49.50	6.67	49.10	6.56
Wheat	49.50	6.93	46.10	6.48	60.60	8.29	70.30	9.52	57.30	7.95	72.30	9.75	78.20	10.44
Barley	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Other cereals & millets	3.50	0.49	3.40	0.48	3.10	0.42	- -	- -	2.13	0.30	2.60	0.35	2.50	0.33
Total cereals	318.60	44.58	318.40	44.77	329.40	45.06	331.00	44.82	313.93	43.53	323.00	43.55	321.00	42.87
Gram	8.70	1.22	9.40	1.32	11.70	1.60	11.00	1.49	9.40	1.30	11.80	1.59	13.30	1.78
Tur	23.80	3.33	25.20	3.54	25.20	3.45	24.90	3.37	22.60	3.13	22.40	3.02	22.20	2.96
Other pulses	72.40	10.13	70.80	9.96	68.90	9.42	64.58	8.75	58.80	8.15	59.16	7.98	56.50	7.54
Total pulses	104.90	14.68	105.40	14.82	105.8	14.47	100.48	13.61	90.80	12.59	93.36	12.59	92.00	12.28
Sugarcane	4.09	0.57	3.18	0.45	3.09	0.41	4.66	0.63	5.01	0.69	4.83	0.65	4.70	0.63
Chilli	11.40	1.59	13.29	1.87	13.49	1.86	11.09	1.50	10.92	1.51	14.34	1.93	14.87	1.99
Ginger	0.28	0.04	0.26	0.04	0.32	0.04	0.24	0.03	0.20	0.03	0.25	0.03	0.29	0.04
Coriander	0.47	0.07	0.46	0.06	0.59	0.08	0.55	0.07	0.41	0.06	0.50	0.07	0.63	0.08
Total spices	12.41	1.74	14.25	2.00	14.77	2.02	12.21	1.65	11.76	1.63	15.33	2.07	16.17	2.16
Total fruits & vegetables	4.80	0.67	4.27	0.60	5.04	0.69	4.70	0.64	4.46	0.63	4.98	0.67	5.13	0.68
Total food crops	444.80	62.24	445.50	62.44	458.10	62.66	453.05	61.35	425.96	59.07	441.50	59.53	439.00	58.61
Groundnut	51.20	7.16	50.20	7.05	51.60	7.06	53.00	7.18	48.80	6.77	47.10	6.35	47.00	6.28
Soybean	14.70	2.06	23.80	3.35	21.20	2.90	27.30	3.70	31.80	4.41	34.10	4.60	39.70	5.30
Other oil seeds	1.80	0.25	2.10	0.30	4.01	.055	1.70	0.23	1.31	0.18	1.80	0.24	1.30	0.17
Total oil seeds	67.70	9.47	76.10	10.70	76.81	10.51	82.00	11.11	81.91	11.36	83.00	11.19	88.00	11.75
Total fibres	191.52	26.8	178.81	25.14	185.80	25.41	194.72	26.37	205.45	28.49	209.10	28.20	214.00	28.57
Total drugs	.0.19	0.03	0.14	0.02	0.13	0.02	0.14	0.02	0.17	0.02	- -	- -	- -	- -
Total fodder	10.31	1.44	10.65	1.50	10.26	1.40	8.49	1.15	7.53	1.04	8.00	1.08	8.00	1.07
Other non food crops	.018	0.02	-	-	- -	- -	- -	- -	0.15	0.02	- -	- -	- -	- -
Total non food crops	269.90	37.76	265.70	37.36	273.00	37.34	285.42	38.65	295.21	40.93	300.16	40.47	310.00	41.39
Gross cropped area	**714.70**	**100.00**	**711.20**	**100.00**	**731.10**	**100.00**	**738.47**	**100.00**	**721.17**	**100.00**	**741.66**	**100.00**	**749.00**	**100.00**

2.3.2 Tikamgarh District

The gross cropped area in the district in the year 1991-92 was 340.09 thousand hectares. It increased to 401.00 thousand hectares in 1997-98 with fluctuations in between. The cropping pattern was food crops dominated and cereals contributed 53.23 per cent in 1991-92. The percentage decreased from year to year and was 42.15 in 1997-98. The proportion of pulses was 19.35 in 1991-92 and increased to 20.45 per cent in 1997-98 with minor fluctuations. The proportion of total spices was 0.46 per cent in 1991-92. It increased slightly to 0.53 in 1997-98. The proportion of none of the three spices of chilli, ginger and coriander varied much (Table 2.19).

2.3.3 Guna District

The cropping pattern was food crops dominated and cereals contributed 46.43 per cent 1991-92. The percentage decreased from year to year and was 37.40 in 1997-98. The gross cropped area in the district in the year 1991-92 was 668.50 thousand hectares. It increased to 743.25 thousand hectares in 1997-98 with fluctuations in between. The proportion of pulses was 27.99 in 1991-92. It continued to be between 27 to 30 per cent in different years. The proportion of total spices was 6.01 per cent in 1991-92 and increased to 10.43 per cent in 1997-98 with fluctuations in between .Among the spices the proportion of coriander was 5.98 per cent in 1991-92 and increased gradually from year to year and was 10.42 per cent in 1997-98 (Table 2.20).

2.4 Production of Spices in Selected Districts

The production figures of five spices viz chilli, ginger , coriander, turmeric and garlic were available. The data for these spices was available from the year 1991-92 to 1997-98. In the following paragraphs the same has been described for selected three districts.

2.4.1 Khargone District

Khargone district was selected for chilli crop as production of chilli was hightest in that district. It varied from 3,871 tonnes in 1991-92 to 8,036 tonnes in 1997-98.The trend showed that it increased from year to year.The production of ginger did not show any trend but was lowest in 1991-92 and highest in 1997-98. The production of coriander showed a declining trend during the plan period. The production of garlic showed an increasing trend with minor fluctuations (Table 2.21).

2.4.2 Tikamgarh District

Tikamgarh district was selected for ginger crop as production of ginger was highest in that district. It varied from 1,117 tonnes in 1991-92 to 1,897 tonnes in 1997-98. The trend showed that it generally increased from year to year. The production of chilli was next highest to ginger. It varied from 178 tonnes in 1991-92 to 304 tonnes in 1997-98. Other spices showed a generally positive trend during 1991-92 to 1997-98 (Table 2.21).

Table 2.19 Cropping pattern, Tikamgarh district, M.P.

(Area – '000 hectares)

rop	1991-92		1992-93		1993-94		1994-95		1995-96		1996-97		1997-98	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
Paddy	26.00	7.65	25.30	7.08	23.50	6.35	23.00	6.34	21.40	5.81	21.30	5.57	21.80	5.44
Jowar	25.10	7.38	23.40	6.56	20.00	5.40	14.20	3.92	13.20	3.59	11.70	3.06	9.00	2.24
Bajra	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Maize	1.90	0.56	3.30	0.92	2.90	0.78	2.50	0.69	2.30	0.63	2.20	0.58	2.00	0.50
Wheat	100.60	29.58	108.20	30.27	115.30	31.44	111.80	30.84	110.40	29.98	120.20	31.42	122.70	30.60
Barley	6.10	1.79	5.70	1.59	5.50	1.48	6.10	1.68	6.70	1.82	6.80	1.78	7.40	1.85
Other cereals & millets	21.33	6.27	14.55	4.07	11.30	3.05	8.93	2.46	7.34	1.99	6.80	1.78	6.10	1.52
Total cereals	181.03	53.23	180.45	50.49	178.50	48.20	166.53	45.93	161.34	43.82	169.00	44.19	169.00	42.15
Gram	27.60	8.12	26.60	7.44	24.40	6.59	27.00	7.45	26.00	7.06	26.00	6.80	25..60	6.38
Tur	1.00	0.29	0.80	0.22	1.20	0.32	0.70	0.19	0.70	0.19	0.70	0.18	1.00	0.25
Other pulses	37.20	10.94	40.80	11.42	43.80	11.83	41.10	11.33	44.29	12.03	47.30	12.37	55.40	13.82
Total pulses	65.80	19.35	68.20	19.08	69.40	18.74	68.80	18.97	70.99	19.28	74.00	19.35	82.00	20.45
Sugarcane	0.75	0.22	0.66	0.19	0.66	0.18	0.40	0.11	0.59	0.16	0.64	0.17	0.61	0.15
Chilli	0.60	0.18	0.67	0.19	0.76	0.20	0.69	0.19	0.74	0.20	0.67	0.18	0.73	0.18
Ginger	0.56	0.16	0.54	0.15	0.58	0.16	0.60	0.17	0.71	0.19	0.82.	0.21	0.90	0.22
Coriander	0.15	0.04	0.18	0.05	0.24	0.06	0.26	0.07	0.26	0.07	0.24	0.06	0.35	0.09
Total spices	1.56	0.46	1.54	0.43	1.75	0.47	1.71	0.47	1.84	0.50	1.86	0.48	2.12	0.53
Total Fruits & vegetables	3.16	0.93	4.55	1.27	4.99	1.35	4.93	1.36	4.61	1.25	4.90	1.28	4.67	1.16
Total food crops	252.30	74.19	255.40	71.46	255.30	68.94	242.37	66.84	239.37	65.01	250.40	65.47	258.40	64.44
Groundnut	6.30	1.85	7.40	2.07	9.20	2.48	10.30	2.84	10.70	2.91	11.50	3.01	11.00	2.74
Soybean	21.80	6.41	34.60	9.68	44.00	11.89	50.10	13.82	59.60	16.19	64.50	16.87	72.50	18.08
Other oil seeds	24.60	7.24	24.90	6.97	29.00	7.83	28.50	7.86	28.48	7.73	28.00	7.32	31.50	7.86
Total oil seeds	52.70	15.50	66.90	18.72	82.20	22.20	88.90	24.52	98.78	26.83	104.00	27.20	115.00	28.68
Total fibres	0.15	0.04	0.10	0.03	0.13	0.04	0.11	0.03	0.15	0.04	0.05	0.01	--	--
Total drugs	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total fodder	34.94	10.27	35.00	9.79	32.67	8.82	31.20	8.61	29.90	8.12	28.00	7.32	27.60	6.88
Other non food crops	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total non food crops	87.79	25.81	102.00	28.54	115.00	31.06	120.22	33.16	128.85	34.99	132.06	34.53	142.60	35.56
Gross cropped area	**340.09**	**100.00**	**357.40**	**100.00**	**370.00**	**100.00**	**362.59**	**100.00**	**368.22**	**100.00**	**382.46**	**100.00**	**401.00**	**100.00**

Table 2.20 Cropping pattern, Guna district, M.P.

(Area – '000 hectares)

Crop	1991-92		1992-93		1993-94		1994-95		1995-96		1996-97		1997-98	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
Paddy	1..60	0.24	1.60	0.23	1.60	0.22	1.60	0.23	1.50	0.21	1.40	0.19	1.50	0.20
Jowar	95.60	14.30	115.00	16.55	94.70	13.25	66.74	9.47	71.20	9.86	61.00	8.31	53.60	7.21
Bajra	0.10	0.07	0.10	0.01	0.20	0.03	0.20	0.03	0.10	0.01	0.20	0.03	0.10	0.01
Maize	25.70	3.84	25.00	3.60	25.90	3.62	23.50	3.33	23.05	3.19	22.50	3.06	23.40	3.15
Wheat	186.90	27.26	196.70	28.29	201.00	28.12	177.38	25.17	191.40	26.50	199.20	27.13	198.80	26.75
Barley	0.30	0.04	0.20	0.03	0.20	0.03	0.20	0.03	0.20	0.03	0.20	0.03	0.20	0.03
Other cereals & millets	0.20	0.03	0.10	0.01	0.18	0.02	- -	- -	- -	- -	- -	- -	0.40	0.05
Total cereals	310.40	46.43	338.70	48.72	323.78	45.29	269.56	38.26	287.45	39.80	284.50	38.75	278.00	37.40
Gram	163.30	24.43	132.00	18.99	141.20	19.75	203.20	28.84	182.00	25.20	174.60	23.78	175.60	23.67
Tur	2.30	0.34	1.90	0.27	1.80	0.25	2.20	0.31	1.50	0.21	1.20	0.16	1.30	0.17
Other pulses	21.50	3.77	24.38	3.51	22.00	3.08	18.70	2.66	21.63	2.99	24.20	3.30	25.10	3.38
Total pulses	187.10	27.99	158.28	22.77	165.00	23.08	224.10	31.81	205.13	28.40	200.00	27.24	202.00	27.18
Sugarcane	0.59	0.09	0.59	0.09	0.54	0.08	0.50	0.07	0.78	0.11	0.90	0.12	0.70	0.09
Chilli	0.14	0.02	0.12	0.02	0.14	0.02	0.09	0.01	0.04	0.01	0.09	0.01	0.04	0.01
Ginger	0.04	0.01	0.02	- -	0.02	- -	- -	- -	- -	- -	0.13	0.02	0.03	- -
Coriander	39.91	5.98	43.00	6.18	56.25	7.88	45.10	6.41	49.31	6.84	60.11	8.19	77.46	10.42
Total spices	40.15	6.01	43.21	6.20	56.49	7.90	45.26	6.42	49.43	6.84	60.35	8.22	77.53	10.43
Total fruits & vegetables	1.36	0.20	1.32	0.20	1.39	0.19	1.35	0.19	1.43	0.20	1.40	0.19	1.02	0.14
Total food crops	539.60	80.72	542.10	77.98	547.20	76.54	540.77	76.74	544.22	75.35	547.15	74.52	559.25	75.24
Groundnut	0.60	0.09	0.50	0.07	0.40	0.06	0.20	0.03	0.20	0.03	0.30	0.04	0.40	0.05
Soybean	55.30	8.27	77.21	11.11	97.90	13.69	100.90	14.32	116.50	16.12	126.40	17.22	124.70	16.78
Other oil seeds	17.70	2.65	20.10	2.89	19.60	2.74	13.01	1.85	12.70	1.76	13.30	1.81	11..90	1.61
Total oil seeds	73.60	11.01	97.81	14.07	117.90	16.49	114.11	16.20	129.40	17.91	140.00	19.07	137.00	18.44
Total fibres	0.10	0.01	0.05	- -	0.05	- -	0.06	0.01	0.04	- -	0.05	- -	- -	- -
Total drugs	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total fodder	55.20	8.26	55.24	7.95	49.75	6.97	49.63	7.05	48.66	6.74	47.00	6.41	47.00	6.32
Other non food crops	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	--	- -	- -	- -
Total non food crops	128.90	19.28	153.10	22.02	167.70	23.46	163.80	23.26	178.11	24.65	187.06	25.48	184.00	24.76
Gross cropped area	**668.50**	**100.00**	**695.20**	**100.00**	**714.90**	**100.00**	**704.57**	**100.00**	**722.33**	**100.00**	**734.21**	**100.00**	**743.25**	**100.00**

2.4.3 Guna District

Guna district was selected for coriander crop as production of coriander was highest in Guna district. It varied from 10,938 tonnes in 1991-92 to 23.518 tonnes in 1997-98. The production of ginger, garlic and chilli showed generally negative trends during 1991-92 to 1997-98 (Table 2.21).

Table 2.21 Production of spices in the selected districts, Madhya Pradesh, 1991-92 to 1997-98

(Production in tonnes)

Ddistrict		1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Khargone	Chilli	3,871	4,338	5,648	5,010	4,371	5,969	8,036
	Ginger	206	230	278	218	157	209	261
	Coriander	261	142	156	130	103	149	165
	Garlic	261	250	354	329	303	283	329
	Turmeric	31	12	59	43	26	35	55
Tikamgarh	Chilli	178	171	217	233	248	187	304
	Ginger	1,117	1,102	1,182	1,180	1,177	1,769	1,897
	Coriander	64	75	100	103	105	114	158
	Garlic	65	97	120	115	109	115	116
	Turmeric	83	63	94	88	82	100	118
Guna	Chilli	8	19	24	16	8	13	8
	Ginger	28	15	15	14	14	109	26
	Coriander	10,938	13,060	15,656	14,898	14,139	17,996	23,518
	Garlic	71	44	95	95	95	49	33
	Turmeric	--	--	2	1	--	--	6

2.5 Procurement and distribution of spices seed

2.5.1 Khargone district

In Khargone district no seed was either multiplied locally or procured from places out side the district. No seed was distributed during the first three years viz. 1992-93, 1993.94 and 1994-95. In 1995-96 one quintal of coriander seed valued Rs.6,000 was distributed. In 1996-97 ,19 kg of chilli seed valued Rs. 5133.60, 9.70 quintals, of ginger seed valued Rs. 16,490.00 and 41 kg. of coriander seed valued Rs.2,433.40 was distributed. The entire distributed seed was totally subsidised (Table 2.22).

Table 2.22 Yearwise procurement and distribution of seeds of spices, Khargone district, Madhya Pradesh

(Figures – quintals)

Programmes	1992-93 to 1994-95		1995-96		1996-97	
	Qty. (qtls)	Value (Rs.)	Qty. (qtls)	Value (Rs.)	Qty. (qtls)	Value (Rs.)
Seed multiplied locally	--	--	--	--	--	--
Seed Procurred from other places outside the district						
1. Onion	--	--	--	--	--	--
2. Methi	--	--	--	--	--	--
3. Chilli	--	--	--	--	--	--
4. Ginger	--	--	--	--	--	--
5. Coriander	--	--	--	--	--	--
Seed distributed						
1 Ginger	--	--	--	--	9.70	16,490.00
2 Chilli	--	--	--	--	0.19	5,133.60
3. Coriander	--	--	1.00	6,000.00	0.41	2,433.40

2.5.2 Tikamgarh District

In Tikamgarh district no seed was multiplied locally. Of the seed procured from places outside the district was 15 kg of onion seed and 5 kg of methi seed in 1992-93. In 1993-94 chilli and ginger seeds were procured. In 1994-95 only chilli seed was procured. In the year 1995-96, 5 kg.of chilli seed and 22 quintals of ginger seed and equal quantity of coriander seed was procured. In 1996-97, 60 quintals of ginger seed and 25.25 quintals of coriander seed were procured. As regards distribution of seed it was noted that in 1992-93 only ginger seed was distributed. In 1993-94 ginger and chilli seeds were distributed. But in 1994-95 only chilli seed was distributed. In 1995-96 seeds of all the three spices were distributed, whereas, in 1996-97 only ginger seed was distributed. In this district also the entire quantity of seed was distributed on hundred per cent subsidy. (Table 2.23).

