Study No.-115

IMPACT OF NATIONAL FOOD SECURITY MISSION (NFSM) ON INPUT USE, PRODUCTION, YIELD AND INCOME IN MADHYA PRADESH

AGRO- ECONOMIC RESEARCH CENTRE FOR MADHYA PRADESH AND CHHATTISGARH

Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (M.P.)

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PREFACE

The present study entitled "Impact of National Food Security Mission (NFSM) on Input Use, Production, Yield and Income in Madhya Pradesh " has been assigned by the Directorate of Economics and Statistics Ministry of Agriculture Government of India to this centre under the close coordination of Agricultural Development and Rural Transformation Centre (ADRTC), Institute for Social and Economic Change (ISEC), Bangalore.

The study comprises 300 beneficiaries and 100 Non-beneficiaries respondents of Harda and Balaghat districts respectively for wheat in Madhya Pradesh. The impact of NFSM in Madhya Pradesh was found to be excellent due to untiring efforts through efficient and effective implementation of the programme. The drastic change has been observed in the area, production and yield of wheat in NFSM districts of the state. The beneficiaries of NSFM got more income and employment over non-beneficiaries from adoption of different interventions on their farms in the area under study.

The present study was conducted by Dr. Deepak Rathi, Deputy Director of this Centre. They have done field investigation, tabulation analysis, interpretation and drafting of the report. I wish to express my deep sense of gratitude to them and their team members namely; Mr. S.K. Upadhye, Mr. C.K. Mishra, Mr. S.C. Meena, Mr. H. K. Niranjan, S.S. Thakur, and Mr. Ravi Singh Chouhan for their untiring efforts in bringing this innovative study to its perfect shape.

I extend heartfelt thanks to the Coordinator of this study Dr. A. V. Manjunatha, Assistant Professor, Agricultural Development and Rural Transformation Centre (ADRTC), Institute for Social and Economic Change (ISEC), Bangalore for providing valuable guidelines and time to time suggestions through e-mails for conducting the study successfully.

On behalf of the Centre, I express deep sense of gratitude to Dr. V.S. Tomar, Hon'ble Vice-Chancellor and Chairman Advisory Body of AERC, Jabalpur, Dr. S.S. Tomar, Director Research Services, Dr. S.K. Rao Dean, Faculty of Agriculture, and Dr. P.K. Mishra, Director Instruction, Dr. N.K. Raghuwanshi, Prof. & Head (Dept. of Agril. Econ.&F.M.), Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur for providing all facilities and valuable guidance during various stages in successful completion of this study of high importance.

I express sincere thanks to Shri B. R. Lokhande and Shri J. S. Gurjar, Deputy Director Agriculture respectively of Harda and Balaghat districts and their field staff for providing not only secondary data but also extending great assistance in collection of field data from the selected respondents.

I hope the findings and suggestions made in the study would be useful to policy makers of the states and Govt. of India

Date : 16.02.2015 **(Hari Om Sharma)**
Place: Jabalpur **Prof. & Director**

CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

1.1 Background

Agriculture sector is immensely important for the Indian economy as the sector is contributing 14 per cent of the nation's GDP, 11 per cent of its exports and about half of the population still depends on agriculture as its primary source of income while it provides raw material for a large number of industries (GoI, 2012-13). The experience of last three decades indicate that the growth rate of food grain production decreased from 2.93 per cent during the period 1986-97 to 0.93 per cent during 1996-2008. The declining growth of food grains production was partly contributed by the decline in area but largely by the decline in yield rate. The yield growth rate of food grains decreased from 3.21 per cent to 1.04 per cent during the same time period. There was also decline in growth in the production of other agricultural commodities. This is clearly reflected in the decelerated agriculture growth from 3.5 per cent during the period 1981-82 to 1996-97 to around 2 per cent during 1997-98 to 2004-05. Nevertheless, there have been signs of improvement during the recent years (Dev and Sharma, 2010; Kumar 2013 and GoI 2012-13). The U-turn in agricultural production occurred mainly due to the implementation of important programs, such as Rastriya Krishi Vikas Yojana (RKVY), National Food Security Mission (NFSM), National Horticultural Mission (NHM), various sub-schemes and substantial increase in the state agricultural outlay on agriculture (GoI 2012-13, Kumar 2013).

The structural change initiated by the reform process in the early 1990s completely transformed the Indian economy. This is evident from the remarkable annual GDP growth rate of 8.3 percent achieved during 2009-10 from 5.3 per cent in 1990-91. The process of reforms transformed the services sector much more than that of manufacturing and agriculture sector. As per the estimates of Department of Economics and Statistics 2013, services sector's contribution to the GDP increased from 49.60 per cent in 1990-91 to 67.40 per cent in 2009-10, as against drastic decline from 24.90 per cent to 12.40 per cent of the agriculture sector during the same time

period. Even manufacturing sector share took a downward trend though marginally, from 20.69 to 18.90 per cent during the same time period. The above statistics clearly indicates the transformation of the Indian economy from traditional agrarian to service oriented Indian economy.

In the midst of this transformation from agriculture to services, it is very interesting to highlight the revelation by the National Sample Survey (NSS) 66th Round (GoI, 2012-13) that still, more than half of the Indian rural workforce continues to opt agriculture for their livelihood. Despite half of the population working in agriculture, Indian economy was encountering a situation where supply of food grains fell short of demand for consumption, mainly due to rising population. Dev and Sharma (2010) indicated that 1/3rd of the population are faced with extreme poverty. They further noted that half of the Indian children were malnourished.