2.5.3 Guna District

There was no procurement and distribution of spices seed in Guna district.

Table 2.23 Yearwise procurement and distribution of seeds of spices, Tikamgarh district, Madhya Pradesh

(Quantity in quintals and value in rupee)

Programmes	1992-93		1993-94		1994-95		1995-96		1996-97	
	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value
Seed multiplied locally	--	--	--	--	--	--	--	--	--	--
Seed procured from other places outside the district										
1.Onion	0.15	1,500	--	--	--	--	--	--	--	--
2.Chilli	--	--	0.005	135	0.01	270	0.05	1,500	--	--
3.Ginger	--	--	20.00	30,000	--	--	22.00	71,548	60.00	1,50,000
4. Methi	0.05	70	--	--	--	--	--	--	--	--
5.Coriander	--	--	--	--	--	--	22.00	1,32,000	25.25	5,05,000
Seed distributed										
1. Ginger	0.20	1,770	20.00	30,000	--	--	22.00	71,548	60.00	1,50,000
2. Chilli	--	--	0.005	135	0.01	270	0.05	1,500	--	--
3.Coriander	--	--	--	--	--	--	22.00	1,32,000	--	--

2.6 Distribution of Minikits and other Development Programmes of Spices

In the following paragraphs progress of distribution of minikits, laying of demonstration-cum-seed multiplication plots, plant protection measures, area expansion programme and establishment of nurseries are described.

2.6.1 Khargone district

In this district no progress was made on above mentioned programmes in the first three years of the eighth plan. In 1995-96 one hundred minikits of coriander, 80 plant protection equipments (sprayers) and area expansion programme of 10 hectares were achieved. In 1996-97 40 minikits of ginger and an equal number of minikits of chilli, were distributed. Demonstration-cum-seed multiplication were laid for 25 plots of chilli, 25 plots of coriander and 13 plots of ginger (Table 2.24).

Table 2.24 Progress of activities under Spices Development Programme during VIII plan Khargone District, Madhya Pradesh

(value in rupee)

Programmes	1992-93		1993-94		1994-95		1995-96		1996-97	
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value
Distribution of minikits										
1.Onion	-	-	-	-	-	-		-	-	-
2.Chilli	-	-	-	-	-	-	-	-	40	4,000.0
3.Ginger	-	-	-	-	-	-	-	-	40	1,020
4. Methi	-	-	-	-	-	-	-	-	-	-
5.Coriander	-	-	-	-	-	-	100	11,000.0	-	-
Demonstration-cum-seed multiplication plots										
1. Chilli	-	-	-	-	-	-	-	-	25	35,778.6
2. Coriander	-	-		-	-	-	-	--	25	12,533.0
3.Ginger	-	-	-	-	-	-	--	-	13	15,470.0
Plant protection measures							80	63,920.0	-	-
Area expansion programme (ha.)							10	1,24,160.0	-	-

2.6.2 Tikamgarh District

In this district in 1992-93, 15 kg of minikits of onion and 5 kg of minikits of methi were distributed. In 1993-94 5kg of chilli minikits were distributed. In 1994-95 no work was done on any of the programmes of the spices. In 1995-96 4 quintals of ginger minikits were distributed. Under area expansion programme 32 hectares under ginger and 10 hectares under coriander were covered. In 1996-97, 20 sprayers were distributed (Table 2.25)

Table 2.25 Progress of activities under Spices Development Programme during VIII plan Tikamgarh District, Madhya Pradesh

(value in rupee)

Programmes	1992-93		1993-94		1994-95		1995-96		1996-97	
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value
Distribution of minikits										
1.Onion	0.15	1,500	-	-	-	-	-	-	-	-
2.Chilli	-	-	0.005	750	-	-	-	-	-	-
3.Ginger	-	-	-	-	-	-	4.00	20,000	-	
4. Methi	0.05	250	-	-	-	-	-	-	-	-
5.Coriander	-	-	-	-	-	-	-	-	-	-
Demonstration-cum-seed multiplication plots										
1. Ginger	-	-	-	-	-	-	-	-	-	-
2. Chilli	-	-	-	-	-	-	-	-	-	-
3.Coriander	-	-	-	-	-	-	-	-	-	-
Plant protection measures			-	-	-	-	-	-	20	22,000
Area expansion programme			-	-	-	-	42	36,998	-	-

2.6.3 Guna District

In Guna district no work was done under spices development programme in the year 1992-93. In 1993-94, 400 quintals of minikits of chilli and 600 quintals of minikits of coriander were distributed. Under area expansion programme 529 ha. were covered. In 1994-95 only area expansion programme was taken up on 361 hectares. In 1995-96, 250 quintals of chilli minikits were distributed and area expansion programme was taken up on 574 hectares. In 1996-97, 50 quintals of coriander minikits were distributed and area expansion programme was taken-up on 289 hectares (Table 2.26).

Table 2.26 Progress of activities under Spices Development Programme during VIII plan Guna District, Madhya Pradesh

(value in rupee)

Programmes	1992-93		1993-94		1994-95		1995-96		1996-97	
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value
Distribution of minikits										
1.Onion	-	-	-	-	-	-	-	-	-	-
2.Chilli	-	-	400	60,000	-	-	250	50,000	-	-
3.Ginger	-	-	-	-	-	-	-	-	-	-
4. Methi	-	-	-	-	-	-	-	-	-	-
5.Coriander	-	-	600	68,850	-	-	-	-	50	5,000
Demonstration-cum-seed multiplication plots										
1. Ginger	-	--	-	-	-	-	-	-	-	-
2. Chilli	-	-	-	-	-	-	-	-	-	-
3.Coriander	-	-	-	-	-	-	-	-	-	-
Plant protection measures			-	-	-	-	-	-	-	-
Area expansion programme			529	-	361	-	574	-	289	-

2.7 Important points Emerging In Selected Districts

1. As regards procurement and distribution of spices seed it was noted that in Khagone district no seed was either multiplied locally or procured from outside the district. No seed was distributed in the first three years of the plan. In 1995-96 one quintal of coriander seed was distributed. In 1996-97, 19 kg of chilli seed and 9.70 quintals of ginger seed, and 41 kg of coriander seed was distributed.

In Tikamgarh district no seed was multiplied locally. In 1992-93 15 kg. of onion seed and 5 kg of methi seed was procured from outside the district. In 1993-94 chilli and ginger seed was procured. In 1994-95 only chilli seed was procured. In 1995-96 chilli and ginger seed was procured. In 1996-97 ginger and coriander seed was procured. The entire quantity of seed procured was distributed.

There was no procurement and distribution of seed in Guna district.

Thus the procurement and distribution of spices seed in the selected districts was not impressive looking to the total area under spices in the districts.

2. As regards distribution of minikits and other development programmes it was noted that in Khargone district no progress was made on any of these programmes in the first three years. In 1995-96, 100 minikits of coriander and 80 sprayers were distributed and area expansion programme in 10 hectares was undertaken. In 1996-97, 40 minikits of ginger and an equal number of minikits of chilli were distributed. Demonstrations cum seed multiplication were laid in 25 plots of chilli, 25 plots of coriander and 13 plots of ginger.

In Tikamgarh district in 1992-93, 15 kg of minikits of onion and 5 kg minikits of methi were distributed. In 1993-94, 5 kg of chilli minikits were distributed but in 1994-95 no work was done on any programme. In 1995-96, 4 quintals of ginger minikits were distributed. Under area expansion programme 32 hectares under ginger and 10 hectares under coriander were taken up. In 1996-97, 20 sprayers were distributed. In Guna district no work was done in 1992-93. In 1993-94, 400 quintals of minikits of chilli and 600 quintals of minikits of coriander were distributed. Under area expansion programme 529 ha. were covered. In 1994-95 only area expansion programme was taken up on 361 hectares. In 1995-96 250 quintals of chilli minikits were distributed and area expansion programme was taken up on 574 hectares. In 1996-97, 50 quintals of coriander minikits were distributed and area expansion programme was taken-up on 289 hectares.

It is evident that not significant and impressive work was done in any of the selected districts under spices development programme in the VIII plan.

This was so because of many administrative and field problems. These have been enumerated in the following paragraphs.

2.8 Problems and suggestions of District Officers

From the foregoing paragraphs it is evident that the programme of spices production has not been satisfactory in any of the districts. The officials of the horticulture department were approached to know the problems faced by them and their suggestions, if any. The relevant problems and suggestions given are described in the following paragraphs individually for the selected districts.

2.8.1 Khargone District

As regards seed production programme it was commented that the programme has been a failure. The main reason for this was that the varieties for which the programme was taken were different from the locally popular varieties of the district. Because of this the farmers were not ready to take up the programme. As regards the minikits distribution the difficulty faced was small size of minikits and the low proportion of subsidy. It was suggested that the subsidies on the minikits should be increased and small minikits should be distributed free of charge. About the demonstrations it was commented that since the share of farmers in cost of demonstrations was high, it was difficult to get the repayment of the cost to the farmers. It was suggested that the number of demonstrations should be reduced significantly and should be conducted on hundred per cent subsidy basis. About the participation of the farmers in the programme it was mentioned that it became difficult to get the repayment to the farmers and at times the departmental officials had to pay the amount due to the farmers. The farmers were not supplied in time seed and fertilizers. Among the complaints of the farmers the most important was wilt and drying diseases of chilli. The farmers requested that suitable research should be conducted on these diseases and necessary recommendations should be given.

There is a zonal agricultural research station of J.N.K.V.V. at Khargone. However, no research scheme on spices is in operation. No budget is allotted to the station either from central and state government or ICAR funds. Moreover no person who has specialised in horticulture is posted at research station.

2.8.2 Tikamgarh District

following difficulties were experienced by field workers of horticulture department,

(a) Seed production of garlic could not be undertaken as the seed received from Entkhedi farm of J.N.K.V.V. was disease infected.

(b) Finance for the centrally sponsored schemes were not received in time, especially before sowing of the respective crops.

(c) In the case of minikits and demonstrations the inputs were not made available in time.

(d) The inputs for spices which are distributed at 25 to 50 per cent subsidy created problems, as it was very difficult for the district officials to get the balance amount repaid from the farmers. It was suggested that inputs should be provided at 100 per cent subsidy especially to marginal and small farmers.

(e) The ginger crop was very susceptible to root-rot and at times the entire crop was destroyed, whereas, the cost of production was very high. There was an acute shortage of proper marketing facility for ginger. In the absence of such facility the farmers can not be encouraged to grow the crop.

(f) There was a very skeletal staff of the horticulture department in the district. The block level staff was required to look after the nursery as well as extension work. Due to shortage of staff both research and extension activities suffered adversely.

2.8.3 Guna district

The horticulture development programme in the district suffered badly due shortage of foundation and certified seed of spices and shortage of minikits of high yielding varieties. There was inadequate marketing facility in the district and no minimum support price was declared for spices. In the absence of remunerative prices the farmers were not attracted towards spices cultivation. There is no facility for processing of coriander neither facility for oil-extraction. It is suggested that these should be established in the cooperative sector. There are shortages as well as qualitative insufficiency of most of the inputs. There is a need to increase the staff of the department, which should also be given training in production and extension techniques of spices crops.

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CHAPTER- III

SOCIO- ECONOMIC BACKGROUND OF THE SAMPLE FARMERS

As mentioned earlier 50 farmers in each of the three districts of Khargone, Tikamgarh and Guna were selected for field study. Within a district 10 farmers each from five size groups viz. marginal, small, semi-medium, medium and large were selected. Thus a total sample of 150 farmers (50 per district) was selected. In this chapter socio-economic background of the sample farmers has been described.

3.1 Holdingwise Classification

The total operated area of the sample farms was 719.40 hectares or an average size of 4.80 hectares. The average size in the marginal size group was 0.87 hectare. It increased to 1.60 hectares in the small size group and 13.05 hectares in large size group. The average size of farm in Khargone district was 4.68 hectares. It was 3.99 hectares in Tikamgarh district, and 5.71 hectares in Guna district (Table 3.1)

Table 3.1 Holdingwise classification of the sample farmers, selected districts, Madhya Pradesh

(Figures – hectares)

Size of holding	Khargone	Tikamgarh	Guna	Total
Marginal	9.11 (0.90)	7.87 (0.79)	9.10 (0.91)	25.97 (0.87)
Small	17.02 (1.70)	13.03 (1.30)	17.90 (1.79)	47.95 (1.60)
Semi medium	31.16 (3.12)	21.84 (2.18)	29.60 (2.96)	82.60 (2.75)
Medium	55.24 (5.52)	47.90 (4.79)	68.20 (6.82)	171.34 (5.71)
Large	121.80 (12.18)	108.94 (10.89)	160.80 (16.08)	391.54 (13.05)
Total	234.32 (4.68)	199.58 (3.99)	285.60 (5.71)	719.40 (4.80)

Each size group contains equal number (10) of farms making a total sample of 150 farms in three districts.
Figures in parentheses are average size of holding.

3.2 Occupational Structure

All the three selected districts being rural as many as 141 out of 150(94.00 per cent) households had agriculture as main occupation. Three households (2.00 per cent) had agricultural labour as main occupation and a one household had dairying as main occupation. The remaining five households had service as main occupation. Of the selected 150 households 65 (43.33 per cent) had some subsidiary occupation. Of the subsidiary occupations agricultural labour was the most important as 26 of the 65 (40.00 per cent) households had this as subsidiary occupation. Business was subsidiary occupation of another 17 households and agriculture as subsidiary occupation of 9 households (Table 3.2)

Table 3.2 Holdingwise occupational structure of the sample households, selected districts, Madhya Pradesh

Size group	Main occupation				Subsidiary occupation						Total
	Agri	Agril. Labour	Dairy	Service	Agri.	Agril Labour	Non Agril. Labour	Dairy	Service	Business	
Marginal	26	1	1	2	4	7	1	--	1	1	14
Small	26	1	--	3	4	6	2	1	1	4	18
Semi medium	29	1	--	--	1	10	1	--	--	- 1	13
Medium	30	--	--	--	--	3	--	1	3	7	14
Large	30	--	--	--	--	--	--	--	2	4	6
Total	141	3	1	5	9	26	4	2	7	17	65

3.3 Details of Population

The total population of the selected households was 1,093.Of this 391 (35.77 per cent) were males, 324(29.64 per cent) females and 378(34.59 per cent) were children. Thus the male: female ratio was 829 females per thousand males. Again of the total population 534(48.86 per cent) were full time workers,46 (4.21 per cent) were part time workers and 513(46.93 per cent) were non workers. Of the total population 598 were literates. Thus the literacy percentage was 54.71.The literacy percentage among males was quite high (74.17 per cent) as compared to females (32.72 per cent). It was noted that 76 individuals among males were members of cooperative societies. Among females 5 were members. A total number of 10 individuals were members of panchayat. Of these 9 were males and only 1,female (Table 3.3)

Table 3.3 Holdingwise details of workers, literacy level and membership in different organisations, sample households, selected districts, Madhya Pradesh

Size group		No	Workers			Education		Membership	
			Full time	Part time	Non	Literate	Illiterate	Cooperative	Panchayat
Marginal	M	50	45	2	3	37	13	19	--
	F	46	35	6	5	13	33	- -	- -
	C	61	- -	- -	61	40	21	- -	- -
	Total	157	80	8	69	90	67	19	- -
Small	M	66	56	2	8	45	21	5	2
	F	46	35	3	8	8	38	5	1
	C	51	- -	- -	51	32	19	- -	- -
	Total	163	91	5	67	85	78	10	3
Semi medium	M	73	63	3	7	53	20	8	4
	F	71	49	6	16	19	52	- -	- -
	C	83	1	- -	82	42	41	- -	- -
	TOTAL	227	113	9	105	114	113	8	4
Medium	M	86	75	2	9	65	21	23	2
	F	70	36	9	25	25	45	- -	- -
	C	79	- -	- -	79	45	34	- -	- -
	TOTAL	235	111	11	113	135	100	23	2
Large	M	116	93	4	19	20	26	21	1
	F	91	46	9	36	41	50	- -	- -
	C	104	- -	- -	104	43	61	- -	- -
	TOTAL	311	139	13	159	174	137	21	1
Total	M	391	332	13	46	290	101	76	9
	F	324	201	33	90	106	218	5	1
	C	378	1	- -	377	202	176	- -	- -
	TOTAL	1093	534	46	513	598	495	81	10

M- Male, F- Female, C- Children

3.4 Income Structure

In the following paragraphs source wise income of the households is described to know the income structure.

3.4.1 Khargone District

The income of the selected households was derived chiefly from agriculture which contributed 84.39 per cent to the total income. Service and profession contributed 5.95 and 5.39 per cent respectively. Among size groups the variation in sources of income was such that agriculture contributed smaller proportion on small size farms than the large size farms. The income of the smaller size farms was derived from larger number of occupations than the larger farms. Agricultural labour and non agricultural labour were the sources on smaller size farms only (Table 3.4).

Table 3.4 Holdingwise income structure, selected households, Khargone district, Madhya Pradesh

(Figures – Rupees)

Size group	Agriculture	Agril. Labour	Non- Agril labour	Transport	Service	Profession	Total
Marginl	2,10,793	57,600	- -	5,500	57,840	20,000	3,51,737
	(59 .93)	(16.38)	- -	(1.56)	(16.44)	(5.69)	(100.00)
Small	2,88,085	53,150	2,000	- -	18,000	6,000	3,67,235
	(78.45)	(14.47)	(0.55)	--	(4.90)	(1.67)	(100.00)
Semi medium	3,87,590	32,510	- -	- -	- -	23,000	4,43,100
	(87.47)	(7.34)	- -	- -	- -	(5.19)	(100.00)
Medium	6,64,964	- -	- -	- -	- -	78,000	7,42,964
	(89.50)	- -	- -	- -	- -	(10.50)	(100.00)
Large	14,34,641	- -	- -	- -	1,34,640	64,000	16,33,281
	(87.84)	- -	- -	- -	(8.24)	(3.92)	(100.00)
Total	**29,86,077**	**1,43,260**	**2,000**	**5,500**	**2,10,480**	**1,91,000**	**35,38,317**
	(84.39)	**(4.05)**	**(0.06)**	**(0.16)**	**(5.95)**	**(5.39)**	**(100.00)**

Figures in parentheses are percentages.