1.2 Launching of National Food Security Mission

In order to combat the challenge of deficit food availability in the country, the Government of India launched National Food Security Mission (NFSM) in 2007-08 at the beginning of 11th Five Year Plan. The NFSM Programme targeted to escalate production of paddy, wheat and pulses by 10, 8, and 2 million tonnes, respectively by the end of Eleventh Five Year Plan. Generating employment opportunities was also a key objective. The NFSM target was to enhance farm profitability so that the farming community retains its confidence in farming activity. With these strategy and goals, NFSM was implemented in 561 districts in 27 states in the country (GoI 2013). Along with the NFSM, RKVY programme was also launched during the same time period. In addition, there were several other state and Centrally Sponsored Programmes running parallel with the NFSM programme. Aided by all the above efforts of the Central and state governments, paddy production during the end of 11th Five Year Plan increased by 12.1 million tonnes, wheat production by 19.1 million tonnes and pulses production by 3 million tonnes as compared to the production during the base year of 2006-07 (GoI 2012).

The mission adopted twofold strategy to bridge the demand-supply gap. First strategy was to expand area, and the second was to bridge the productivity gap between potential and existing yield of food crops. Expansion of area approach was mainly confined to pulses and wheat only, and paddy was mainly targeted for

productivity enhancement. The chief measures adopted to augment the productivity included: (1) acceleration of quality seed production; (2) emphasizing INM and IPM; (3) promotion of new production technologies; (4) supply of adequate and timely inputs; (5) popularizing improved farm implements; (6) restoring soil fertility; and (7) introduction of pilot projects like community generator and blue bull. A total amount of Rs 4500 crores have been spent under NFSM during the 11th FYP (GoI 2014).

1.3 Review of Literature

The National Development Council (NDC) in its 53rd meeting held on 29th May, 2007 adopted a resolution to launch a Food Security Mission comprising paddy, wheat and pulses to increase the production of paddy by 10 million tons, wheat by 8 million tons and pulses by 2 million tons by the end of the Eleventh Plan (2011-12). Accordingly, a Centrally Sponsored Scheme, 'National Food Security Mission' (NFSM), was launched in October 2007 for five years (11th FYP) to increase production and productivity of wheat, paddy and pulses on sustainable basis so as to insure food security of the country. The aim is to bridge the yield gap in respect of these crops through dissemination of improved technologies and farm management practices. This mission has been for three components in 11th FYP i.e. (i) NFSM-Paddy; (ii) NFSM-Wheat; (iii) NFSM-Pulses.

The Mission is being continued during 12th Five Year Plan with new targets of additional production of food grains of 25 million tons of food grains comprising of 10 million tons paddy, 8 million tons of wheat, 4 million tons of pulses and 3 million tons of coarse cereals by the end of 12th Five Year Plan. The National Food Security Mission (NFSM) during the 12th Five Year Plan will have five components (i) NFSM- Paddy; (ii) NFSM-Wheat; (iii) NFSM-Pulses; (iv) NFSM-Coarse cereals and (v) NFSM-Commercial Crops.

NABARD consultancy Services (NY) conducted a concurrent evaluation of NFSM by comparing NFSM and non-NFSM districts in Rajasthan considering current year and base year (2006-07). It was found from the study that there was an excellent growth in NFSM pulses districts with 57, 134 and 49 per cent growth in total sown area, production and productivity, respectively. In non-NFSM pulse districts, all three measures *viz*, area, production and productivity had decreased by

20, 101 and 68 per cent, respectively. Even though the non-NFSM districts have better irrigation sources than the NFSM districts, the yield in NFSM districts was generally higher.

Agricultural Finance Corporation Limited [AFCL] (2012) conducted mid-term evaluation of NFSM by selecting 17 states, 136 districts and 232 blocks common for all the 3 components i.e., paddy, wheat and pulses. The study concluded that NFSM-Paddy districts recorded yield gain of about two times and five times more than the non-NFSM districts during 2007-08 and 2008-09, respectively. The productivity of wheat in non-NFSM districts had better yield gain of 3.91 per cent in 2007-08 as compared to the 3 per cent increase in NFSM Districts. The productivity of wheat in NFSM districts improved at 7.91 per cent and 12.87 per cent during 2008-09 and 2009-10, while the corresponding figures were 7.09 per cent and zero per cent in non- NFSM districts, respectively. In the year 2007-08, the non- NFSM pulse districts had recorded better yield by 1.14 per cent over the base year of 2006-07 compared to an increase of 0.99 per cent in NFSM districts. In the consecutive year 2008-09, NFSM districts showed improved performance by registering yield of 8.26 per cent as against the corresponding figure of 6.99 per cent in non-NFSM districts.

1.4 Background of NFSM in the State

The National Food Security Mission in Madhya Pradesh is being implemented since its inception in totality as per the norms and guidelines of Government of India. All the districts (51) have been selected under NFSM-Pulses i.e. Anuppur, Ashoknagar, Balaghat, Barwani, Betul, Bhind, Bhopal, Burhanpur, Chhatarpur, Chhindwara, Damoh, Datia, Dewas, Dhar, Dindori, East Nimar, Guna, Gwalior, Harda, Hoshangabad, Indore, Jabalpur, Jhabua, Katni, West Nimar (Khargon) , Mandla, Mandsaur, Morena, Narsinghpur, Neemuch, Panna, Raisen, Rajgarh, Ratlam, Rewa, Sagar, Satna, Sehore, Seoni, Shahdol, Shajapur, Sheopur, Shivpuri, Sidhi, Tikamgarh, Ujjain, Umaria, Vidisha, Alirajpur, Singrauli and Agar Malwa. Whereas, Anuppur, Damoh, Dindori, Katni, Mandla, Panna, Rewa and Sidhi in NFSM-Paddy; Ashoknagar, Chhatarpur, East Nimar, Guna, Katni, Panna, Raisen, Rajgarh, Rewa, Sagar, Satna, Seoni, Shivpuri, Sidhi, Tikamgarh & Vidisha in NFSM-Wheat and Barwani, Betul, Chhindwara, Dhar, Dindori, East Nimar, Jhabua,

Mandla, Mandsaur, Morena, Rajgarh, Ratlam, Shajapur, Shivpuri, Alirajpur and Singrauli have been selected for Coarse Cereals (Table 1.1). The districts under the component NFSM Commercial Crops yet to be decided for 12th FYP. The interventions i.e. demonstrations, distribution on subsidy, farm machines, farmers training, Integrated Pest management, local initiatives, micro nutrients, production subsidy, project management team, publicity, seed minikits, soil amendments, water management and training of extension workers have been considered for dissemination of technologies and farm management practices.