3.4.2 Tikamgarh District

In Tikamgarh district the contribution of agriculture to total income was 84.34 per cent,(equal to Khargone district).Service was second important occupation contributing 7.13 per cent to total income. There was no relationship between the proportion of different sources of income and size of holdings (Table 3.5)

Table 3.5 Holdingwise income structure, selected households, Tikamgarh district, Madhya Pradesh

(Figures – Rupees)

Size group	Agril.	Agril. Labour	Service	Profession	Allied agril. activities	Total
Marginal	1,79,145 (92.85)	13,800 (7.15)	- - - -	- - - -	- - - -	1,92,945 (100.00)
Small	1,64,881 (65.75)	9,500 (3.79)	48,000 (19.14)	28,400 (11..32)	- - - -	2,50,781 (100.00)
Semi medium	2,74,817 (75.78)	58,450 (16.12)	14,400 (3.97)	15,000 (4.13)	- - - -	3,62,667 (100.00)
Medium	4,03,633 (92.96)	15,600 (3.59)	- - - -	15,000 (3.45)	- - - -	4,34,233 (100.00)
Large	10,21,332 (86.35)	- - - -	1,10,400 (9.34)	36,000 (3.04)	15,000 (1.27)	11,82,732 (100.00)
Total	**20,43,808 (84.34)**	**97,350 (4.02)**	**1,72,800 (7.13)**	**94,400 (3.90)**	**15,000 (0.61)**	**24,23,358 (100.00)**

Figures in parentheses are percentages.

3.4.3 Guna District

In Guna district agriculture contributed the highest proportion (92.06 per cent) among all the selected districts. The second and third important occupations were service and transport and contributed 2.75 and 2.55 per cent respectively. It was observed that the percentage contribution of agriculture generally increased with the size of holdings. It was 65.13 per cent in marginal size group and increased to 96.95 per cent in large size group with minor fluctuations. On the other hand the percentage contribution of other occupations such as agricultural and non-agricultural labour, service and profession generally decreased with the size of holdings (Table 3.6).

Table 3.6 Holdingwise income structure, selected households, Guna district, Madhya Pradesh

(Figures – Rupees)

Size group	Agril.	Agril. Labour	Non-Agri.l Labour	Transport	Service	Profession	Allied agril. activities	Total
Marginal	1,31,281 (65.13)	29,300 (14.54)	4,000 (1.98)	- - - -	18,000 (8.93)	19,000 (9.42)	- - - -	2,01,581.00 (100.00)
Small	3,33,419 (84.86)	10,000 (2.55)	3,000 (0.76)	- - - -	28,000 (7.13)	16,000 (4.07)	2,500.00 (0.63)	3,92,919.00 (100.00)
Semi medium	3,54,447.00 (95.89)	15,200.00 (4.11)	-- --	-- --	-- --	-- --	-- --	3,69,647.00 (100.00)
Medium	8,03,014.00 (90.94)	1000.00 (0.11)	1,000.00 (0.11)	-- --	18,000.00 (2.04)	60,000.00 (6.80)	--	8,83,014.00 (100.00)
Large	15,56,470.00 (96.95)	-- --	-- --	-- --	24,000.00 (1.50)	-- --	25,000.00 (1.55)	16,05,470.00 (100.00)
Total	**31,78,631.00 (92.06)**	**55,500.00 (1.61)**	**8,000.00 (0.23)**	**-- --**	**88,000.00 (2.55)**	**95,000.00 (2.75)**	**27,500.00 (0.80)**	**34,52,631.00 (100.00)**

Figures in parentheses are percentages.

3.5 Livestock and Modern Implements

The livestock included milch cows, buffaloes and draught animals (bullocks), pigs, poultry, horses and goats. The modern implements included tractors, trolleys, iron ploughs, threshers and cane crushers. Among irrigation sources and equipments were tubewells, pump sets and sprinklers. Among transportation equipments were carts with pneumatic wheels and ordinary wheels.

3.5.1 Khargone District

The 50 selected households had 61 milch cows, 71 buffaloes and 119 bullocks. It was observed that the number per household was higher on larger farms. There were 9 tubewells,43 pump sets,46 iron ploughs and 5 threshers on the selected farms. In this case also the number per farm was higher on large size farms. There were 35 carts with pneumatic tyres. While medium and large farms owned a cart each the small farms had not got a cart each (Table 3.7)

Table 3.7 Holdingwise number of livestock and modern implements, Khargone district, Madhya Pradesh

Items	GROUPS					Total
	Marginal	Small	Semi medium	Medium	Large	
A. Number of livestock (No.)						
1. Milch animals						
i) Cow	5	3	16	14	23	61
ii) Buffaloe	6	13	13	19	20	71
2. Draught animals (Bullocks)	16	18	24	25	36	119
3. Pigs	--	--	--	--	--	---
4. Poultry	--	--	--	--	--	---
5. Pony / Horse	--	--	--	--	--	---
6. Goats	--	--	--	--	--	---
7. Others	1	1	--	4	1	7
B. Modern agriculture implements (No.)						
1. Tractor	--	--	--	--	1	1
2. Trolley	--	--	--	--	1	1
3. Tubewell	--	--	2	2	5	9
4. Pump set	8	9	8	10	8	43
5. Iron plough	7	9	10	10	10	46
6. Thresher	--	--	--	2	3	5
7. Crusher	--	--	--	--	--	---
8. Dibler	--	--	--	--	--	---
9. Sprinkler	--	--	--	--	--	---
10. Drip System	--	--	--	--	--	---
11. Bullock cart	2	5	8	10	10	35

3.5.2 Tikamgarh District

In this district the selected farms owned 41 cows, 80 buffaloes and 100 bullocks. The number per household of these categories of livestock was higher on larger farms. There were 29 goats and 25 other animals. The number per household was higher on large farms. There were 6 tractors, and 6 trolleys and 51 pump sets on the selected farms. The number of these equipments per farm was higher on larger farms. There were 43 iron ploughs and 13 threshers. These were also concentrated on the larger farms (Table 3.8).

Table 3.8 Holdingwise number of livestock and modern implements, Tikamgarh district, Madhya Pradesh

Items	GROUPS					Total
	Marginal	Small	Semi medium	Medium	Large	
A. Number of livestock (No.) 1. Milch animals						
i) Cow	4	10	6	9	12	41
ii) Buffaloes	2	11	12	15	40	80
2 Draught animals (Bullocks)	16	16	18	15	35	100
3. Pigs	--	--	--	--	--	--
4. Poultry	--	--	5	--	--	5
5. Pony / Horse	--	--	--	--	--	--
6. Goats	--	2	7	10	10	29
7. Others	--	5	5	8	7	25
B. Modern agriculture implements (No.)						
1. Tractor	--	--	--	1	5	6
2. Trolley	--	--	--	1	5	6
3. Tubewell	--	--	--	1	--	1
4. Pump set	10	9	10	11	11	51
5. Iron plough	9	9	8	7	10	43
6. Thresher	--	--	2	2	9	13
7. Crusher	--	--	--	--	--	--
8. Dibler	--	--	--	--	3	3
9. Sprinkler	--	--	--	--	--	--
10. Drip System	--	--	--	--	--	--
11. Dunlop cart	--	2	1	1	1	5
12. Bullock cart	--	--	3	6	6	15

3.5.3 Guna District

On the selected farms there were 76 cows, 68 buffaloes and 55 bullocks. The number per household of these categories of livestock was higher on larger farms. There were 14 tractors, 14 trolleys, 10 tubewells, 40 pumpsets, 24 iron ploughs and 12 threshers on the selected farms. In these cases the number per farm was higher on larger farms than smaller farms (Table 3.9).

Table 3.9 Holdingwise number of livestock and modern implements, Guna district, Madhya Pradesh

Items	GROUPS					Total
	Marginal	Small	Semi medium	Medium	Large	
A. Number of livestock 1. Milch animals						
a) Cow	7	11	13	9	36	76
b) Buffaloes	16	9	6	16	21	68
2. Draught animals (Bullocks)	8	10	12	14	11	55
3. Pigs	--	--	--	--	--	--
4. Poultry	2	--	--	--	--	2
5. Pony / Horse	--	--	--	--	--	--
6. Goats	--	--	--	--	--	--
7. Others	3	3	5	9	12	32
B. Modern agriculture implements (No.)						
1. Tractor	--	1	2	3	8	14
2. Trolley	--	1	2	3	8	14
3. Tubewell	1	2	--	--	7	10
4. Pump set	5	7	8	7	13	40
5. Iron plough	7	4	6	5	2	24
6. Thresher	--	1	2	3	6	12
7. Crusher	--	--	--	--	--	--
8. Dibler	--	--	--	--	1	1
9. Sprinkler	--	--	--	2	--	2
10. Drip System	--	--	--	--	2	2
11. Dunlop cart	4	4	2	5	3	18
12. Bullock cart	--	--	2	--	--	2

CHAPTER IV

LAND USE AND CROPPING PATTERN

4.1 Holdingwise land use pattern of sample farms of selected districts

4.1.1 Khargone district

In Khargone district the total area owned by sample farmers was 232.80 hectares. Of this 7.28 per cent was waste and fallow land. The total cultivated area was 215.84 hectares or 92.72 per cent. The area under garden crops was 0.91 hectare. Among all the size groups only one cultivator of semi- medium size group purchased 1.42 hectares of land. The irrigated area formed 75.68 per cent of the total cultivated area (Table 4.1).

Table 4.1 Holding wise land use pattern, Khargone district, Madhya Pradesh

(Area- hectares)

Size group	Area owned	Waste and fallow land	Cultivated area	Area under garden	During five year period		Area irrigated
					Sold	Purchased	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Marginal	9.00	0.40 (4.44)	8.60 (95.56)	- - - -	- - - -	- - - -	7.59 (88.26)
Small	17.02	0.40 (2.35)	16.62 (97.65)	- - - -	- - - -	- - - -	15.63 (94.04)
Semi medium	29.74	0.80 (2.69)	28.94 (97.31)	0.10	- -	1.42	24.78 (85.63)
Medium	55.24	4.44 (8.04)	50.80 (91.96)	0.81	- -	- -	36.03 (70.93)
Large	121.80	10.92 (8.97)	110.88 (91.03)	- -	- -	- -	79.31 (71.53)
Total	**232.80**	**16.96 (7.28)**	**215.84 (92.72)**	**0.91**	- -	**1.42**	**163.34 (75.68)**

Figures in parentheses of column 3 and 4 are the percentage to own area and figures in parentheses of column 8 are percentage to cultivated area.

4.1.2. Tikamgarh district

In Tikamgarh district the total owned area of selected farmers was 199.38 hectares. Of this 9.87 per cent was waste and fallow land. The total cultivated area was 179.70 hectares or 90.13 per cent. The total land sold and purchased was 0.20 hectare and 0.40 hectare respectively during the five year period. The total land sold and purchased was only in large size group. The total irrigated area was 160.95 hectares or 89.57 per cent (Table 4.2).

Table 4.2 Holding wise land use pattern, Tikamgarh district, Madhya Pradesh

(Area - hectares)

Size group	Area owned	Waste and fallow land	Cultivated area	During five year period		Area irrigated
				Sold	Purchased	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Marginal	7.87	0.20 (2.54)	7.67 (97.46)	- - - -	- - - -	7.26 (94.65)
Small	13.03	1.20 (9.21)	11.83 (90.79)	- -	- -	11.53 (97.46)
Semi medium	21.84	1.91 (8.75)	19.93 (91.25)	- -	--	17.50 (87.81)
Medium	47.90	5.86 (12.23)	42.04 (87.77)	- -	- -	38.19 (90.84)
Large	108.74	10.51 (9..67)	98.23 (90.33)	0.20	0.40	86.47 (88.03)
Total	199.38 (100.00)	19.68 (9.87)	179.70 (90.13)	0.20	0.40	160.95 (89.57)

Figures in parentheses of column 3 and 4 are the percentage to own area and figures in parentheses of column 8 are percentage to cultivated area.

4.1.2 Guna district

The total owned area of selected farmers was 283.40 hectares. Of this 21.60 hectares or 7.62 per cent was waste and fallow land and 261.80 hectares or 92.38 per cent was cultivated area. The total area under garden was 2.30 hectares. Maximum area under garden was in large size group (1.90 hectares) and minimum in small size group (0.40hectare) (Table 4.3).

Table 4.3 Holding wise land use pattern, Guna district, Madhya Pradesh

(Area- hectares)

Size group	Area owned	Waste and fallow land	Cultivated area	Area under garden	During five year period		Area irrigated
					Sold	Purchased	
Marginal	9.10	0.30	8.80	- -	--	- -	7.00
		(3.30)	(96.70)				(79.55)
Small	17.10	- -	17.10	0.40	- -	0.80	8.00
			(100.00)				(46.78)
Semi medium	28.20	1.00	27.20	- -	- -	1.40	12.00
		(3.55)	(96.45)				(44.12)
Medium	68.20	1.40	66.80	- -	- -	- -	18.40
		(2.05)	(97.95)				(27.55)
Large	160.80	18..90	141.90	1.90	- -	- -	53..30
		(11.75)	(88.25)				(37.56)
Total	283.40	21.60	261.80	2.30	- -	2.20	98.70
		(7.62)	(92.38)				(37.70)

Figures in parentheses of column 3 and 4 are the percentage to own area and figures in parentheses of column 8 are percentage to cultivated area.

The percentage of irrigated area was highest (89.57) in Tikamgarh district and lowest (37.70) in Guna district.

4.2 Cropping pattern on sample farms, selected districts

4.2.1 Khargone District

The gross cropped area of the sample farms of Khargone district was 248.97 hectares in 1991-92. It increased to 259.90 hectares in 1997-98 with fluctuations in between. The cropping pattern was cereals dominated which contributed 34.02 per cent in 1991-92. The percentage decreased from year to year and was 23.53 in 1997-98. The proportion of pulses was 6.96 in 1991-92 and decreased to 3.16 in 1997-98. The oilseed crops contributed 13.76 per cent in 1991-92 and the percentage decreased to 13.00 in 1997-98. In oilseed crops soybean crop contributed 6.86 per cent in 1991-92 and was 8.50 per cent in 1997-98. The proportion of cotton was 29.13 per cent in 1991-92 and increased gradually from year to year and was 37.28 per cent in 1997-98. Among the spices chilli contributed 14.57 per cent in 1991-92. It's contribution was between 14.57 and 21.35 per cent in different years (Table 4.4).

Table 4.4 Cropping pattern of Khargone district, Madhya Pradesh

(Area - hectare)

Crops	Pre period		During VIII Plan period										Average of VIII Plan		Post period	
	1991-92		1992-93		1993-94		1994-95		1995-96		1996-97				1997-98	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
Paddy	5.00	2.01	4.50	1.80	4.50	1.76	4.00	1.56	2.30	0.90	2.30	0.91	3.52	1.38	2.00	0.77
Jowar	20.40	8.19	20.10	8.03	20.10	7.84	20.10	7.85	17.10	6.65	15.10	5.95	18.50	7.26	13.40	5.16
Maize	0.20	0.08	0.40	0.16	0.40	0.16	0.40	0.16	0.40	0.16	0.40	0.16	0.40	0.16	0.60	0.23
Bajra	4.62	1.86	3.50	1.39	3.50	1.37	2.45	0.95	2.45	0.95	2.26	0.89	2.83	1.11	1.62	0.62
Wheat	54.48	21.88	53.08	21.20	53.07	20.70	51.00	19.91	49.00	19.05	46.00	18.12	50.43	19.80	43.53	16.75
Total cereals	84.70	34.02	81.58	32.58	81.57	31.83	77.95	30.43	71.25	27.71	66.06	26.03	75.68	29.7	61.15	23.53
Gram	3.52	1.41	3.02	1.21	2.71	1.06	2.60	1.02	2.10	0.82	1.60	0.63	2.40	0.94	1.41	0.54
Urad	- -	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Moong	2.81	1.13	2.80	1.12	2.30	0.90	2.30	0.90	1.80	0.70	1.60	0.63	2.16	0.85	0.81	0.31
Arhar	11.00	4.42	10.50	4.19	9.00	3.51	9.21	3.59	8.47	3.29	8.27	3.26	9.09	3.57	6.00	2.31
Total pulses	17.33	6.96	16.32	6.52	14.01	5.47	14.11	5.51	12.37	4.81	11.47	4.52	13.65	5.36	8.22	3.16
Groundnut	17.19	6.90	14.19	5.67	13.61	5.31	13.61	5.31	12.61	4.90	12.51	4.93	13.30	5.22	11.69	4.50
Soybean	17.09	6.86	20.09	8.02	20.09	7.84	20.34	7.94	21.95	8.54	22.00	8.67	20.89	8.20	22.09	8.50
Mustard	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Till	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total oil seed	34.28	13.76	34.28	13.69	33.70	13.15	33.95	13.25	34.56	13.44	34.51	13.60	34.19	13.42	33.78	13.00
Fruit & vegetable	2.33	0.94	2.61	1.04	2.61	1.02	2.61	1.02	2.83	1.10	2.83	1.12	2.70	1.06	2.83	1.09
Cotton	72.52	29.13	74.52	29.77	74.52	29.08	75.52	29.48	79.52	30.92	82.97	32.69	77.41	30.39	96.89	37.28
Total cash crop	109.13	43.83	111.41	44.50	110.83	43.25	112.08	43.75	116.91	45.46	120.31	47.41	114.30	44.87	133.50	51.37
Chilli	36.28	14.57	39.52	15.79	48.34	18.86	50.50	19.71	55.13	21.43	54.39	21.44	49.57	19.46	55.50	21.35
Ginger	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Coriander	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Onion	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Garlic	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total spices	36.28	14.57	39.52	15.79	48.34	18.86	50.50	19.71	55.13	21.43	54.39	21.44	49.57	19.46	55.50	21.35
Fodder	1.53	0.62	1.53	0.61	1.53	0.59	1.53	0.60	1.51	0.59	1.53	0.60	1.53	0.60	1.53	0.59
Total cropped area	**248.97**	**100.00**	**250.36**	**100.00**	**256.28**	**100.00**	**256.17**	**100.00**	**257.17**	**100.00**	**253.76**	**100.00**	**254.73**	**100.00**	**259.90**	**100.00**

4.2.2 Tikamgarh District

The gross cropped area in the district in the year 1991-92 was 317.68 hectares. It increased to 325.18 hectares in 1997-98. The cropping pattern was food crops dominated and cereals contributed 48.99 per cent in 1991-92. The percentage increased from year to year and was 50.24 per cent in 1997-98. Over the period 1991-92 to 1997-98 the proportion of total pulses reduced from 11.83 per cent to 9.67 per cent. The percentage of oilseeds increased slightly from 29.51 to 31.31. Ginger contributed 5.89 per cent in the year 1991-92 and the percentage reduced to 4.49 in 1997-98 (Table 4.5).