Table 1.1: National Food Security Mission Districts - Madhya Pradesh.

Crops	Districts covered
Pulses	Anuppur, Ashoknagar, Balaghat, Barwani, Betul, Bhind, Bhopal, Burhanpur, Chhatarpur, Chhindwara, Damoh, Datia, Dewas, Dhar, Dindori, East Nimar, Guna, Gwalior, Harda, Hoshangabad, Indore, Jabalpur, Jhabua, Katni, West Nimar (Khargon), Mandla, Mandsaur, Morena, Narsinghpur, Neemuch, Panna, Raisen, Rajgarh, Ratlam, Rewa, Sagar, Satna, Sehore, Seoni, Shahdol, Shajapur, Sheopur, Shivpuri, Sidhi, Tikamgarh, Ujjain, Umaria, Vidisha, Alirajpur, Singrauli, Agar Malwa
Paddy	Anuppur, Damoh, Dindori, Katni, Mandla, Panna, Rewa, Sidhi
Wheat	Ashoknagar, Chhatarpur, East Nimar, Guna, Katni, Panna, Raisen, Rajgarh, Rewa, Sagar, Satna, Seoni, Shivpuri, Sidhi, Tikamgarh, Vidisha
Coarse Cereals	Barwani, Betul, Chhindwara, Dhar, Dindori, East Nimar, Jhabua, Mandla, Mandsaur, Morena, Rajgarh, Ratlam, Shajapur, Shivpuri, Alirajpur, Singrauli

1.5 Main Objectives and Scope of the Study

The NFSM is extended to 12th Five Year Plan due to its success in achieving the targeted goal of production enhancement. It is essential to evaluate and measure the extent to which the programme and approach has stood up to the expectations. The study would enlighten the policy makers to incorporate necessary corrective measures to make the programme more effective and successful during the 12th Five Year Plan. Given the above broad objectives, the study intends to achieve the following specific objectives listed below:

1. To analyse the trends in area, production, productivity of wheat in the NFSM and non NFSM districts in Madhya Pradesh.
2. To analyse the socio-economic profile of NFSM vis-a-vis Non-NFSM beneficiary farmers of wheat.

3. To assess the impact of NFSM on input use, production and income among the beneficiary farmers.
4. To identify factors influencing participation under NFSM; and
5. To identify the constraints hindering the performance and suggest ways and means for improvement of the programme.

1.6 Data and Methodology

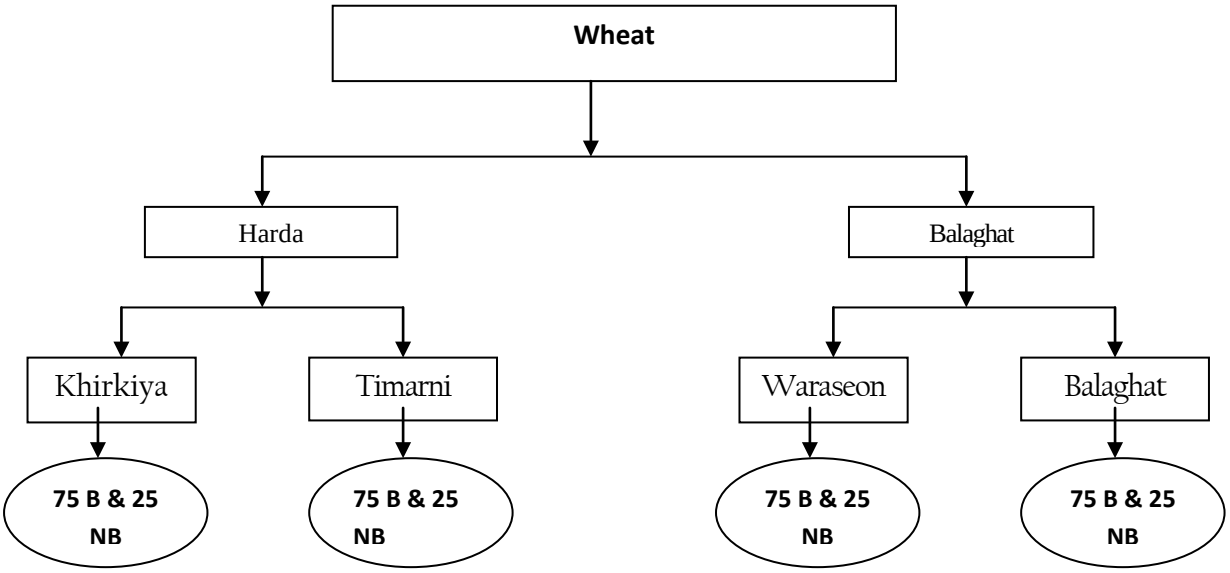
The study is based on the survey data collected from sample wheat growers in selected NFSM districts of the State as shown in Table 1. For selection of farmers, a multi-stage sampling design was used for selection of respondents (Figure 1.1). At the first stage, two NFSM districts viz. Harda and Balaghat were selected for the study. For the selection of districts in the State, production of wheat in the NFSM districts for the year 2012-13 was arranged in descending order. Among the NFSM districts, the district having highest production (Harda) and district having lowest production (Balaghat) were finally selected for the survey of Wheat.

Table 1.2: State-wise selected crops covered under NFSM.