4.2.3 Guna District

In Guna district the gross cropped area of sample farmers was 369.24 hectares in 1991-92. It decreased to 361.56 hectares in 1997-98. The cropping pattern was cereal dominated which contributed 35.56 per cent in 1991-92. The percentage decreased from year to year and was 25.14 in 1997-98. Pulses contributed 13.90 per cent and oilseeds 31.00 per cent. Spices contributed 19.22 per cent. Among selected spices coriander contributed highest percentage (18.30). The proportion of total spices was 19.22 per cent in 1991-92 and increased to 24.87 per cent in 1997-98. Over the period from 1991-92 to 1997-98 total pulses increased from 13.90 per cent to 19.36 per cent (Table 4.6).

Thus in all the three districts cropping pattern was food crops dominated with major share of cereals and pulses. In Khargone district, besides food crops, soybean and cotton were grown. Among spices, chilli contributed 14.57 per cent. In Tikamgarh district besides food crops ginger contributed 5.89 per cent. In Guna district besides food crops and oilseeds, spices contributed 19.22 per cent. Among spices coriander contributed 18.30 per cent.

4.3 Area sown and growth rates under three specified spice crops, selected households, selected districts, Madhya Pradesh

4.3.1 Khargone District

In Khargone district the area under chilli in 1991-92 was 36.28 hectares. It increased till 1995-96 and reached 55.13 hectares or 151.96 per cent. Thereafter it declined to 54.39 hectares or 149.92 per cent in 1996-97 and again increased and was highest (152.98 per cent) in 1997-98. Among different size groups the highest area 185.26 per cent was occupied by large size group followed by semi medium size group (147.04 per cent) in 1995-96. Thereafter it reached to the peak point in the year 1997-98 and again the highest area 200.69 per cent was occupied by large size group followed by semi medium size group (131.62 per cent). The growth rate of area of chilli in Khargone district was 7.37 per cent. The highest growth rate (11.01 per cent) was observed in large size group followed by 7.33 per cent on semi medium size group (Table 4.7).

Table 4.5 Cropping pattern of Tikamgarh district, Madhya Pradesh

(Area - hectare)

Crops	Pre period		During VIIIth Plan period										Average of VIIIth Plan		Post period	
	1991-92		1992-93		1993-94		1994-95		1995-96		1996-97				1997-98	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
Paddy	12.50	3.93	13.00	4.06	13.05	4.04	13.00	3.97	13.01	4.02	11.00	3.39	12.61	3.90	10.87	3.34
Jowar	1.81	0.57	1.75	0.55	1.70	0.52	1.75	0.54	1.77	0.55	1.70	0.52	1.73	0.53	0.81	0.25
Maize	5.80	1.83	6.25	1.95	6.54	2.03	6.57	2.01	6.55	2.03	6.50	2.00	6.48	2.00	4.84	1.49
Barley	1.50	0.47	1.60	0.50	0.80	0.25	0.90	0.28	0.88	0.27	0.85	0.26	1.01	0.31	0.81	0.25
Wheat	134.03	42.19	135.75	42.34	137.80	42.67	138.80	42.42	139.60	43.16	139.35	42.91	138.26	42.70	146.03	44.91
Total cereals	155.64	48.99	158.35	49.40	159.89	49.51	161.02	49.22	161.81	50.03	159.40	49.08.	160.09	49.44	163.36	50.24
Gram	5.00	1.57	4.75	1.48	4.50	1.39	4.25	1.30	4.30	1.33	4.35	1.34	4.43	1.37	4.43	1.36
Urad	26.50	8.34	29.12	9.08	29.35	9.09	32.77	10.01	26.69	8.25	27.05	8.33	29.00	8.96	23.31	7.17
Moong	6.07	1.91	5.50	1.72	5.25	1.63	5.00	1.53	5.10	1.58	4.75	1.46	5.12	1.58	3.69	1.14
Arhar	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total pulses	37.57	11.83	39.37	12.28	39.10	12.11	42.02	12.84	36.09	11.16	36.15	11.13	38.55	11.91	31.43	9.67
Groundnut	40.59	12.78	37.02	11.55	38.29	11.86	35.61	10.88	40.46	12.51	44.79	13.79	39.24	12.12	44.75	13.76
Soybean	50.82	16.00	51.28	16.00	51.67	16.00	52.35	16.00	51.25	15.85	51.96	16.00	51.70	15.97	54.75	16.84
Mustard	1.00	0.31	1.00	0.31	1.10	0.34	1.00	0.31	0.90	0.28	0.85	0.26	0.97	0.30	0.81	0.25
Till	1.35	0.42	1.45	0.45	1.50	0.46	1.55	0.47	1.50	0.46	1.55	0.48	1.51	0.46	1.50	0.46
Total oil seed	93.76	29.51	90.75	28.31	92.56	28.66	90.51	27.66	94.11	29.10	99.15	30.53	93.42	28.85	101.81	31.31
Fruit & vegetable	10.00	3.15	10.25	3.20	10.50	3.25	11.10	3.39	11.25	3.47	11.50	3.54	10.92	3.37	11.98	3.68
Cotton	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total cash crop	103.76	32.66	101.00	31.51	103.06	31.91	101.61	31.05	105.36	32.57	110.65	34.07	104.34	32.22	113.79	34.99
Chilli	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Ginger	18.71	5.89	19.84	6.19	18.89	5.85	20.53	6.28	18.18	5.62	16.58	5.11	18.80	5.81	14.60	4.49
Coriander	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Onion	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Garlic	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total spices	18.71	5.89	19.84	6.19	18.89	5.85	20.53	6.28	18.18	5.62	16.58	5.11	18.80	5.81	14.60	4.49
Fodder	2.00	0.63	2.00	0.62	2.00	0.62	2.00	0.61	2.00	0.62	2.00	0.61	2.00	0.62	2.00	0.61
Total cropped area	**317.68**	**100.00**	**320.56**	**100.00**	**322.94**	**100.00**	**327.18**	**100.00**	**323.44**	**100.00**	**324.78**	**100.00**	**323.78**	**100.00**	**325.18**	**100.00**

Table 4.6 Cropping pattern of Guna district, Madhya Pradesh

(Area - hectare)

Crops	Pre period		During VIII Plan period										Average of VIII Plan		Post period	
	1991-92		1992-93		1993-94		1994-95		1995-96		1996-97				1997-98	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
Paddy	0.50	0.13	0.31	0.08	0.11	0.03	0.41	0.11	0.20	0.05	0.20	0.06	0.25	0.07	0.10	0.03
Jowar	18.50	5.01	14.00	3.86	13.00	3.54	11.00	2.98	10.00	2.69	9.00	2.45	11.40	3.10	8.60	2.38
Maize	5.31	1.44	4.30	1.18	4.00	1.08	3.50	0.95	3.00	0.81	3.00	0.82	3.56	0.97	3.40	0.94
Bajra	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Wheat	107.00	28.98	92.00	25.35	90.00	24.50	84.00	22.77	85.00	22.88	82.00	22.36	86.60	23.57	78.80	21.79
Total cereals	131.31	35.56	110.61	30.47	107.11	29.15	98.91	26.81	98.20	26.43	94.20	25.69	101.81	27.71	90.90	25.14
Gram	51.21	13.87	64.21	17.69	60.16	16.37	63.21	17.14	61.36	16.51	64.91	17.70	62.77	17.08	69.81	19.30
Urad	0.10	0.03	0.10	0.03	0.15	0.05	0.15	0.04	0.20	0.06	0.20	0.06	0.16	0.04	0.20	0.06
Moong	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Arhar	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total pulses	51.31	13.90	64.31	17.72	60.31	16.42	63.36	17.18	61.56	16.57	65.11	17.76	62.93	17.12	70.01	19.36
Groundnut	0.30	0.08	0.40	0.11	0.35	0.10	0.40	0.11	0.30	0.08	0.25	0.07	0.34	0.09	0.20	0.06
Soybean	114.15	30.92	112.22	30.92	110.62	30.10	108.17	29.32	111.08	29.90	111.29	30.35	110.68	30.12	109.44	30.26
Mustard	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Till	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total oil seed	114.45	31.00	112.62	31.03	110.97	30.20	108.57	29.43	111.38	29.98	111.54	30.42	111.02	30.21	109.64	30.32
Fruit & vegetable	0.80	0.21	0.75	0.21	0.75	0.21	0.80	0.22	0.75	0.20	0.70	0.19	0.75	0.20	0 .70	0.20
Cotton	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total cash crop	115.25	31.21	113.37	31.24	111.72	30.41	109.37	29.65	112.13	30.18	112.24	30.61	111.77	30.41	110.34	30.52
Chilli	0.30	0.08	0.30	.0.08	0.25	0.07	0.25	0.07	0.20	0.05	0.20	0.06	0.24	0.07	0.20	0.06
Ginger	1.00	0.27	1.00	0.28	0.75	0.20	0.75	0.21	0.50	0.15	0.50	0.14	0.70	0.19	0.50	0.14
Coriander	67.57	18.30	70.97	19.55	84.87	23.10	93.77	25.42	96.67	26.02	92.11	25.12	87.68	23.86	87.31	24.15
Onion	1.30	0.35	1.20	0.33	1.25	0.34	1.30	0.35	1.20	0.32	1.20	0.32	1.23	0.33	1.20	0.33
Garlic	0.80	0.22	0.80	0.22	0.75	0.21	0.75	0.20	0.70	0.18	0.70	0.19	0.74	0.20	0.70	0.19
Total spices	70.97	19.22	74.27	20.46	87.87	23.92	96.82	26.25	99.27	26.72	94.71	25.83	90.59	24.65	89.91	24.87
Fodder	0.40	0.11	0.40	0.11	0.40	0.11	0.40	0.11	0.40	0.10	0.40	0.11	0.40	0.11	0.40	0.11
Total cropped area	**369.24**	**100.00**	**362.96**	**100.00**	**367.41**	**100.00**	**368.86**	**100.00**	**371.56**	**100.00**	**366.66**	**100.00**	**367.50**	**100.00**	**361.56**	**100.00**

Table 4.7 Area sown and growth rate under Chilli crop, Khargone district, Madhya Pradesh

Size of holding	Pre period	VIII Plan period						Post period
	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	Growth rate	1997-98
Marginal	3.60 (100.00)	3.80 (105.55)	4.00 (111.11)	4.30 (119.44)	4.80 (133.33)	4.60 (127.78)	5.58 --	4.36 (121.11)
Small	5.33 (100.00)	6.34 (118.95)	7.13 (133.77)	7.43 (139.40)	7.64 (143.34)	6.78 (127.20)	1.97	6.73 (126.27)
Semi medium	6.42 (100.00)	6.83 (106.39)	8.14 (126.79)	8.34 (129.91)	9.44 (147.04)	9.26 (144.24)	7.33	8.45 (131.62)
Medium	7.97 (100.00)	8.37 (105.02)	8.58 (107.65)	9.34 (117.19)	9.65 (121.08)	9.74 (122.21)	4.17	9.95 (124.84)
Large	12.96 (100.00)	14.18 (109.41)	20.49 (158.10)	21.09 (162.73)	23.60 (182.10)	24.01 (185.26)	11.01	26.01 (200.69)
Total	36.28 (100.00)	39.52 (108.93)	48.34 (133.24)	50.50 (139.20)	55.13 (151.96)	54.39 (149.92)	7.37	55.50 (152.98)

Figures in parentheses indicate the percentage change of area sown under selected spice over base year (1991-92)

4.3.2 Tikamgarh District

In Tikamgarh district the index of area of ginger increased from 100.00 or 18.71 hectares in 1991-92 to 109.73 or 20.53 hectares in 1994-95. Thereafter it declined gradually to be 81.24 per cent or 15.20 hectares in 1997-98. Among different size groups the highest index of area of 151.54 per cent was observed on semi-medium size group followed by medium size group. In the next three years the percentage declined to 101.54 on semi medium size group and 72.02 on medium group in 1997-98 (Table 4.8).

Table 4.8 Area sown and growth rate under Ginger crop, Tikamgarh district, Madhya Pradesh

Size of holding	Pre period	VIII Plan period						Post period
	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	Growth rate	1997-98
Marginal	1.72 (100.00)	1.50 (87.21)	1.46 (84.44)	1.43 (83.14)	1.13 (65.70)	1.09 (63.70)	(-)8.71	1.04 (60.47)
Small	2.60 (100.00)	2.50 (96.15)	2.50 (96.15)	2.55 (98.08)	2.55 (98.08)	2.70 (103.85)	1.76	1.66 (63.47)
Semi medium	2.60 (100.00)	3.40 (130.77)	3.50 (134.62)	3.94 (151.54)	3.19 (122.69)	2.69 (103.46)	(-) 5.18	2.04 (101.54)
Medium	3.61 (100.00)	3.61 (100.00)	4.21 (116.62)	3.66 (101.39)	3.31 (91.69)	3.05 (84.49)	(-) 5.66	2.60 (72.02)
Large	8.18 (100.00)	8.83 (107.95)	7.22 (88.26)	8.95 (109.41)	8.00 (97.80)	7.05 (86.19)	(-) 3.47	7.26 (88.75)
Total	18.71 (100.00)	19.84 (106.04)	18.89 (100.96)	20.53 (109.73)	18.18 (97.17)	16.58 (88.62)	(-) 3.84	15.20 (81.24)

Figures in parentheses indicate the percentage change of area sown under selected spice over base year (1991-92)

The growth rate of area under ginger declined by 3.84 per cent. Among all size groups the growth rate has declined except in small size group in which the growth was 1.76 per cent. The highest growth rate was 8.71 per cent in small size group and minimum 5.66 per cent in medium size group.

4.3.3 Guna District

In Guna district the area under coriander in 1991-92 was 68.37 hectares. It increased till 1995-96 and reached to 96.67 hectares or 141.39 per cent. Thereafter it declined to 87.31 hectares or 127.70 per cent in 1997-98. Among different size groups the highest index of area of 216.52 per cent was observed on medium size group, followed by 154.29 per cent on semi medium size group. Thereafter it reached to the peak point in the year 1997-98 and again the highest area of 222.32 per cent was occupied by medium size group followed by small size group (151.85 per cent).

The growth rate of area under coriander was 5.940 per cent. Among all size groups the growth rate was positive except on marginal size group on which the growth rate was (–) 0.121 per cent. The highest growth rate was 16.480 per cent on medium size group and lowest (0.088 per cent) on small size group (Table 4.9).

Table 4.9 Area sown and growth rate under Coriander Crop, Guna district, Madhya Pradesh

Size of holding	Pre period	VIII Plan period						Post period
	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	Growth rate	1997-98
Marginal	4.06 (100.00)	4.06 (100.00)	4.16 (102.46)	4.26 (104.93)	4.21 (103.69)	4.01 (98.77)	(-) 0.121	4.11 (101.23)
Small	7.31 (100.00)	7.31 (100.00)	8.31 (113.68)	9.81 (134.20)	10.11 (138.30)	10.50 (148.64)	0.088	11.10 (151.85)
Semi medium	7.00 (100.00)	7.10 (101.43)	9.80 (118.71)	10.80 (154.29)	10.50 (150.00)	9.50 (135.71)	5.973	9.50 (135.71)
Medium	11.20 (100.00)	12.20 (108.93)	17.50 (156.25)	20.65 (184.38)	24.25 (216.52)	24.90 (222.32)	16.480	24.90 (222.32)
Large	38.80 (100.00)	41.00 (105.67)	45.50 (117.27)	48.70 (125.52)	47.60 (122.68)	43.20 (111.34)	1.438	37.70 (97.16)
Total	**68.37 (100.00)**	**71.67 (104.83)**	**85.27 (124.72)**	**94.22 (137.81)**	**96.67 (141.39)**	**92.11 (134.72)**	**5.940**	**87.31 (127.70)**

Figures in parentheses indicate the percentage change of area sown under selected spice over base year (1991-92)

Thus the growth rate of chilli in Khargone district was 7.37 per cent during the period 1991-92 to 1996-97. During the same period growth rate of ginger in Tikamgarh district was (-) 3.84 per cent . In Guna district the growth rate of coriander during the same period was 5.94 per cent per cent.

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CHAPTER V

CULTURAL PRACTICES ADOPTED BY SELECTED FARMERS

In earlier chapters it has been observed that the programme of spices development has not made much progress in the state. Data of spices development programme in the state as a whole and in the selected districts has not made much progress. This also proves to be true for the selected farmers. As far as cultural practices are concerned none of the selected farmers used nucleus seed, planting material, or used root cuttings. Rehabilitation of old pepper gardens and establishment of demonstration cum seed multiplication plots were not observed on any of the selected farms. Some data could be noted on use of minikits, use of plant protection equipment and plant protection measures. These have been described in this chapter.

5.1 Use of minikits

It was noted that in the case of chilli minikits (Khargone districts), none of the selected farmers used these during the first three years of plan. In year 1995-96, 8 farmers used these and in 1996-97, 9 farmers used the minikits (Table 5.1).

Table 5.1 Use of minikits (no.) of chilli, selected farms, Khargone district, Madhya Pradesh

Size group	1992-93	1993-94	1994-95	1995-96	1996-97
Marginal	--	--	--	2	3
Small	--	--	--	3	2
Semi- medium	--	--	--	1	2
Medium	--	--	--	2	1
Large	--	--	--	--	1
Total	--	--	--	8	9

In the case of ginger (Tikamgarh district) no farmer used minikits in the years 1992-93, 1995-96 and 1996-97. In 1993-94, 6 farmers used minikits and in 1994-95, 7 farmers used these (Table 5.2).

Table 5.2 Use of minikits (no.) of ginger, selected farms, Tikamgarh district, Madhya Pradesh

Size group	1992-93	1993-94	1994-95	1995-96	1996-97
Marginal	--	2	2	--	--
Small	--	2	3	--	--
Semi- medium	--	2	1	--	--
Medium	--	--	1	--	--
Large	--	--	--	--	--
Total	--	6	7	--	--

In Guna district in the case of coriander 2 farmers used minikits in 1992-93. In 1993-94, 3 farmers used minikits and in 1994-95, 4 farmers used these minikits. While 4 farmers used minikits in 1995-96, 3 farmers used minikits in 1996-96 (Table 5.3).