S.No.	District	Taluka	Village	Sample size		Total
				Beneficiary	Non-Beneficiary	
1	Harda	Khirkiya	Drigaliya	75	25	100
			Chaukadi			
			Lohayakhedi			
			Pathanwada			
		Timarni	Sodalpur	75	25	100
			Alampur			
			Dhangaon			
Total				**150**	**50**	**200**
2	Balaghat	Waraseoni	Kochiwahi	75	25	100
			Budbuda			
			Sarra			
		Balaghat	Parshawada	75	25	100
			Bori			
			Katangi			
Total				**150**	**50**	**200**
Grand total				**300**	**100**	**400**

Two talukas were selected from each district at the second stage, drawing one taluk from the nearby district headquarters and the second at a distance of 15-20 kilometres from the district headquarter. Subsequently, at the third stage, 75 beneficiaries and 25 non beneficiaries were selected purposefully from each taluka

totalling to a sample size of 400 households comprised of 300 beneficiary households and 100 non beneficiary households in Madhya Pradesh (Table 1.2).



Note: B-Beneficiaries; NB-Non-Beneficiaries

Fig 1.1: Multistage sampling Method

For the selection of beneficiary households in each taluk, the beneficiary list was obtained from the Department of Agriculture/State Officials at the taluk level. While collecting the list, an attempt should be made to collect the households who have obtained benefits of various components irrespective of the year of benefit. The list contained the benefits obtained by the households for the whole of 11th Plan (2007-08 to 2011-12) and two years of 12th Plan (2012-13 and 2013-14). After obtained the beneficiary list, the households were selected in such a way that all the major components covered under the programme were got due representation. While selecting the households, a due care were taken for the crop development programme under which benefit pertained to only one year, e.g., seed, fertilizer, pesticides, etc., were distributed for the latest year while, machinery and equipment (that have much longer use) represented for the previous year including the period of 11th Plan. The selection of non-beneficiary households were done in the peripheral areas in such a way that a similar cropping pattern and baseline characteristics were represented by the non-beneficiary households as well. Giving representation to different size classes and various socio-economic characteristics were tried while selection of the beneficiary and non-beneficiary sample farmers.

In order to fulfil the first objective of analysing the trends in production, productivity of wheat in NFSM districts and Non-NFSM districts, secondary data on area, production and productivity of wheat for 8^{th}, 9^{th}, 10^{th} and 11^{th} FYPs were used. Compound growth rates, correlation and graphical analysis were applied to draw conclusions.

For meeting the remaining objectives, primary household data were taken into consideration. The primary data relating to general information about the sample farmers, socio-economic profiles, cropping pattern, details on various inputs used in wheat cultivation, irrigation details, yield, returns, reasons for adoption/non-adoption of NFSM interventions, constrains faced for availing the benefits, suggestions for improvement, etc., were collected from the sample beneficiary and non-beneficiary farmers using a pre-tested interview schedule. The primary household data were collected mainly pertaining to the agricultural year 2013-14, which is the latest agricultural year. In order to fulfil the remaining objectives, descriptive analysis, gross margin analysis, logistic regression equation and correlation techniques were used to draw conclusions.

The annual average growth rates (AAGR) were analyzed with following formula:

$$\text{Annual Growth Rate (AGR)} = \frac{(Current\ Year - Previous\ Year)}{Previous\ Year} \times 100$$

$$\text{Average Annual Growth Rate (AAGR)} = \frac{\sum AGR\ of\ Different\ Year}{No.of\ Years}$$

The following regression equation was used to drawn conclusion.

$Y = Ln\ (P/1 - P)$

$Ln\ (P/1 - P) = b_o + b_1 x_1 + b_2 x_2 \ldots b_9 x_9 + e$ Where:

Y = Dependent binary variable (participate = 1, do not participate = 0)

P = Probability of participating in NFSM

Ln = Natural logarithm function

b_0 = Constant

b_1- b_9 = Regression coefficients

X_1- X_9 = Explanatory variables; X_1= Age (Years), X_2= Education (No. of years in school), X_3= Operational holdings (Acers), X4-= Family size (No. of family members dependent on farming), X_5= SC/ST Category, X_6= OBC Category, X_7= Income from Farming (Rs.), X_8= Credit Availed (per acre in Rs.) and X_9= Farm Assets Value (Rs.).

E = Stochastic error term

$(^{P}/_{1-p})$ = Odd ratio (odds in favour of participation)

1.7 Structure of the Report

The study comprises five chapters, Chapter I includes brief introduction, background of the NFSM in Madhya Pradesh, main objectives and scope of the study, data and methodology. Average annual growth rate of net irrigated area, gross irrigated area, net sown area, fertiliser consumption, trend in area, production and productivity of wheat in NFSM and Non-NFSM districts of the state during 9^{th} ,10^{th} & 11^{th} Five Year Plan was worked out and discussed along with category and intervention wise financial progress under NFSM during 11^{th} Five Year Plan period including correlation between per cent change in NFSM expenditure and irrigation/fertiliser and area/production of wheat is explained In Chapter II. Household characteristics, cropping pattern, production structure and per acre costs and returns were dealt in Chapter III. In Chapter IV NFSM interventions and its impact on farming is described in detail, while in Chapter V Participation decision, constraints and suggestions for improvement were explained. Concluding remarks and policy suggestions are given in Chapter VI.

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CHAPTER II

IMPACT OF NFSM ON FOODGRAINS PRODUCTION IN MADHYA PRADESH - A TIME SERIES ANALYSIS

A time series analysis has been carried out to find out the impact of National Food Security Mission (NFSM) on production of paddy, wheat and pulses in Madhya Pradesh. The growth of area, production and productivity of wheat, paddy and pulses in the State along with input use, financial progress under NFSM during the 11th & 12th Five Year Plans and correlation between percentage change in NFSM expenditure and percentage change in seeds, fertilizer consumption, irrigated area, area & production of paddy, wheat and pulses have been worked out and explained in this chapter.

2.1 Area, Production and Productivity of, Paddy, Wheat and Pulses in Madhya Pradesh

Madhya Pradesh contributed 2, 12 and 24 per cent of paddy (Fig 2.1) wheat (Fig 2.2) and pulses (Fig 2.3) production of India respectively (2011-12). The productivity of paddy in Madhya Pradesh (1343 kg/ha) was found to be minimum across all the paddy growing States in the country (Fig. 2.4).