Table 5.3 **Use of minikits (no.) of coriander selected farms, Guna district, Madhya Pradesh**

Size group	1992-93	1993-94	1994-95	1995-96	1996-97
Marginal	--	1	2	--	1
Small	--	1	2	2	1
Semi- medium	--	1	--	--	--
Medium	--	--	--	1	1
Large	2	--	--	1	--
Total	2	3	4	4	3

It is thus observed that the programme of use of minikits did not make much progress on the selected farms in the selected districts.

5.2 Plant Protection measures

In Khargone district for chilli crop the selected farmers used plant protection measures worth Rs.54,005 in the year 1997-98. In earlier years none of the selected farmers used any plant protection measures. In the case of use of plant protection equipment 27 farmers used sprayers and dusters in 1997-98 only. The value of these equipments was Rs.20,250. In earlier years there was no use of plant protection equipments on the selected farms (Table 5.4).

5.4 Use of plant protection measure and plant protection equipments of chilli selected farms, Khargone district, Madhya Pradesh

Year		Marginal	Small	Semi medium	Medium	Large	Total
1992-3to 1996-97	P.P.M.	--	--	--	--	--	--
	P.P.E. (No)	--	--	--	--	--	--
	(Value)	--	--	--	--	--	--
1997-98	P.P.M.	2,700	9,200	9,650	15,950	16,505	54,005
	P.P.E.(No.)	2	5	8	7	5	27
	(Value)	1,500	3,750	6,000	5,250	3,750	20,250

P.P.E. denote Plant Protection Equipment & P.P.M. – Plant Protection Measures in Rs.

In Tikamgarh district for ginger crop no use of plant protection measure was done during the years 1992-93 to 1996-97. In 1997-98 selected farmers used plant protection measure worth Rs.4,355.00. Similarly only 4 farmers used plant protection equipments worth Rs.3,000 in the year 1997-98. Earlier to this there was no use of plant protection equipments on the selected farms (Table 5.5).

5.5 Use of plant protection measure and plant protection equipments of ginger selected farms, Tikamgarh district, Madhya Pradesh

Year		Marginal	Small	Semi-medium	Medium	Large	Total
1992-93 to 1996-97	P.P.M.	--	--	--	--	--	--
	P.P.E. (No.)	--	--	--	--	--	--
	(Value)	--	--	--	--	--	--
1997-98	P.P.M.	--	600	105	1,200	2,450	4,355
	P.P.E. (No.)	--	1	1	1	1	4
	(Value)	--	750	750	750	750	3,000

P.P.E. denote Plant Protection Equipment & P.P.M. – Plant Protection Measures in Rs.

In Guna district like other selected districts there was no use of plant protection measure prior to 1997-98. In 1997-98 selected farmers used plant protection measures worth Rs.16,487. As regards use of plant protection equipments it was observed that in 1997-98, 29 farmers used plant protection equipments worth Rs.21,750. Earlier to 1997-98 none of the farmers used any plant protection equipments (Table 5.6).

5.6 Use of plant protection measure and plant protection equipments of Coriander selected farms, Guna district, Madhya Pradesh

Year		Marginal	Small	Semi medium	Medium	Large	Total
1992-93 to 1996-97	PPM.	--	--	--	--	--	--
	PPE. (No.)	--	--	--	--	--	--
	(Value)	--	--	--	--	--	--
1997-98	PPM.	542	2,200	2,375	4,125	7,245	16,487
	PPE. (No.)	3	6	6	6	8	29
	(Value)	2,250	4,500	4,500	4,500	6,000	21,750

P.P.E. denote Plant Protection Equipment & P.P.M. – Plant Protection Measure in Rs.

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CHAPTER VI

PRODUCTION AND MARKETING OF SPICES

6.1 Cost of Production

In Khargone district the cost of production of Chilli in 1991-92 was Rs.8,992 per hectare. In 1992-93 it decreased to Rs.8,804.91. In 1993-94 it again increased and was Rs.8,832.02. In the subsequent year it increased from year to year and was Rs.10,036.31 in 1996-97. It again decreased and was Rs.8,111.41. The per quintal cost in 1991-92 was Rs.542.59. 1992-93 it slightly decreased and was Rs. 535.49. In subsequent years it increased from year to year and was Rs.634.00 in 1996-97. In 1997-98 however, it decreased and was Rs.617.53 (Table 6.1).

Table 6.1 Cost of Production of Chilli, selected farms, Khargone district, Madhya Pradesh

Year	Marginal	Small	Semi medium	Medium	Large	Total
1991-92						
Total cost	33,285	49,645	57,330	1,15,130	70,840	3,26,230
Per hect. Cost	9,246	9,314.26	8,929.91	14,514.29	5,466.05	8,992.00
Per Qtl. Cost	470.13	522.03	454.10	665.11	520.88	542.59
1992-93						
Total cost	37,255	57,770	61,280	1,21,885	69,780	3,47,970
Per hect. Cost	9,803.95	9,111.99	8,972.18	14,562.13	4,921.02	8,804.91
Per Qtl. Cost	463.66	514.20	458.17	696.49	471.49	535.49
1993-94						
Total cost	44,550	64,135	81,505	1,32,825	1,03,925	4,26,940
Per hect. Cost	11,137.50	8,995.03	10,012.90	15,480.77	5,071.99	8,832.02
Per Qtl. Cost	538.37	525.70	527.54	719.92	474.54	559.74
1994-95						
Total cost	51,345	64,969	91,220	1,40,440	1,28,650	4,76,624
Per hect. Cost	11,940.70	8,744.15	10,937.65	15,036.40	6,100.05	9,438.10
Per Qtl. Cost	572.09	530.36	577.34	797.95	532.71	605.04
1995-96						
Total cost	54,415	73,760	97,445	1,49,640	1,55,015	5,30,275
Per hect. Cost	11,336.45	9,654.45	10,322.56	15,506.74	6,568.43	9,618.63
Per Qtl. Cost	638.30	538.39	607.13	817.70	541.06	622.21
1996-97						
Total cost	57,370	73,850	97,870	1,55,815	1,60,970	5,45,875
Per hect. Cost	12,471.74	10,892.33	10,569.11	15,997.43	6,704.29	10,036.31
Per Qtl. Cost	682.98	659.38	598.59	734.98	556.03	634.00
1997-98						
Total cost	41,515	63,090	88,230	1,26,787	1,30,561	4,50,183
Per hect. Cost	9,521.79	9,374.44	10,441.42	12,742.41	5,019.65	8,111.41
Per Qtl. Cost	528.85	678.39	571.06	754.68	555.58	617.53

In Tikamgarh district the cost of production per hectare of ginger was Rs.24,609.83 in 1991-92. It increased in the next two years and was Rs.25,042.32 in 1992-93 and Rs.29,010.06 in 1993-94. In 1994-95 it decreased. In 1995-96 it again increased to be followed by decline 1996-97 and 1997-98 (Rs.25,465.13). The per quintal cost of production in 1991-92 was Rs.647.15. It decreased in the subsequent two years and was Rs.547.51 in 1993-94. From 1994-95 onwards it increased from year to year and was Rs.838.45 in 1997-98 (Table 6.2).

Table 6.2 Cost of Production of ginger, selected farms, Tikamgarh district, Madhya Pradesh

Year	Marginal	Small	Semi medium	Medium	Large	Total
1991-92						
Total cost	59,500	72,620	75,980	1,19,485	1,32,865	4,60,450
Per hect. Cost	34,593.02	27,930.77	29,223.08	33,098.34	16,242.67	24,609.83
Per Qtl. Cost	531.25	705.05	620.25	728.57	632.69	647.15
1992-93						
Total cost	65,900	74,305	95,475	1,13,370	1,47,790	4,96,840
Per hect. Cost	43,933.33	29,722.00	28,080.88	31,404.43	16,737.26	25,042.34
Per Qtl. Cost	619.36	643.33	472.65	609.52	564.08	569.84
1993-94						
Total cost	53,090	86,900	1,05,450	1,39,480	1,63,080	5,48,000
Per hect. Cost	36,363.01	34,760.00	30,128.57	33,130.64	22,587.26	29,010.06
Per Qtl. Cost	559.43	678.91	433.95	611.75	531.21	547.51
1994-95						
Total cost	47,550	80,520	1,27,705	1,27,230	1,71,220	5,54,225
Per hect. Cost	33,251.75	31,576.47	32,412.44	34,762.30	19,130.73	26,995.86
Per Qtl. Cost	588.13	631.53	493.07	608.76	552.32	561.89
1995-96						
Total cost	40,200	68,965	1,01.580	1,29,910	1,88,605	5,29,260
Per hect. Cost	35,575.22	27,045.10	31,843.26	39,247.73	23,575.63	29,112.21
Per Qtl. Cost	655.79	547.34	488.37	657.77	683.35	609.19
1996-97						
Total cost	38,500	65,060	74,295	1,10.475	1,43,530	4,31,860
Per hect. Cost	35,321.10	24,096.30	27,618.96	36,221.31	20,358.87	26,047.04
Per Qtl. Cost	660.94	897.38	594.36	821.38	622.02	695.43
1997-98						
Total cost	36,200	58,265	54,065	86,990	1,51,550	3,87,070
Per hect. Cost	34,807.69	35,099.40	20,479.17	33,457.69	20,874.66	25,465.13
Per Qtl. Cost	709.80	1,099.34	924.19	808.08	791.38	838.45

In Guna district the cost of production of coriander per hectare was Rs.2,930.89. From 1992-93 onwards the cost of production per hectare increased from year to year till 1996-97 when it was Rs.4,324.34. In 1997-98 however the cost of production per hectare decreased and was Rs.4,070.44. The cost of production per quintal in 1991-92 was Rs.327.37. It increased to Rs.329.81 in 1992-93. In 1993-94 it decreased and was Rs.306.05. From 1994-95 till 1996-97 the cost per quintal increased from year to year and was Rs.386.43 in 1996-97. However, it declined slightly in 1997-98 when it was Rs.378.20 (Table 6.3).

Table 6.3 Cost of Production, coriander selected farms, Guna district, Madhya Pradesh

Year	Marginal	Small	Semi medium	Medium	Large	Total
1991-92						
Total cost	15,530	34,785	30,225	42,770	77,075	2,00,385
Per hect. Cost	3,825.12	4,758.55	4,317.86	3,818.75	1,986.46	2,930.89
Per Qtl. Cost	458.79	350.48	372.00	404.44	263.95	327.37
1992-93						
Total cost	15,790	37,050	32,760	49,850	87,780	2,23,230
Per hect. Cost	3,889.16	5,068.40	4,614.08	4,086.06	2,140.97	3,114.69
Per Qtl. Cost	467.85	336.51	376.55	380.53	278.67	329.81
1993-94						
Total cost	15,885	42,690	45,840	64,590	1,05,060	2,74.065
Per hect. Cost	3,818.50	5,137.18	4,677.55	3,690.86	2,309.01	3,214.08
Per Qtl. Cost	453.86	344.27	291.05	300.42	288.63	306.05
1994-95						
Total cost	16,740	47,020	53,915	79,240	1,28,620	3,25,535
Per hect. Cost	3,929.58	4,793.07	4,992.13	3837.29	2,641.07	3,455.05
Per Qtl. Cost	446.40	308.33	298.28	308.93	299.46	308.05
1995-96						
Total cost	16,845	52,685	57,035	97,875	1,43,930	3,68,370
Per hect. Cost	4,001.19	5,211.18	5,431.90	4,036.08	3,023.74	3,810.59
Per Qtl. Cost	452.82	348.91	355.91	305.86	328.23	332.80
1996-97						
Total cost	16,225	57,660	53,945	1,15,535	1,54,950	3,98,315
Per hect. Cost	4,046.13	5,491.43	5,678.42	4,639.96	3,586.81	4,324.34
Per Qtl. Cost	527.64	348.40	467.06	386.40	368.93	386.43
1997-98						
Total cost	15,990	60,505	49,295	1,05,970	1,23,630	3,55,390
Per hect. Cost	3,890.51	5,990.69	5,188.95	4,255.82	3,279.31	4,070.44
Per Qtl. Cost	510.86	392.89	456.44	400.79	323.64	378.20

6.2 Production per Hectare

Production of chilli per hectare in Khargone district was 16.30 quintals. It increased to 16.43 quintals in 1992-93. It decreased in 1993-94 and was 15.78 quintals. It further decreased to 15.60 quintals in 1994-95 and to 15.46 quintals in 1995-96. In the year 1996-97 it recorded a small increase and was 15.83 quintals. In the year 1997-98 however it declined suddenly to 13.14 quintals. There was no relationship between production and size of holdings in any of the years of reference period (Table 6.4).

Table 6.4 Production of chilli, selected farms, Khargone district, Madhya Pradesh

(Figures- Quintals)

Size group	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Marginal	70.80 (19.67)	80.35 (22.31)	82.75 (20.96)	89.75 (20.87)	85.25 (17.76)	84.00 (18.26)	78.50 (18.00)
Small	95.10 (17.84)	112.35 (17.72)	(122.00 (17.11)	122.50 (16.49)	137.00 (17.93)	112.00 (16.52)	93.00 (13.82)
Semi- medium	126.25 (19.67)	133.75 (19.58)	154.50 (18.98)	158.00 (18.95)	160.50 (17.00)	163.50 (17.66)	154.50 (18.28)
Medium	173.10 (21.83)	175.00 (20.91)	187.54 (21.50)	176.00 (18.84)	183.00 (18.96)	212.00 (21.77)	168.00 (16.88)
Large	126.00 (9.72)	148.00 (10.44)	219.00 (10.69)	241.50 (11.45)	286.50 (12.19)	289.50 (12.06)	235.00 (9.03)
Total	591.25 (16.30)	649.45 (16.43)	765.75 (15.78)	787.75 (15.60)	852.25 (15.46)	861.00 (15.83)	727.00 (13.14)

Figures in parenthesis are per hectare production

In Tikamgarh district the production per hectare of ginger was 38.03 quintals in 1991-92. It increased to 43.95 quintals in 1992-93 and to 52.99 quintals in 1993-94. There after it declined from year to year so that it was 48.04 quintals in 1994-95, 47.79 quintals in 1995-96, 37.46 quintals in 1996-97 and 30.37 quintals in 1997-98.

There was no relationship between the production of ginger per hectare and size of holdings in any of the year of the reference period. However, it was noted that the production per hectare was lowest on large farms in nearly all the years. The highest production per hectare was recorded on the marginal size group in two years but in other years it was highest on semi-medium farms or other size groups (Table 6.5).

Table 6.5 Production of ginger, selected farms, Tikamgarh district, Madhya Pradesh

(Figures- Quintals)

Size group	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Marginal	112.00 (65.12)	106.40 (70.93)	94.90 (65.00)	80.85 (56.54)	61.30 (54.25)	58.25 (46.60)	51.00 (49.04)
Small	103.00 (39.62)	115.50 (46.20)	128.00 (51.20)	127.50 (50.00)	126.00 (49.41)	72.50 (26.85)	53.00 (31.93)
Semi-medium	122.50 (47.12)	202.00 (59.41)	243.00 (69.43)	259.00 (65.74)	208.00 (65.20)	125.00 (46.47)	58.50 (22.16)
Medium	164.00 (45.43)	186.00 (51.52)	228.00 (54.16)	209.00 (57.10)	197.50 (59.67)	134.50 (44.10)	107.65 (41.40)
Large	210.00 (25.67)	262.00 (29.67)	307.00 (42.52)	310.00 (34.64)	276.00 (34.50)	230.75 (32.73)	191.50 (26.38)
Total	711.50 (38.03)	871.90 (43.95)	1000.90 (52.99)	986.35 (48.04)	868.80 (47.79)	621.00 (37.46)	461.65 (30.37)

Figures in parenthesis are per hectare production

In Guna district the production per hectare of coriander was 8.95 quintals in 1991-92. It increased from year to year so that it was 9.44 quintals in 1992-93, 10.50 quintals in 1993-94, 11.22 quintals in 1994-95 and 11.45 quintals in 1995-96. In the last two years it decreased slightly so that it was 11.19 quintals in 1996-97 and 10.76 quintals in 1997-98.

As regards relationship between production per hectare and size of holdings it was noted that in the first three years of the reference period the production per hectare was lowest on the large size group. However, there was no trend observed between production per hectare and different size groups. In the last four years of the reference period the production per hectare was lowest on the marginal size group. Again there was no relationship between production per hectare and other size groups of holdings (Table 6.6).

Table 6.6 Production of coriander, selected farms, Guna district, Madhya Pradesh

(Figures- Quintals)

Size group	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Marginal	33.85 (8.34)	33.75 (8.31)	35.00 (8.41)	37.50 (8.80)	37.20 (8.84)	30.75 (7.67)	31.30 (7.62)
Small	99.25 (13.58)	110.10 (15.06)	124.00 (14.92)	152.50 (15.55)	151.00 (14.94)	165.50 (15.76)	154.00 (15.25)
Semi-medium	81.25 (11.61)	87.00 (12.25)	157.50 (16.07)	180.75 (16.74)	160.25 (15.26)	115.50 (12.16)	108.00 (11.37)
Medium	105.75 (9.44)	131.00 (10.74)	215.00 (12.29)	256.50 (12.42)	320.00 (13.20)	299.00 (12.01)	264.40 (10.62)
Large	292.00 (7.53)	315.00 (7.68)	364.00 (8.00)	429.50 (8.82)	438.50 (9.21)	420.00 (9.72)	382.00 (10.13)
Total	612.10 (8.95)	676.85 (9.44)	895.50 (10.50)	1,056.75 (11.22)	1,106.95 (11.45)	1,030.75 (11.19)	939.70 (10.76)

Figures in parenthesis are per hectare production

6.3 Disposal of Production

Any agricultural produce is disposed of either as home consumption, exchanged, set aside for future consumption, stored for next years seed, kept for payment of wages and sold either in the local market or in the nearby market. In the case of spices very little is set aside for home consumption and for seed. Being commercial crops the produce of these crops is mainly for sale. Among the different agencies are government and private.