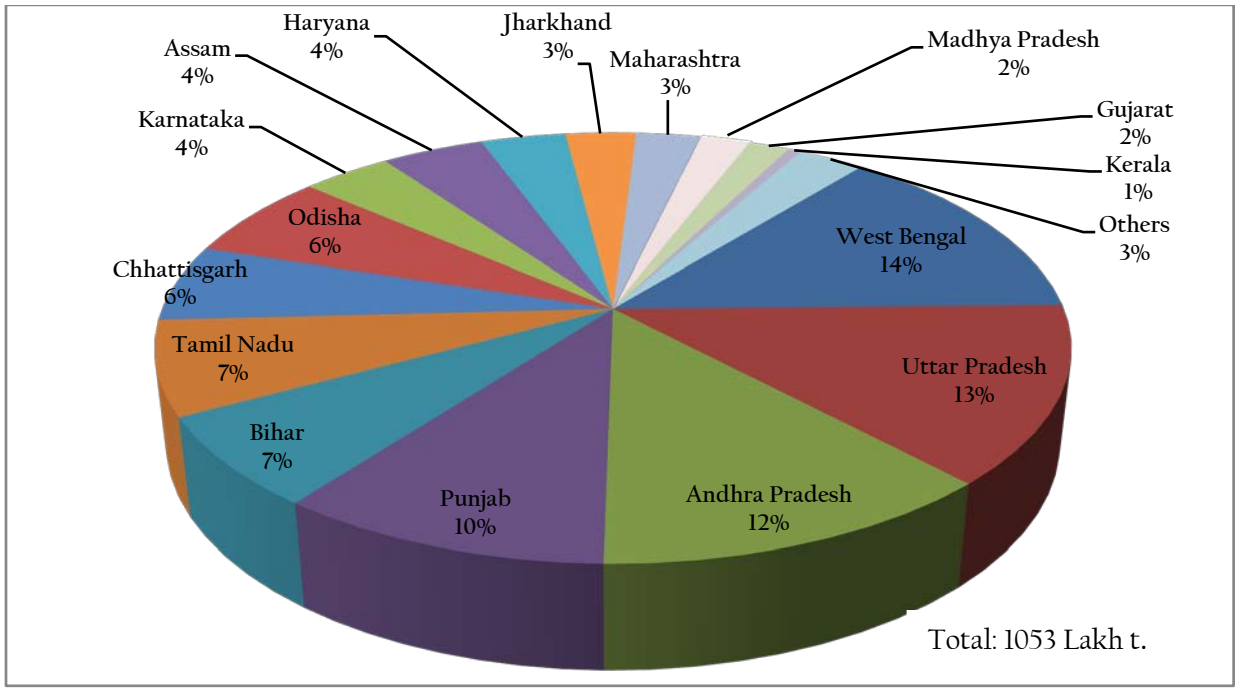

Fig. 2.1: Percentage Share of different States in Total Production of Paddy in India (2011-12)

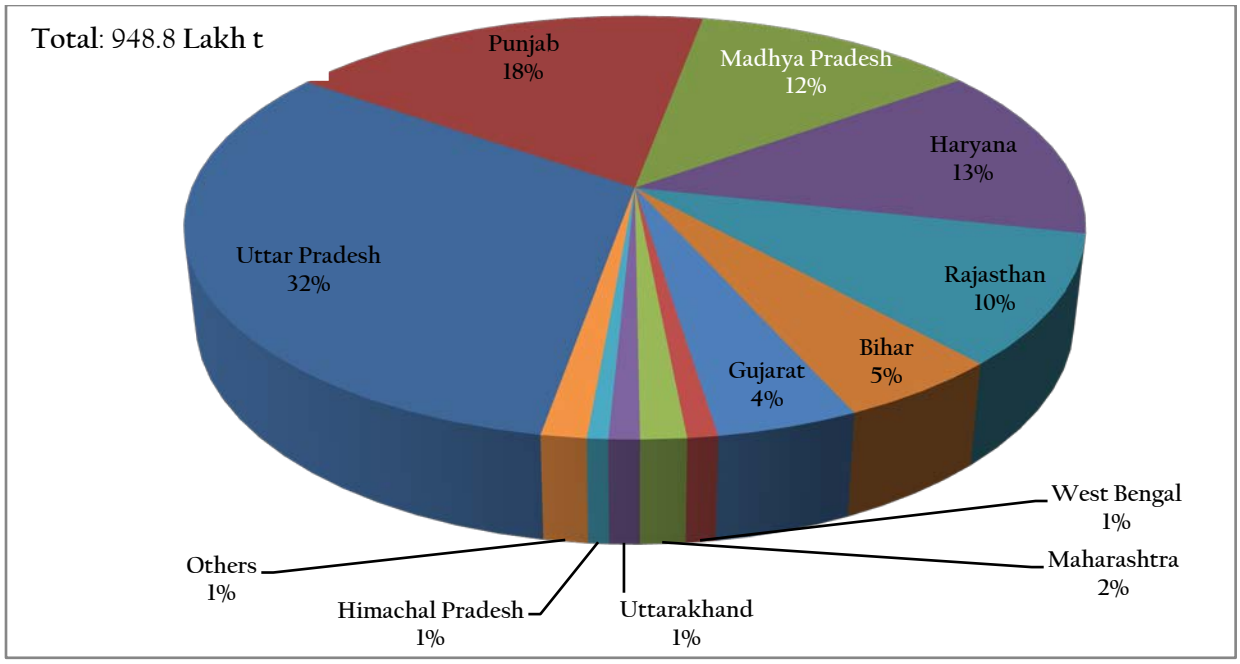

Fig. 2.2: Percentage Share of different States in Total Production of Wheat in India (2011-12)

The productivity of wheat in Madhya Pradesh (2360 kg/ha) was found to be less than the national average (3177 kg/ha). Amongst the different wheat growing States it was found more than Karnataka, Assam, Maharashtra, Himachal Pradesh, J&K, Jharkhand, Bihar and less than Haryana, Punjab, Rajasthan, Uttar Pradesh , Gujarat and Uttrakhand States of India (Fig 2.5).