Marketing of Chilli, selected farms, Khargone district

It was observed that nearly three fourths of the total production was sold to government agency. Another about one fourth of the total produce was sold to other agency. A very meagre proportion of produce around one per cent was retained for home consumption. This was true in all the years from 1991-92 to 1997-98. As regards variation between different size groups it was observed that the proportion of produce

sold to govt. agencies increased with the increase in size of holdings. Conversely the proportion of produce sold to others decreased with the increase in the size of holdings. The proportion of the produce sold to government agency on marginal farms was around 67 per cent. The proportion of produce sold to others was about 31 per cent. The remaining proportion of produce around 1.35 per cent was retained for home consumption (Table 6.7).

Table 6.7 Production and agencies involved in marketing of Chilli, selected farms, Khargone district

Year	Marginal	Small	Semi medium	Medium	Large	Total
1991-92						
Total production (Qtl.)	70.80	95.10	126.25	173.10	126.00	591.25
Home Consumption (%)	1.34	1.10	1.46	0.52	1.23	1.06
Govt. Agency (%)	67.09	69.19	71.29	74.64	79.36	73.15
Others (%)	31.57	29.71	27.25	24.84	19.41	25.79
1992-93						
Total production (Qtl.)	80.35	112.35	133.75	175.00	148.00	649.45
Home Consumption (%)	1.37	1.22	1.42	0.51	1.11	1.06
Govt. Agency (%)	66.96	69.07	70.92	74.62	79.06	72.96
Others (%)	31.67	29.71	27.66	24.87	19.83	25.98
1993-94						
Total production (Qtl.)	82.75	122.00	154.50	187.50	219.00	765.75
Home Consumption (%)	1.45	2.06	1.21	0.48	0.96	1.12
Govt. Agency (%)	67.01	68.56	71.20	74.67	79.13	73.44
Others (%)	31.54	29.38	27.59	24.85	19.91	25.44
1994-95						
Total production (Qtl.)	89.75	122.50	158.00	176.00	241.50	787.75
Home Consumption (%)	1.53	2.77	0.87	0.51	0.60	1.08
Govt. Agency (%)	66.85	68.00	71.14	74.60	79.50	73.50
Others (%)	31.62	29.23	27.99	24.89	19.90	25.42
1995-96						
Total production (Qtl.)	85.25	137.00	160.50	183.00	286.50	852.25
Home Consumption (%)	1.20	1.57	0.87	0.55	1.01	0.99
Govt. Agency (%)	67.13	68.91	71.38	74.86	79.23	73.95
Others (%)	31.67	29.52	27.75	24.59	19.76	25.06
1996-97						
Total production (Qtl.)	84.00	112.00	163.50	212.00	289.50	861.00
Home Consumption (%)	1.07	1.40	0.83	0.54	0.40	0.71
Govt. Agency (%)	62.02	69.02	71.40	74.53	79.79	73.72
Others (%)	36.91	29.58	27.77	24.93	19.81	25.57
1997-98						
Total production (Qtl.)	78.50	93.00	154.50	168.00	235.00	729.00
Home Consumption (%)	1.02	1.51	1.20	0.56	0.38	0.81
Govt. Agency (%)	67.13	68.95	71.20	75.00	79.69	74.09
Others (%)	31.85	29.54	27.60	24.44	19.93	25.10

Marketing of Ginger, selected farms Tikamgarh district

In the case of ginger the proportion of produce marketed through government agencies varied from 62.76 per cent to 70.40 per cent during the reference period. The produce marketed through others varied from 26.44 per cent to 31.68 per cent. The remaining proportion of produce was used for home consumption and its proportion varied from 4.33 per cent to 6.30 per cent. It is thus observed that around 65 per cent of the produce was marketed through government agencies, around 30 per cent through

other agencies and remaining 5 per cent used for home consumption. There was no trend in yearly variation from 1991-92 to 1997-98. As in the case of chilli the proportion of sale through government agencies increased with the size of holdings. On the other hand the proportion of produce sold through other agencies generally declined with the size of holdings. There was no relationship between proportion of produce retained for home consumption and the size of holdings (Table 6.8).

Table 6.8 Production and agency involved in marketing of Ginger selected farms, Tikamgarh district.

Year	Marginal	Small	Semi medium	Medium	Large	Total
1991-92						
Total production (Qtl.)	112.00	103.00	122.50	164.00	210.00	711.50
Home Consumption (%)	4.46	9.90	7.47	1.46	2.91	4.62
Govt. Agency (%)	66.07	64.08	66.94	71.95	70.95	68.73
Others (%)	29.46	26.02	25.59	26.59	26.14	26.65
1992-93						
Total production (Qtl.)	106.40	115.50	202.00	186.00	262.00	871.90
Home Consumption (%)	4.70	12.38	5.52	6.13	5.00	6.30
Govt. Agency (%)	56.39	52.81	67.82	68.82	70.61	65.49
Others (%)	38.91	34.81	26.66	25.05	24.39	28.21
1993-94						
Total production (Qtl.)	94.90	128.00	243.00	228.00	307.00	1000.90
Home Consumption (%)	5.27	7.97	6.24	2.15	2.64	4.33
Govt. Agency (%)	54.80	57.03	69.14	74.12	72.96	68.54
Others (%)	39.93	35.00	24.62	23.73	24.40	27.13
1994-95						
Total production (Qtl.)	80.85	127.50	259.00	209.00	310.00	986.35
Home Consumption (%)	6.18	9.57	8.94	3.06	2.61	5.56
Govt. Agency (%)	59.37	54.90	59.85	64.59	68.07	62.76
Others (%)	34.45	35.53	31.21	32.35	29.32	31.68
1995-96						
Total production (Qtl.)	61.30	126.00	208.00	197.50	276.00	868.80
Home Consumption (%)	3.26	16.03	8.73	3.24	1.12	5.74
Govt. Agency (%)	52.20	51.59	60.10	65.82	73.19	63.77
Others (%)	44.54	32.38	31.17	30.94	25.69	30.49
1996-97						
Total production (Qtl.)	58.25	72.50	125.00	134.50	230.75	621.00
Home Consumption (%)	5.15	9.93	6.52	3.98	2.21	4.64
Govt. Agency (%)	60.09	55.17	68.80	69.15	75.41	68.92
Others (%)	34.76	34.90	24.68	26.87	22.38	26.44
1997-98						
Total production (Qtl.)	51.00	53.00	58.50	107.65	191.50	461.65
Home Consumption (%)	3.92	2.26	9.74	3.10	4.23	4.41
Govt. Agency (%)	74.51	66.04	66.67	74.32	69.45	70.40
Others (%)	21.57	31.70	23.59	22.58	26.32	25.19

Marketing of Coriander, selected farms, Guna district

In Coriander the major proportion of produce was sold through government agencies. During the years from 1991-92 to 1997-98 the proportion of produce thus sold varied from 65.90 per cent in 1992-93 to 70.30 per cent in 1994-95. However, no trend

was noticed during this period. The proportion of produce sold through other agencies varied between 27.55 per cent to 30.64 per cent. In this type of sale also no relationship could be observed during the reference years. The proportion of produce retained for home consumption varied between 1.84 per cent and 4.43 per cent. In this case also no trend was noticed during the reference years. The variation in the proportion of produce sold through different agencies and the size of holdings was such that the proportion of produce sold through government agencies was generally higher on the larger size farms and the proportion sold to other agencies was generally lower on the larger size farms. But no definite trend could be noticed. It was also observed that the proportion of produce retained for home consumption was highest on the marginal size of farms. But the proportion did not show any trend with the size of holdings (Table 6.9).

Table 6.9 Production and agency involved in marketing of Coriander selected farms, Guna district.

Year	Marginal	Small	Semi medium	Medium	Large	Total
1991-92						
Total production (Qtl.)	33.85	99.25	81.25	105.75	292.00	612.10
Home Consumption (%)	13.89	2.37	1.75	4.92	1.30	2.85
Govt. Agency (%)	55.98	66.40	67.79	64.63	68.10	66.51
Others (%)	30.13	31.23	30.46	30.45	30.60	30.64
1992-93						
Total production (Qtl.)	33.75	110.10	87.00	131.00	315.00	676.85
Home Consumption (%)	14.22	2.27	1.63	5.08	4.64	4.43
Govt. Agency (%)	60.74	67.44	66.90	65.50	65.80	65.90
Others (%)	25.04	30.29	31.47	29.42	29.56	29.67
1993-94						
Total production (Qtl.)	35.00	124.00	157.50	215.00	364.00	895.50
Home Consumption (%)	9.71	2.14	1.40	3.00	1.33	2.18
Govt. Agency (%)	63.14	70.40	70.06	66.93	68.08	68.28
Others (%)	27.15	27.46	28.54	30.07	30.59	29.54
1994-95						
Total production (Qtl.)	37.50	152.50	180.75	256.50	429.50	1,056.75
Home Consumption (%)	5.60	1.31	1.49	2.42	1.50	1.84
Govt. Agency (%)	66.13	70.07	69.93	70.25	70.92	70.30
Others (%)	28.27	28.62	28.58	27.33	27.58	27.86
1995-96						
Total production (Qtl.)	37.20	151.00	160.25	320.00	438.50	1,106.95
Home Consumption (%)	4.44	2.09	1.53	2.31	1.71	2.00
Govt. Agency (%)	65.94	67.55	68.93	68.25	68.80	68.39
Others (%)	29.62	30.36	29.54	29.44	29.49	29.61
1996-97						
Total production (Qtl.)	30.75	165.50	115.50	299.00	420.00	1,030.75
Home Consumption (%)	5.37	1.90	1.69	1.76	2.19	2.06
Govt. Agency (%)	66.18	68.67	67.84	69.75	68.47	68.73
Others (%)	28.45	29.43	30.47	28.49	29.34	29.21
1997-98						
Total production (Qtl.)	31.30	154.00	108.00	264.40	382.00	939.70
Home Consumption (%)	5.43	2.18	1.53	3.76	2.41	2.75
Govt. Agency (%)	68.05	70.42	70.90	68.15	70.26	69.70
Others (%)	26.52	27.40	27.57	28.09	27.33	27.55

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CHAPTER VII

PROBLEMS AND SUGGESTIONS OF THE FARMERS

From the preceding chapters it will be clear that the integrated programme for development of spices has not made any significant progress either in the state, selected districts or on selected farmers.

7.1 Khargone district

The selected farmers had no knowledge about nucleus seed, pepper root cuttings and renovation of old gardens. As regards minikits they complained that the minikits were supplied in very small number and not all the needy farmers got it. They suggested that the number of minikits should be increased. They observed that identification of diseases was not done nor any kind of training was given to them. They suggested that larger number of farmers should be trained in the recommended cultural practices of spices. Regarding demonstration plots the farmers had grievance that demonstrations were laid on the farms of big farmers only. They suggested that the number of demonstrations be increased and they should be laid on larger area. About fertilizers and insecticides the farmers complained that both these inputs were not available in time. They suggested that these should be supplied by the department. The spice crops were very sensitive to abnormal climatic conditions. To safeguard the farmers against the vagaries of climate effective crop insurance scheme should be implemented.

7.2 Tikamgarh district

The farmers of this district also did not know any thing about nucleus seed, root cuttings of pepper and renovation of old gardens. About minikit distribution they complained that these were distributed only to selected few farmers. Moreover minikits of latest varieties were not available. They, therefore, suggested that minikits should be made available in larger number of latest varieties and small and marginal farmers should get the benefit of minikits. The ginger crop suffers from yellowing of leaves, rotting of stems and tubers. However, the farmers had not been trained in identifying the diseases and plant protection measures. They suggested that adequate training in identification of diseases and plant protection measures should be given to them. Demonstrations were laid on a limited number of farmers' plots. The farmers suggested that the demonstrations should be conducted on larger number of plots and the spread of the plots should be large. About marketing of ginger the farmers suggested that the government should intervene in the purchase so that they got reasonably good prices. In the absence of adequate number of technical staff of the department technical advice was not available. It is suggested that the number of technical staff members with the department should be increased and training facility to the farmers be made available. About the problems of irrigation the farmers complained that electricity was not available when required and the supply was not regular. The farmers suggested that adequate, timely and

continuous supply of electricity should be made available. The farmers complained about the low quality of fertilizers and insecticides. These are also not made available in time. The farmers suggested that proper quality control of both these inputs should be ensured and these should be available in the cooperative society. Farmers had problems as regards plant protection equipments and soil testing facility. In the former case the farmers suggested that the department should give the training and about the later they demanded that the soil testing facility should be available at the block level.

7.3 Guna district

When contacted during the survey the selected farmers did not know anything about many aspects of the programme. For example, they were unaware about the nucleus seed, renovation of old gardens and demonstration plots etc. About minikits the comments of the selected farmers were that the minikits were available in very small number and these were not available for new varieties. They commented that they were not made available to real small farmers but were available to the big and influencial farmers who could produce a patta of only a part of their land holdings to get the minikits. The farmers suggested that the minikits should be made available to the larger number so that these were equally distributed to the farmers. As regards irrigation the farmers complained that there was not enough water in the tank. They suggested that deepening of the tank should be done and stop dams should be constructed across the nalas. As regards fertilizers and insecticides farmers commented that both the inputs were not available when these were needed. They suggested that these inputs be stored in the stores of cooperative society. The farmers put forth the problem of technical know how of cultivation of spices. They observed that no technical knowledge is given by the government staff. They suggested that the staff in the district should be strengthened so that they got the knowledge of recommended practices. The farmers took the produce to the mandi for sale. But they complained that the traders exploited them so that they did not get remunerative prices. They suggested that there should be government intervention in the marketing of spices.

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CHAPTER – VIII

SUMMARY AND CONCLUSIONS

8.1 India is the foremost country with regard to production and consumption as well as export of a wide range of spices. The present production of spices is about 21 lakh tonnes per annum, valued at Rs.5,200 crores. Of this 5 per cent is exported. During VIII plan the scheme namely "Integrated programme for development of spices" was launched in the country. The total outlay for the scheme during VIII plan was Rs.125 crores. However the results of this were not satisfactory. Therefore Ministry of Agriculture, Govt. of India asked the AER Centres to evaluate the scheme during 1998-99. Chilli was most important spice and occupied 40 per cent of the area under 11 major spices. The production of chilli ranged between 32 to 38 per cent. In terms of production turmeric ranked second. It was noted that area under major spices increased from 19.7 lakh hectares in 1991-92 to 23.20 lakh hectares in 1996-97. The production increased from 18.7 lakh tonnes in 1991-92 to 26.78 lakh tonnes in 1996-97. Among different states Andhra Pradesh dominates in the production of chilli and turmeric whereas pepper was wholly concentrated in Kerala. Kerala also had highest share of production in ginger and cardamom. The export of spices increased from 1.02 lakh tonnes in 1989-90 to 2.28 lakh tonnes in 1997-98. It was noted that pepper, ginger and turmeric were major exported spices.

The objectives of the study were –

1. To evaluate the status of spices cultivation prior to and during the implementation of 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 aspects.

5. To furnish rational guidelines for betterment of the scheme.

For Madhya Pradesh three spices viz. coriander, chilli and ginger were selected. From each selected district, two blocks having maximum area under the spice crop were selected. At the next stage 2 clusters comprising 2 to 4 best villages from the point of view of spice crop were chosen from each block on the advice of block officials. Lists of spice crop growers were prepared in each cluster and the growers were grouped into 5 groups viz. marginal, small, semi- medium, medium and large according to land holding size. Fifty spice growers were selected from each selected district. Thus, the total sample comprised 150 spice growers from three selected districts. .

On the advice of Directorate of Horticulture, M.P. Bhopal, Khargone for chilli, Guna for coriander and Tikamgarh for ginger were selected respectively. The reference year for the study was agricultural year 1998-99.

8.2 In the eighth five year plan an outlay of Rs.125 crores was made for spices development programme. The annual growth rate of spices production in the seventh plan was four per cent. The production target was fixed at 29.35 lakh tonnes in 1996-97. The important points of strategies for development of spices were following :

a) Identify spices/varieties available in the country, which have high production and export potential.

b) Production of quality planting material on large scale.

c) Import of seed material.

d) To motivate farmers to adopt latest technology and recommended practices.

e) Impart training to different levels of officers and farmers.

In Madhya Pradesh the area under spices in 1992-93 was 2,04,000 hectares. It increased to 2,62,077 hectares in 1996-97 or an increase of 28.47 per cent. The production of spices in 1992-93 was 1,497 lakh tonnes and it increased to 3,256 lakh tonnes in 1996-97 or an increase of 117.50 per cent during the eighth five year plan. The most important spice crop was coriander in respect of area coverage. From the point of view of production garlic was most important contributing 49.43 per cent.

The funds made available for the scheme in 1992-93 were Rs.13.33 lakhs. The funds utilised during the year were Rs.12.99 lakhs. In the second year of the plan the percentage of funds utilised to fund sanctioned was 66.48. It was 49.36 per cent in 1994-95. The percentage utilised for 1995-96 was 84.40 but again decreased to 74.53 per cent in the last year of the plan.

The cropping pattern of the state was food crops dominated. As these occupied between 71.11 and 74.93 per cent during 1991-92 to 1997-98. Spices formed only between 0.85 to 1.27 per cent of the cropped area in different years. Thus the spices sector had not made much progress in these years.

The area under chilli increased from 22.80 per cent in 1991-92 to 25.05 per cent in 1992-93. Thereafter it declined till the end of the reference period. In the case of ginger the percentage in 1991-92 was 1.35. It declined to 1.21 per cent in the last year of the reference period with fluctuations. In the case of coriander the percentage was 47.06 in 1991-92. It increased to 59.36 per cent in the last year. Thus it can be concluded that while the percentage contribution of chilli and ginger generally declined that of coriander increased. It was noted that the production of rooted cuttings of pepper was only

52.40 per cent of the target. In the case of production of nucleus seed of ginger the achievement was 2.67 per cent more than target. In the case of establishment of demonstrations-cum-seed multiplication plots of ginger, turmeric and chilli the achievement fell short of target,

Of the three selected districts only Tikamgarh district received seed from out side the district. In Tikamgarh district no seed was received in 1992-93. In the remaining years chilli, ginger and coriander seeds were received. As regards minikits during eighth plan a total number of 3,000 minikits of ginger were planned against this 4,710 minikits were distributed. In the case of Chiili the target of 5,000 minikits was fully achieved. In the case of coriander the achievement was 54.83 per cent. Thus although the minikits distribution programme for ginger and chilli were impressive that for coriander was not satisfactory. The distribution of planting material of cinnamon fell short of target.

The achievements in demonstration-cum- seed multiplication plots fell short of target in all the three crops of ginger, turmeric and chilli. The percentage of the achievement to target in plant protection demonstrations was about 80 in both the cases of chilli and ginger.

Under the demonstration of high production technology the percentage of achievement to target in case of pepper was 72.97. In the case of chilli the achievement was 48.57 per cent. In tree spices the achievement was 71.43 per cent and for coriander the percentage was 83.33. The percentage of achievement in the case of pepper demonstration was 72.97. In the case of chilli the achievement was 48.57 and for tree spices the achievement was 71.47 per cent.

Under the area expansion programme of ginger the percentage of achievement was 86.36. In the case of chilli the percentage achievement was 57.14. Against the planned target of establishing four nurseries only two were established.

In the pre eighth plan year (1991-92) the spices production was 1.75,500 tonnes. In the first year of the plan the production reduced to 1,49,700 tonnes. In the subsequent four years the production increased from year to year and was 2,80,222 tonnes in 1996-97. In the post plan year (1997-98) the production was 2,69,155 tonnes. It can be concluded that the production of spices generally increased from year to year during the five years of the eighth plan. In the post plan year, however, the production decreased. In khargone district the production of chilli varied from 3,871 tonnes in 1991-92 to 8,036 tonnes in 1997-98. The trend showed that it increased from year to year. In Tikamgarh district the production of ginger varied from 1,117 tonnes in 1991-92 to 1,897 tonnes in 1997-98. The trend showed that it generally increased from year to year. In Guna district the production of coriander varied from 10,838 tonnes in 1991-92 to 23,518 tonnes in 1997-98.

It was noted that in Khargone district no seed was either multiplied locally or procured from outside the district. No seed was distributed in the first three years of the plan. In 1995-96 one quintal of coriander seed was distributed. In 1996-97, 19 kg of chilli seed and 9.70 quintals of ginger seed, and 41 kg of coriander seed was distributed.

In Tikamgarh district no seed was multiplied locally. In 1992-93 15 kg. of onion seed and 5 kg of methi seed was procured from outside the district. In 1993-94 chilli and ginger seed was procured. In 1994-95 only chilli seed was procured. In 1995-96 chilli and ginger seed was procured. In 1996-97 ginger and coriander seed was procured. The entire quantity of seed procured was distributed.

There was no procurement and distribution of seed in Guna district.

Thus the procurement and distribution of spices seed in the selected districts was not impressive looking to the total area under spices in the districts.

As regards distribution of minikits and other development programmes it was noted that in Khargone district no progress was made on any of these programmes in the first three years. In 1995-96, 100 minikits of coriander and 80 sprayers were distributed and area expansion programme in 10 hectares was undertaken. In 1996-97, 40 minikits of ginger and an equal number of minikits of chilli were distributed. Demonstrations cum seed multiplication were laid in 25 plots of chilli, 25 plots of coriander and 13 plots of ginger.

In Tikamgarh district in 1992-93, 15 kg of minikits of onion and 5 kg minikits of methi were distributed. In 1993-94, 5 kg of chilli minikits were distributed but in 1994-95 no work was done on any programme. In 1995-96, 4 quintals of ginger minikits were distributed. Under area expansion programme 32 hectares under ginger and 10 hectares under coriander were taken up. In 1996-97, 20 sprayers were distributed. In Guna district no work was done in 1992-93. In 1993-94, 400 quintals of minikits of chilli and 600 quintals of minikits of coriander were distributed. Under area expansion programme 529 ha. were covered. In 1994-95 only area expansion programme was taken up on 361 hectares. In 1995-96 250 quintals of chilli minikits were distributed and area expansion programme was taken up on 574 hectares. In 1996-97, 50 quintals of coriander minikits were distributed and area expansion programme was taken-up on 289 hectares.

It is evident that not significant and impressive work was done in any of the selected districts under spices development programme in the VIII plan.

This was so because of many administrative and field problems. These have been enumerated in the following paragraphs.

Problems and suggestions of District Officers

From the foregoing paragraphs it is evident that the programme of spices production has not been satisfactory in any of the districts. The officials of the horticulture department were approached to know the problems faced by them and their suggestions, if any. The relevant problems and suggestions given are described in the following paragraphs individually for the selected districts.

Khargone District

As regards seed production programme it was commented that the programme has been a failure. The main reason for this was that the varieties for which the programme was taken were different from the locally popular varieties of the district. Because of this the farmers were not ready to take up the programme. As regards the minikits distribution the difficulty faced was small size of minikits and the low proportion of subsidy. It was suggested that the subsidies on the minikits should be increased and small minikits should be distributed free of charge. About the demonstrations it was commented that since the share of farmers in cost of demonstrations was high, it was difficult to get the repayment of the cost to the farmers. It was suggested that the number of demonstrations should be reduced significantly and should be conducted on hundred per cent subsidy basis. About the participation of the farmers in the programme it was mentioned that it became difficult to get the repayment to the farmers and at times the departmental officials had to pay the amount due to the farmers. The farmers were not supplied in time seed and fertilizers. Among the complaints of the farmers the most important was wilt and drying diseases of chilli. The farmers requested that suitable research should be conducted on these diseases and necessary recommendations should be given.

There is a zonal agricultural research station of J.N.K.V.V. at Khargone. However, no research scheme on spices is in operation. No budget is allotted to the station either from central and state government or ICAR funds. Moreover no person who has specialised in horticulture is posted at research station.

Tikamgarh District

Following difficulties were experienced by field workers of horticulture department,

(a) Seed production of garlic could not be undertaken as the seed received from Entkhedi farm of J.N.K.V.V. was disease infested.

(b) Finance for the centrally sponsored schemes were not received in time, especially before sowing of the respective crops.

(c) In the case of minikits and demonstrations the inputs were not made available in time.

(d) The inputs for spices which are distributed at 25 to 50 per cent subsidy created problems, as it was very difficult for the district officials to get the balance amount repaid from the farmers. It was suggested that inputs should be provided at 100 per cent subsidy especially to marginal and small farmers.

(e) The ginger crop was very susceptible to root-rot and at times the entire crop was destroyed, whereas, the cost of production was very high. There was an acute shortage of proper marketing facility for ginger. In the absence of such facility the farmers can not be encouraged to grow the crop.

(f) There was a very skeletal staff of the horticulture department in the district. The block level staff was required to look after the nursery as well as extension work. Due to shortage of staff both research and extension activities suffered adversely.

Guna district

The horticulture development programme in the district suffered badly due shortage of foundation and certified seed of spices and shortage of minikits of high yielding varieties. There was inadequate marketing facility in the district and no minimum support price was declared for spices. In the absence of remunerative prices the farmers were not attracted towards spices cultivation. There is no facility for processing of coriander nor facility for oil-extraction. It is suggested that these should be established in the cooperative sector. There are shortages as well as qualitative insufficiency of most of the inputs. There is a need to increase the staff of the department, which should also be given training in production and extension techniques of spices crops.

8.3 A total number of 150 farmers formed the sample' for the study. The average size of holding was 4.80 hectares. Ninety four per cent of the households had the agriculture as the main occupation, two per cent had agricultural labour as main occupation and one per cent households had dairy as main occupation and remaining households had service as main occupation. The total population of the selected households was 1,093. Of these 36 per cent were males. 30 per cent females and 34 per cent childrens. Income drived from agriculture in khargon district formed 84.00 per cent In Tikamgarh district also 84.00 per cent income from agriculture. In Guna district as high as 92.00 per cent of income was from agriculture. The livestock population included milch cows, buffaloes and bullocks. It was observed that the number of livestock was higher on larger farms than the small size group.

8.4 In Khargone district the percentage of irrigated area to cultivated area was 75.68. In Tikamgarh district the percentage was 89.57 and in Guna district the percentage was 37.70. On the farms of all the three selected districts the cropping pattern was cereal dominated. Moreover food crops in general dominated the cropping pattern. Among food crops cereals were most important, pulses and oilseeds came next. In Khargone district the growth rate of area of chilli was 7.37 per cent. In Tikamgarh district the growth rate of area of ginger was negative and was 3.84 per cent. In Guna district the growth rate of area under coriander was 5.94 per cent.

8.5 As regards the cultural practices of spices none of the selected farmers used nucleus seed, planting material or root cuttings. On none of the selected farmers demonstration cum seed multiplication plots were observed. In Khargone district only eight farmers used minikits in 1995-96, and in 1996-97, nine farmers used minikits. In Tikamgarh district no farmer used minikits in three out of five years. In 1993-94, six farmer used minikits and in 1994-95, seven farmers used these. In Guna district two farmers used coriander minikits in 1992-93. In 1993-94, three farmers used minikits and in 1994-95, four farmers used these. In Khargone district for chilli crop selected farmers used plant protection measures worth Rs.54,005 in 1997-98. Earlier no farmer used plant protection measure. In Tikamgarh district no plant protection measure was used in the eighth plan period. In 1997-98 plant protection measure worth Rs.4,355 were used. In Guna district there was no use of plant protection measures prior to 1997-98. In 1997-98 selected farmers used plant protection measure worth Rs.16,487.

8.6 In Khargone district the cost of production of chilli in 1991-92 was Rs.8,992 per hectare. It generally increase in the subsequent years and was Rs.10,036 in 1996-97. The per quintal cost in 1991-92 was Rs542 and it was Rs.617 in 1997-98. In Tikamgarh district the cost of production per ha. of ginger was Rs.24,609 in 1991-92 and was Rs,25,465 in 1997-98. The per quintal cost of production in 1991-92 was Rs.647. It was Rs,838 in 1997-98. In Guna district the cost of production of of coriander per hectare was Rs.2,930 in 1991-92 and was Rs,4,070 in 1997-98. The cost of production per qtl. in 1991-92 was Rs.327 and was Rs.378 in 1997-98.

Production of chilli per hectare in Khargone district was 16.30 quintals in 1991-92 and 13.14 quintals in1997-98. In Tikamgarh district the production per hectare of ginger was 38 quintals in 1991-92 and was 30 quintals in 1997-98. In Guna district the production per hectare of coriander was 8 quintals in 1991-92 and 10 quintals in 1997-98.

As regards marketing it was noted that nearly three fourth production of chilli in Khargone district was sold to government agency and the remaining one fourth to other agencies. In the case of ginger in Tikamgarh district the proportion of produce marketed through government agency varied from 62 to 70 per cent and the remaining was sold through other agencies. In the case of coriander in Guna district the proportion of produce sold through government agency varied from 65 to 70 per cent.

8.7 Problems and suggestions of selected farmers are given below

Khargone district

The selected farmers had no knowledge about nucleus seed, pepper root cuttings and renovation of old gardens. As regards minikits they complained that the minikits were supplied in very small number and not all the needy farmers got it. They suggested that the number of minikits should be increased. They observed that identification of diseases was not done nor any kind of training was given to them. They suggested that larger number of farmers should be trained in the recommended cultural practices of spices. Regarding demonstration plots the farmers had grievance that demonstrations

were laid on the farms of big farmers only. They suggested that the number of demonstrations be increased and they should be laid on larger area. About fertilizers and insecticides the farmers complained that both these inputs were not available in time. They suggested that these should be supplied by the department. The spice crops were very sensitive to abnormal climatic conditions. To safeguard the farmers against the vagaries of climate effective crop insurance scheme should be implemented.

Tikamgarh district

The farmers of this district also did not know any thing about nucleus seed, root cuttings of pepper and renovation of old gardens. About minikit distribution they complained that these were distributed only to selected few farmers. Moreover minikits of latest varieties were not available. They, therefore, suggested that minikits should be made available in larger number of latest varieties and small and marginal farmers should get the benefit of minikits. The ginger crop suffers from yellowing of leaves, rotting of stems and tubers. However, the farmers had not been trained in identifying the diseases and plant protection measures. They suggested that adequate training in identification of diseases and plant protection measures should be given to them. Demonstrations were laid on a limited number of farmers' plots. The farmers suggested that the demonstrations should be conducted on larger number of plots and the spread of the plots should be large. About marketing of ginger the farmers suggested that the government should intervene in the purchase so that they got reasonably good prices. In the absence of adequate number of technical staff of the department technical advice was not available. It is suggested that the number of technical staff members with the department should be increased and training facility to the farmers be made available. About the problems of irrigation the farmers complained that electricity was not available when required and the supply was not regular. The farmers suggested that adequate, timely and continuous supply of electricity should be made available. The farmers complained about the low quality of fertilizers and insecticides. These are also not made available in time. The farmers suggested that proper quality control of both these inputs should be ensured and these should be available in the cooperative society. Farmers had problems as regards plant protection equipments and soil testing facility. In the former case the farmers suggested that the department should give the training and about the later they demanded that the soil testing facility should be available at the block level.

Guna district

When contacted during the survey the selected farmers did not know anything about many aspects of the programme. For example, they were unaware about the nucleus seed, renovation of old gardens and demonstration plots etc. About minikits the comments of the selected farmers were that the minikits were available in very small number and these were not available for new varieties. They commented that they were not made available to real small farmers but were available to the big and influencial farmers who could produce a patta of only a part of their land holdings to get the minikits. The farmers suggested that the minikits should be made available to the larger

number so that these were equally distributed to the farmers. As regards irrigation the farmers complained that there was not enough water in the tank. They suggested that deepening of the tank should be done and stop dams should be constructed across the nalas. As regards fertilizers and insecticides farmers commented that both the inputs were not available when these were needed. They suggested that these inputs be stored in the stores of cooperative society. The farmers put forth the problem of technical know how of cultivation of spices. They observed that no technical knowledge is given by the government staff. They suggested that the staff in the district should be strengthened so that they got the knowledge of recommended practices. The farmers took the produce to the mandi for sale. But they complained that the traders exploited them so that they did not get remunerative prices. They suggested that there should be government intervention in the marketing of spices.

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EXECUTIVE SUMMARY

Introduction

India is the foremost country with regard to production and consumption as well as export of a wide range of spices. The present production of spices is about 21 lakh tonnes per annum, valued at Rs.5,200 crores. Of this 5 per cent is exported. During VIII plan the scheme namely "Integrated programme for development of spices" was launched in the country. The total outlay for the scheme during VIII plan was Rs.125 crores. However the results of this were not satisfactory. Therefore Ministry of Agriculture, Govt. of India asked the AER Centres to evaluate the scheme during 1998-99.

Chilli was most important spice and occupied 40 per cent of the area under 11 major spices. The production of chilli ranged between 32 to 38 per cent. In terms of production turmeric ranked second. It was noted that area under major spices increased from 19.7 lakh hectares in 1991-92 to 23.20 lakh hectares in 1996-97. The production increased from 18.7 lakh tonnes in 1991-92 to 26.78 lakh tonnes in 1996-97. Among different states Andhra Pradesh dominated in the production of chilli and turmeric whereas pepper was wholly concentrated in Kerala. Kerala also had highest share of production in ginger and cardamom. The export of spices increased from 1.02 lakh tonnes in 1989-90 to 2.28 lakh tonnes in 1997-98. It was noted that pepper, ginger and turmeric were major exported spices.

Objectives of the study –

1. To evaluate the status of spices cultivation prior to and during the implementation of 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 aspects.

5. To furnish rational guidelines for betterment of the scheme.

Methodology

For Madhya Pradesh three spices viz. coriander, chilli and ginger were selected. From each selected district, two blocks having maximum area under the spice crop were selected. At the next stage 2 clusters comprising 2 to 4 best villages from the point of view of spice crop were chosen from each block on the advice of block officials. Lists of spice crop growers were prepared in each cluster and the growers were grouped into 5 groups viz. marginal, small, semi- medium, medium and large according to land holding size. Fifty spice growers were selected from each selected district. Thus, the total sample comprised 150 spice growers from three selected districts. .

On the advice of Directorate of Horticulture, M.P. Bhopal, Khargone for chilli, Guna for coriander and Tikamgarh for ginger were selected respectively. The reference year for the study was agricultural year 1998-99.

Spices Development Programme during the VIII five year Plan

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The area under chilli increased from 22.80 per cent in 1991-92 to 25.05 per cent in 1992-93. Thereafter it declined till the end of the reference period. In the case of ginger the percentage in 1991-92 was 1.35. It declined to 1.21 per cent in the last year of the reference period with fluctuations. In the case of coriander the percentage was 47.06 in 1991-92. It increased to 59.36 per cent in the last year. Thus it can be concluded that

while the percentage contribution of chilli and ginger generally declined that of coriander increased. It was noted that the production of rooted cuttings of pepper was only 52.40 per cent of the target. In the case of production of nucleus seed of ginger the achievement was 2.67 per cent more than target. In the case of establishment of demonstrations-cum-seed multiplication plots of ginger, turmeric and chilli the achievement fell short of target,

Of the three selected districts only Tikamgarh district received seed from out side the district. In Tikamgarh district no seed was received in 1992-93. In the remaining years chilli, ginger and coriander seeds were received. As regards minikits during eighth plan a total number of 3,000 minikits of ginger were planned against this 4,710 minikits were distributed. In the case of Chiili the target of 5,000 minikits was fully achieved. In the case of coriander the achievement was 54.83 per cent. Thus although the minikits distribution programme for ginger and chilli were impressive that for coriander was not satisfactory. The distribution of planting material of cinnamon fell short of target.

The achievements in demonstration-cum- seed multiplication plots fell short of target in all the three crops of ginger, turmeric and chilli. The percentage of the achievement to target in plant protection demonstrations was about 80 in both the cases of chilli and ginger.

Under the demonstration of high production technology the percentage of achievement to target in case of pepper was 72.97. In the case of chilli the achievement was 48.57 per cent. In tree spices the achievement was 71.43 per cent and for coriander the percentage was 83.33. The percentage of achievement in the case of pepper demonstration was 72.97. In the case of chilli the achievement was 48.57 and for tree spices the achievement was 71.47 per cent.

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As regards distribution of minikits and other development programmes it was noted that in Khargone district no progress was made on any of these programmes in the first three years. In 1995-96, 100 minikits of coriander and 80 sprayers were distributed and area expansion programme in 10 hectares was undertaken. In 1996-97, 40 minikits of ginger and an equal number of minikits of chilli were distributed. Demonstrations cum seed multiplication were laid in 25 plots of chilli, 25 plots of coriander and 13 plots of ginger.