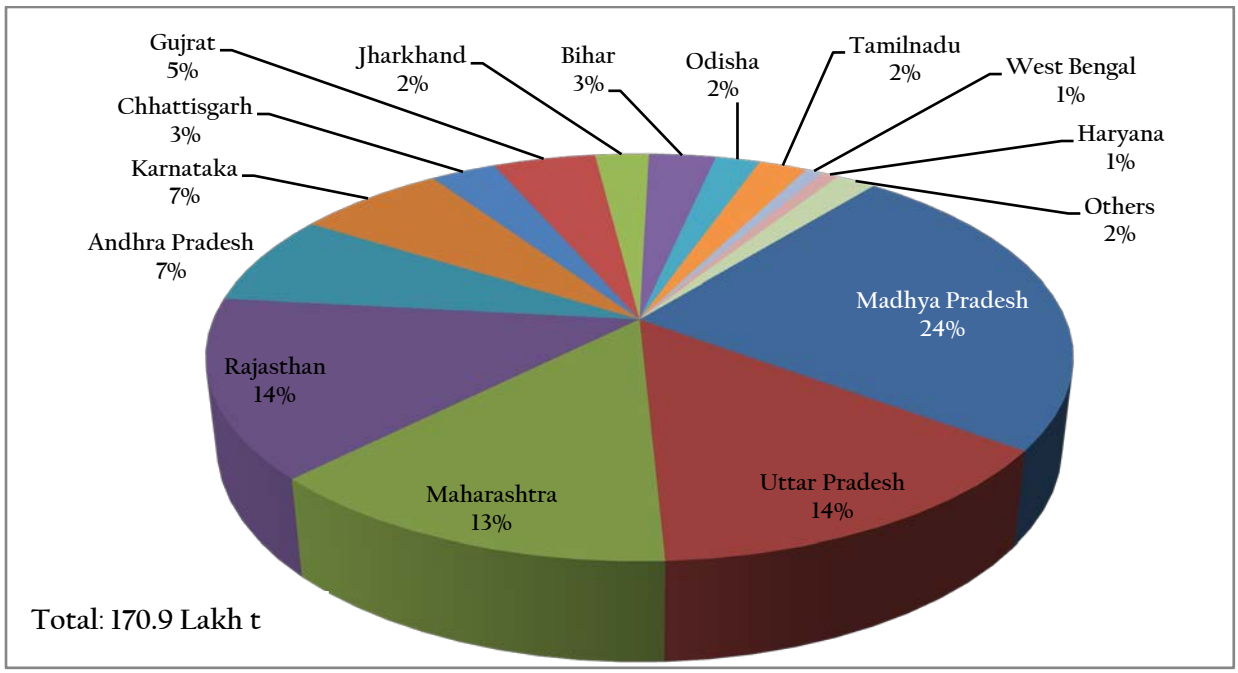

Fig. 2.3: Percentage Share of different States in Total Production of Pulses in India (2011-12)

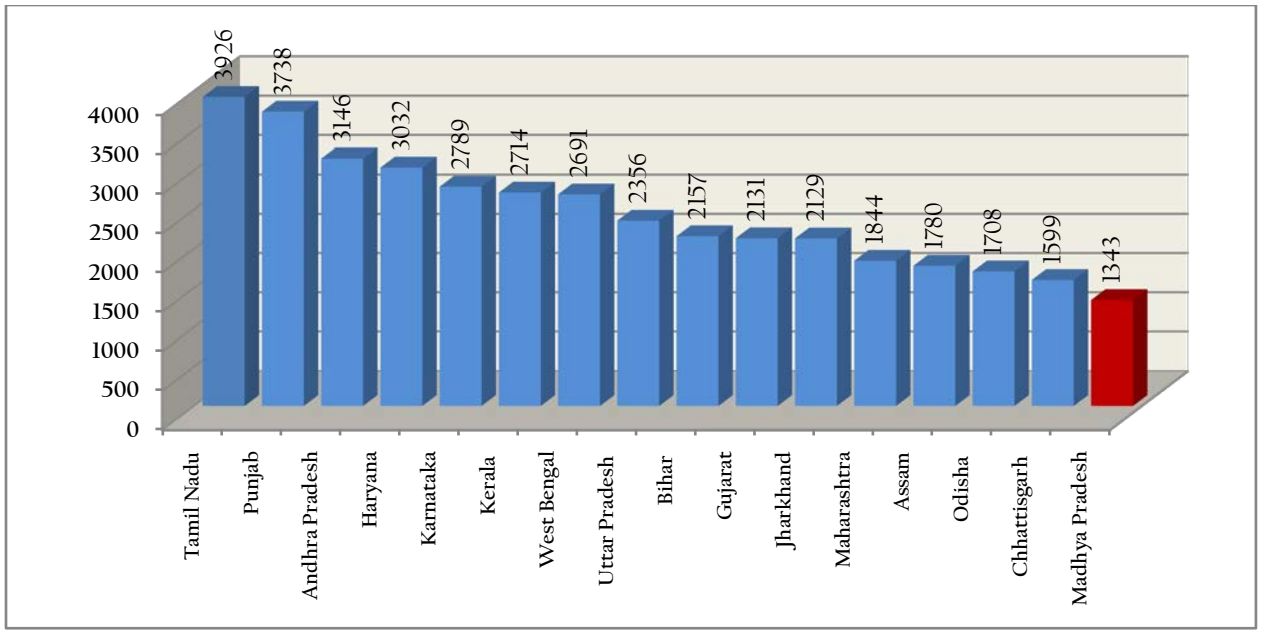

Fig. 2.4: Yield of Paddy in different States of India (kg/ha)

Madhya Pradesh ranks first in area and production of pulses in the country contributing nearly 24 per cent (4.16 MT) in India's pulse production basket (17.09 MT). The productivity of Madhya Pradesh (802 kg/ha) was found to be more than the national average (700 kg/ha) but less than the main pulses growing States like Jharkhand, Gujarat, Uttar Pradesh and Bihar. (Fig. 2.6).

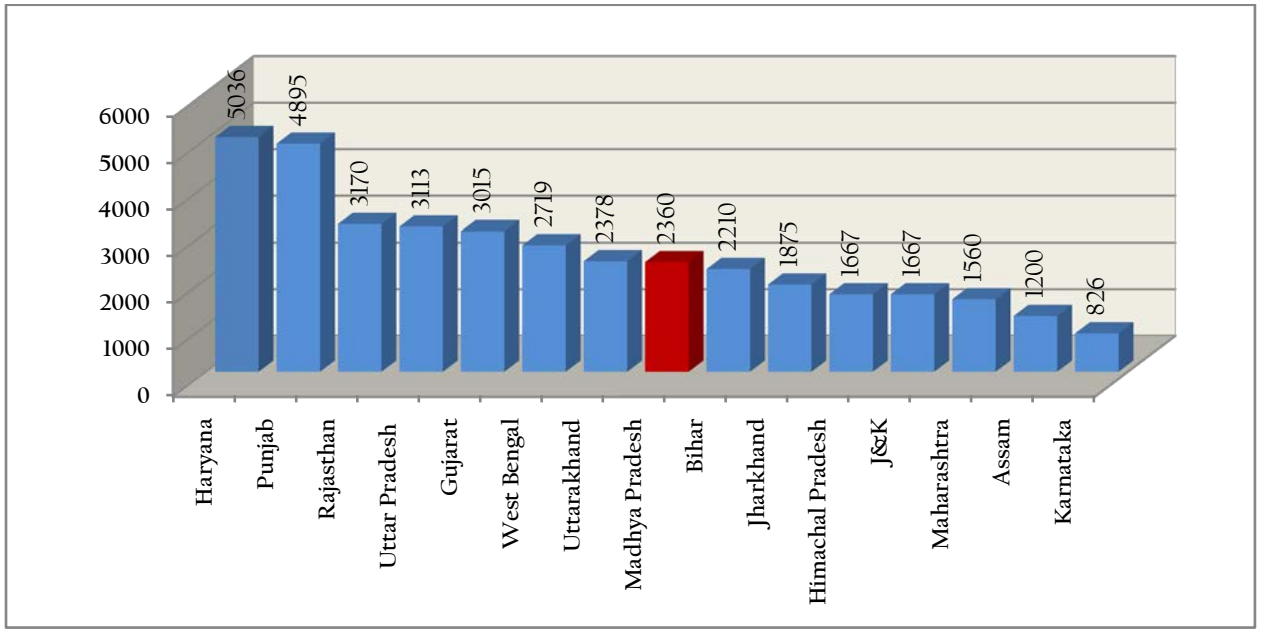

Fig. 2.5: Yield of Wheat in different States of India (kg/ha)

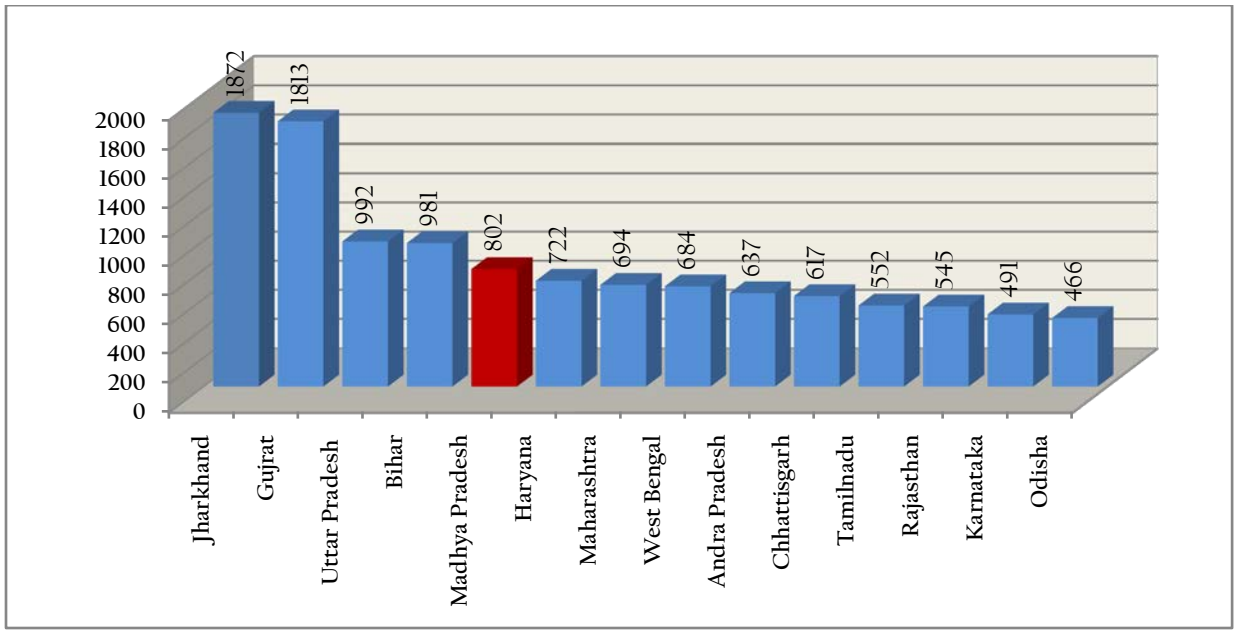

Fig. 2.6: Yield of Pulses in Different States of India (kg/ha)

The concentration of paddy, wheat and pulses in different districts of Madhya Pradesh are presented in Fig. 2.7, Fig. 2.8 and Fig. 2.9 and district wise (NFSM & non-NFSM) area, production and productivity of paddy, wheat and pulses during 9th, 10th and 11th FYP periods have been presented in Annexure II (a) to II (i).