In Tikamgarh district in 1992-93, 15 kg of minikits of onion and 5 kg minikits of methi were distributed. In 1993-94, 5 kg of chilli minikits were distributed but in 1994-95 no work was done on any programme. In 1995-96, 4 quintals of ginger minikits were distributed. Under area expansion programme 32 hectares under ginger and 10 hectares under coriander were taken up. In 1996-97, 20 sprayers were distributed. In Guna district no work was done in 1992-93. In 1993-94, 400 quintals of minikits of chilli and 600 quintals of minikits of coriander were distributed. Under area expansion programme 529 ha. were covered. In 1994-95 only area expansion programme was taken up on 361 hectares. In 1995-96 250 quintals of chilli minikits were distributed and area expansion programme was taken up on 574 hectares. In 1996-97, 50 quintals of coriander minikits were distributed and area expansion programme was taken-up on 289 hectares.

It is evident that not significant and impressive work was done in any of the selected districts under spices development programme in the VIII plan.

This was so because of many administrative and field problems. These have been enumerated in the following paragraphs.

Problems and suggestions of District Officers

From the foregoing paragraphs it is evident that the programme of spices production has not been satisfactory in any of the districts. The officials of the horticulture department were approached to know the problems faced by them and their suggestions, if any. The relevant problems and suggestions given are described in the following paragraphs individually for the selected districts.

Khargone District

As regards seed production programme it was commented that the programme has been a failure. The main reason for this was that the varieties for which the programme was taken were different from the locally popular varieties of the district. Because of this the farmers were not ready to take up the programme. As regards the minikits distribution the difficulty faced was small size of minikits and the low proportion of subsidy. It was suggested that the subsidies on the minikits should be increased and small minikits should be distributed free of charge. About the demonstrations it was commented that since the share of farmers in cost of demonstrations was high, it was difficult to get the repayment of the cost to the farmers. It was suggested that the number of demonstrations should be reduced significantly and should be conducted on hundred per cent subsidy basis. About the participation of the farmers in the programme it was mentioned that it became difficult to get the repayment to the farmers and at times the departmental officials had to pay the amount due to the farmers. The farmers were not supplied in time seed and fertilizers. Among the complaints of the farmers the most important was wilt and drying diseases of chilli. The farmers requested that suitable research should be conducted on these diseases and necessary recommendations should be given.

There is a zonal agricultural research station of J.N.K.V.V. at Khargone. However, no research scheme on spices is in operation. No budget is allotted to the station either from central and state government or ICAR funds. Moreover no person who has specialised in horticulture is posted at research station.

Tikamgarh District

Following difficulties were experienced by field workers of horticulture department,

(a) Seed production of garlic could not be undertaken as the seed received from Entkhedi farm of J.N.K.V.V. was disease infested.

(b) Finance for the centrally sponsored schemes were not received in time, especially before sowing of the respective crops.

(c) In the case of minikits and demonstrations the inputs were not made available in time.

(d) The inputs for spices which are distributed at 25 to 50 per cent subsidy created problems, as it was very difficult for the district officials to get the balance amount repaid from the farmers. It was suggested that inputs should be provided at 100 per cent subsidy especially to marginal and small farmers.

(e) The ginger crop was very susceptible to root-rot and at times the entire crop was destroyed, whereas, the cost of production was very high. There was an acute shortage of proper marketing facility for ginger. In the absence of such facility the farmers can not be encouraged to grow the crop.

(f) There was a very skeletal staff of the horticulture department in the district. The block level staff was required to look after the nursery as well as extension work. Due to shortage of staff both research and extension activities suffered adversely.

Guna district

The horticulture development programme in the district suffered badly due shortage of foundation and certified seed of spices and shortage of minikits of high yielding varieties. There was inadequate marketing facility in the district and no minimum support price was declared for spices. In the absence of remunerative prices the farmers were not attracted towards spices cultivation. There is no facility for processing of coriander nor facility for oil-extraction. It is suggested that these should be established in the cooperative sector. There are shortages as well as qualitative insufficiency of most of the inputs. There is a need to increase the staff of the department, which should also be given training in production and extension techniques of spices crops.

Socio Economic Background of Selected Farmers

A total number of 150 farmers formed the sample' for the study. The average size of holding was 4.80 hectares. Ninety four per cent of the households had the agriculture as the main occupation, two per cent had agricultural labour as main occupation and one per cent households had dairy as main occupation and remaining households had service as main occupation. The total population of the selected households was 1,093. Of these 36 per cent were males. 30 per cent females and 34 per cent childrens. Income drived from agriculture in khargon district formed 84.00 per cent In Tikamgarh district also 84.00 per cent income from agriculture. In Guna district as high as 92.00 per cent of income was from agriculture. The livestock population included milch cows, buffaloes and bullocks. It was observed that the number of livestock was higher on larger farms than the small size group.

Land Use on Selected Farms

In Khargone district the percentage of irrigated area to cultivated area was 75.68. In Tikamgarh district the percentage was 89.57 and in Guna district the percentage was 37.70. On the farms of all the three selected districts the cropping pattern was cereal dominated. Moreover food crops in general dominated the cropping pattern. Among food

crops cereals were most important, pulses and oilseeds came next. In Khargone district the growth rate of area of chilli was 7.37 per cent. In Tikamgarh district the growth rate of area of ginger was negative and was 3.84 per cent. In Guna district the growth rate of area under coriander was 5.94 per cent.

Cultural Practices Followed

As regards the cultural practices of spices none of the selected farmers used nucleus seed, planting material or root cuttings. On none of the selected farmers demonstration cum seed multiplication plots were observed. In Khargone district only eight farmers used minikits in 1995-96, and in 1996-97, nine farmers used minikits. In Tikamgarh district no farmer used minikits in three out of five years. In 1993-94, six farmer used minikits and in 1994-95, seven farmers used these. In Guna district two farmers used coriander minikits in 1992-93. In 1993-94, three farmers used minikits and in 1994-95, four farmers used these. In Khargone district for chilli crop selected farmers used plant protection measures worth Rs.54,005 in 1997-98. Earlier no farmer used plant protection measure. In Tikamgarh district no plant protection measure was used in the eighth plan period. In 1997-98 plant protection measure worth Rs.4,355 were used. In Guna district there was no use of plant protection measures prior to 1997-98. In 1997-98 selected farmers used plant protection measure worth Rs.16,487.

Production and Marketing of Spices on Selected Farms

In Khargone district the cost of production of chilli in 1991-92 was Rs.8,992 per hectare. It generally increase in the subsequent years and was Rs.10,036 in 1996-97. The per quintal cost in 1991-92 was Rs542 and it was Rs.617 in 1997-98. In Tikamgarh district the cost of production per ha. of ginger was Rs.24,609 in 1991-92 and was Rs,25,465 in 1997-98. The per quintal cost of production in 1991-92 was Rs.647. It was Rs,838 in 1997-98. In Guna district the cost of production of of coriander per hectare was Rs.2,930 in 1991-92 and was Rs,4,070 in 1997-98. The cost of production per qtl. in 1991-92 was Rs.327 and was Rs.378 in 1997-98.

Production of chilli per hectare in Khargone district was 16.30 quintals in 1991-92 and 13.14 quintals in1997-98. In Tikamgarh district the production per hectare of ginger was 38 quintals in 1991-92 and was 30 quintals in 1997-98. In Guna district the production per hectare of coriander was 8 quintals in 1991-92 and 10 quintals in 1997-98.

As regards marketing it was noted that nearly three fourth production of chilli in Khargone district was sold to government agency and the remaining one fourth to other agencies. In the case of ginger in Tikamgarh district the proportion of produce marketed through government agency varied from 62 to 70 per cent and the remaining was sold through other agencies. In the case of coriander in Guna district the proportion of produce sold through government agency varied from 65 to 70 per cent.

Problems and suggestions of selected farmers

Khargone district

The selected farmers had no knowledge about nucleus seed, pepper root cuttings and renovation of old gardens. As regards minikits they complained that the minikits were supplied in very small number and not all the needy farmers got it. They suggested that the number of minikits should be increased. They observed that identification of diseases was not done nor any kind of training was given to them. They suggested that larger number of farmers should be trained in the recommended cultural practices of spices. Regarding demonstration plots the farmers had grievance that demonstrations were laid on the farms of big farmers only. They suggested that the number of demonstrations be increased and they should be laid on larger area. About fertilizers and insecticides the farmers complained that both these inputs were not available in time. They suggested that these should be supplied by the department. The spice crops were very sensitive to abnormal climatic conditions. To safeguard the farmers against the vagaries of climate effective crop insurance scheme should be implemented.

Tikamgarh district

The farmers of this district also did not know any thing about nucleus seed, root cuttings of pepper and renovation of old gardens. About minikit distribution they complained that these were distributed only to selected few farmers. Moreover minikits of latest varieties were not available. They, therefore, suggested that minikits should be made available in larger number of latest varieties and small and marginal farmers should get the benefit of minikits. The ginger crop suffers from yellowing of leaves, rotting of stems and tubers. However, the farmers had not been trained in identifying the diseases and plant protection measures. They suggested that adequate training in identification of diseases and plant protection measures should be given to them. Demonstrations were laid on a limited number of farmers' plots. The farmers suggested that the demonstrations should be conducted on larger number of plots and the spread of the plots should be large. About marketing of ginger the farmers suggested that the government should intervene in the purchase so that they got reasonably good prices. In the absence of adequate number of technical staff of the department technical advice was not available. It is suggested that the number of technical staff members with the department should be increased and training facility to the farmers be made available. About the problems of irrigation the farmers complained that electricity was not available when required and the supply was not regular. The farmers suggested that adequate, timely and continuous supply of electricity should be made available. The farmers complained about the low quality of fertilizers and insecticides. These are also not made available in time. The farmers suggested that proper quality control of both these inputs should be ensured and these should be available in the cooperative society. Farmers had problems as regards plant protection equipments and soil testing facility. In the former case the farmers suggested that the department should give the training and about the later they demanded that the soil testing facility should be available at the block level.

Guna district

When contacted during the survey the selected farmers did not know anything about many aspects of the programme. For example, they were unaware about the nucleus seed, renovation of old gardens and demonstration plots etc. About minikits the comments of the selected farmers were that the minikits were available in very small number and these were not available for new varieties. They commented that they were not made available to real small farmers but were available to the big and influencial farmers who could produce a patta of only a part of their land holdings to get the minikits. The farmers suggested that the minikits should be made available to the larger number so that these were equally distributed to the farmers. As regards irrigation the farmers complained that there was not enough water in the tank. They suggested that deepening of the tank should be done and stop dams should be constructed across the nalas. As regards fertilizers and insecticides farmers commented that both the inputs were not available when these were needed. They suggested that these inputs be stored in the stores of cooperative society. The farmers put forth the problem of technical know how of cultivation of spices. They observed that no technical knowledge is given by the government staff. They suggested that the staff in the district should be strengthened so that they got the knowledge of recommended practices. The farmers took the produce to the mandi for sale. But they complained that the traders exploited them so that they did not get remunerative prices. They suggested that there should be government intervention in the marketing of spices.

Policy Implications

1. Lack of enough programmes for large scale production and distribution of quality planting material of released varieties of different spices are important factors which have come in the way of increasing production and productivity.

2. Productivity is often low due to cultivation of varieties of poor genetic potential, non-manuring or imbalanced manuring and non adoption of recommended package of practices by the farmers.

3. Plant protection measures being costly are not adopted by majority of farmers.

4. Farmers training on production, protection and processing technology is required to be carried out in a big way. Motivation of farmers to adopt new technology through field demonstrations has not been carried out sufficiently.

5. Besides training of farmers, training of different levels of offices of state Agriculture/Horticulture department on the latest technology has to be carried out.

6. In the state of M.P. the percentage of funds utilized to fund allotted was 97.45 in the first year. In the several year the percentage dropped to 66.48 and further to 49.36. Although the percentage short up to 84.40 in 1995-96. It came down in 1996-97 to 74.53.

7. While the percentage contribution to area of chilli & ginger generally declined that of coriander increase.

8. The production of rooted cutting of bebber was 52.40 per cent of the target. While in the case of production of nucleous seed material of ginger was 2.67 per cent more than the target, in the case of establishment of demonstration cus seed multiplication plots of ginger, turmeric and chilli, the achievement fell share of target.

9. Although the minikits distribution programmes for ginger of chilli were impressive that of coriander was not satisfactory.

10. The achievement in demonstration cum seal multiplication plots fell short of target in all the three crops of ginger, turmeric and chilli.

11. The P.P.Ms demonstration were satisfactory.

12. The programme of establishment of spices nurseries was not very successful.

13. The procurement and distribution of spices seed in the selected districts was not impressive looking into the area under spices in the districts.

14. No significant and impressive work was done in any of the selected districts under spices development programme in the VIII plan.

15. The problems faced by the department offices are described for individual districts.

a) Khargone district

i) In the case of seed production programme it was noted that the varieties for which the programme was taken were different from the locally popular varieties.

ii) In the case of minikits the problems was that the size of minikits was small and the proportion of subsidy was little.

iii) In the case of demonstration the share of farmers in the cost of demonstration was high.

iv) There was no solution found for wilt, and drying diseases of chilli.

b) Tikamgarh district

i) The garlic seed received was disease infected.

ii) For the centrally sponsored scheme finance was not received in time and for minikits deomonstration the imputs were not received in time.

c) Guna district

The programme suffered badly due to shortage of foundation and certified seed and shortage of minikits. There was inadequate marketing facility and no minimum support price. There was no facility for processing of coriander norfacility for oil extraction.

16. In Khargone district the farmers complaint that the minikits supplied were in very small number and not all the needy farmers got. They suggested that training in the identification of diseases and their solution should be given. They also suggested that crop insurance scheme should be initiated.

17. In Tikamgarh district the farmers were unaware of nucleus seed and renovation of old gardens. The minikits distribution was not impartially done. Therefore these should be available in larger number. They suggested that the farmers should be trained in identification of discusses and plant protection measure. They suggested that the demonstration should laid in larger number and on larger area. They suggested that state government should intervene in the marketing of ginger. They also complained about irregular supply of electricity and low quality of fertilizers.

18. In Guna district the farmers were unaware of nucleus seed supply, renovation of old gardens and demonstration plots. They also complained about small number of minikits available. The fertilizers and insecticides were not available in adequate quality and at proper time. They complained about exploitation of traders in the market.

Action Points

1. There was insufficient production and distribution of quality planting material of released varieties which affected the production and productivity of spices.
(Attention : Ministry of Agriculture, Government of India, New Delhi)

2. Productivity is low due to use of varieties of poor genetic potential.
(Attention : Ministry of Agriculture, Government of India, New Delhi)

3. Non manuring or imbalance manuring and non adoption of recommended package of practices by farmers.
(Attention : Director of Horticulture, Government of M.P., Bhopal

4. Lack of knowledge about diseases and plant protection measures by the farmers
(Attention : Director of Horticulture, Government of M.P., Bhopal

5. The Spices development programme in the state during eighth plan was not satisfactory on the following points.
(Attention : Director of Horticulture, Government of M.P., Bhopal

a) The percentage of the funds allotted.

b) While the percentage contribution to area under chilli and ginger declined that under coriander income.

c) The production of rooted cuttings of pepper was only 52.40 per cent of the target. In the case of establishment of demonstration-cum-seed multiplication plots of ginger/turmeric and chilli the achievement fell short of target.

d) Of the three selected districts only Tikamgarh received seed from outside the districts.

e) Although the minikits distribution programme for ginger and chilli were impressive that for coriander was not satisfactory.

f) In the case of distribution of planting material the distribution fell much short of target.

g) The achievements in demonstration-cum-seed multiplication plots fell short of targets in all the three crops of ginger, turmeric and chilli.

h) Against the target of establishment of four nurseries only two were established.

6. In the selected districts procurement and distribution of spices was not impressive looking to the total area under spices in the districts.
(Attention : Deputy Director of Horticulture, Khargone, Tikamgarh, and Guna Districts of M.P.)

7. No satisfactory progress was made with regard to distribution of minikits, expantion, spices area expantion programme and demonstration-cum-seed multiplication plots in the three selected districts of Khargone, Tikamgarh and Guna.
(Attention : Deputy Director of Horticulture, Khargone, Tikamgarh, and Guna Districts of M.P.)

8. There were many field and practices problems in the selected districts. There need attention of Deputy Directors Horticulture of the selected districts as well as Director of Horticulture, Govt. of M.P.

a) The seed production programme was a failure because the varieties for which the programme was taken where different from locally popular varieties.

b) In the case of minikits distribution the difficulty was small size of minikits and low proportion of subsidy.

c) In demonstration the share of farmers in the cost of demonstration was high.

d) There was a lack of knowledge about the diseases of spice crops and remedial measures there of.

e) The staff in the selected districts was for less than that required for production, demonstrations and extension activities.

f) There was general complaint about inadequate marketing facilities, lack of intervention by state govt. and declaration of minimum support prices.

g) Complaints were also made as regard processing of spices and optaining of other finished products from the raw materials.

9. The selected farmers of Khargone district complained that minikits supply were in a very small number and therefore many farmers should not get it. The farmers needed in needed in identification of diseases and remedial measures for which training was essential. They further informed that demonstration were laid on the farms of big farmers only. They suggested that timely supply of fertilisers and insecticide and comprehensive crop insurance scheme.
(Attention : Deputy Director of Horticulture, Khargone district and Director of Horticulture, Government of M.P. Bhopal).

10. The farmers of Tikamgarh district had twin complaints about minikits. These were distributed to selected few farmers and were not available of latest variety. They suggested that farmers needed training in identification of diseases of spices in general and of ginger in particular and the remedial measures for which they needed intensive training. They suggested that the number of demonstrations should be increased and the state government should intervene in the marketing of ginger. They found that the state government staff in Horticulture department were inadequate. About electricity they complained that the electricity was not available timely and regularly. There was a need to check the quality of fertilizers and pesticides.
(Attention : Deputy Director of Horticulture Tikamgarh, and Director of Horticulture, Government of M.P., Bhopal).

11. The selected farmers of Guna district also complained about minikit distribution w.r.t. number and quality. They complained that these were not distributed to the needy farmers. As regards irrigation they suggested that deepening of tanks was necessary and construction of stop dams should be taken up. They desire training of farmers as well as officials in respect of spices cultivation. The staff strength should be increased.

(Attention : Deputy Director of Horticulture Guna district, and Director of Horticulture, Government of M.P., Bhopal).

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