2.2 Trend in Area, Production and Productivity of Paddy, Wheat and Pulses.

The changes in area, production and productivity along with the Average Annual Growth Rate (AAGR) were worked out for 9th, 10th and 11th Five Year Plans (FYPs) to judge the impact of NFSM on area, production and productivity of paddy, wheat and pulses in the State during 11th FYP over 9th and 10th FYP. The analyzed data of growth of paddy, wheat and pulses have been presented in table 2.1, and table 2.2 respectively.

The growth of area, production and productivity of paddy was found to be positive and increased by 3.02, 18.33 and 4.34 per cent per year respectively during 9th FYP with increase in area, production and productivity from 16.18 (1997-98) to 17.66 lakh ha (2001-02), 11.90 (1997-98) to 16.92 lakh t (2001-02) and 7.35 (1997-98) to 8.49 q/ha (2001-02) respectively.

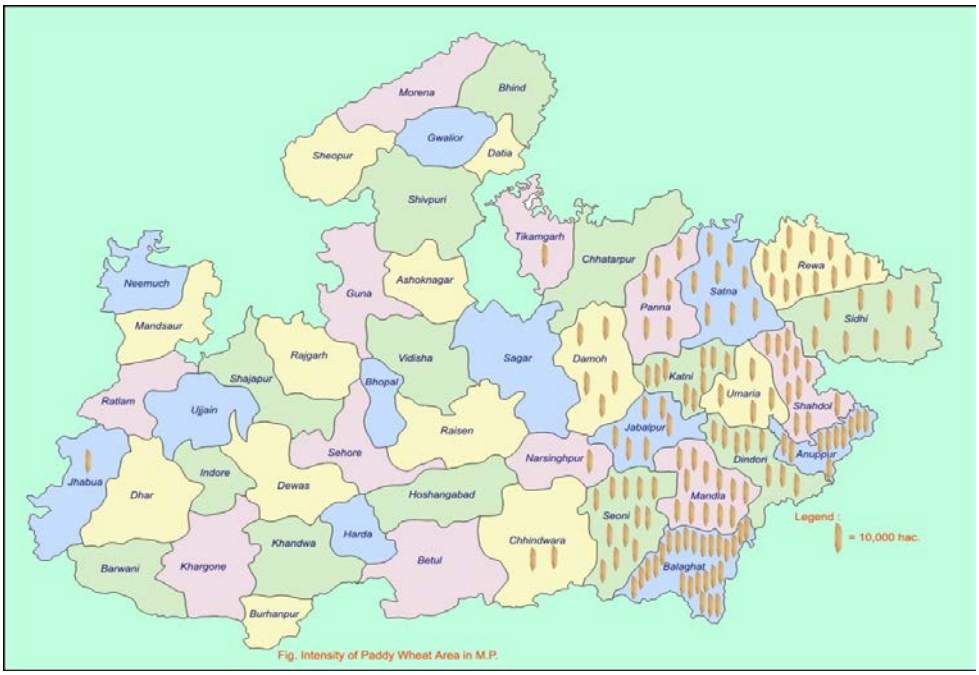

Fig. 2.7: Concentration of Paddy in different Districts of Madhya Pradesh

The growth of area was found to be decreased with a magnitude of 0.90 per cent per year during 10th FYP period while, the growth of production and productivity was found to be increased by 4.79 and 5.66 per cent per year respectively in Madhya Pradesh.

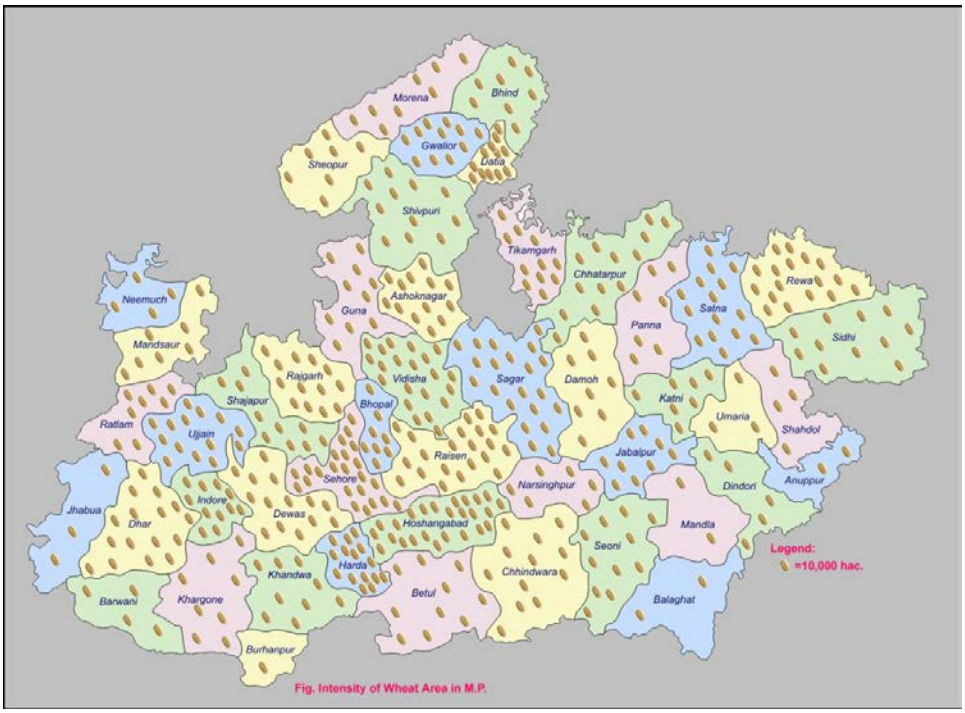

Fig. 2.8: Concentration of Wheat in different Districts of Madhya Pradesh

The area, production and productivity of paddy was found to be increased with a growth of 0.33, 11.79 and 11.00 per cent per year respectively during 11th FYP period.

The growth in area, production and productivity of wheat was found to be decreased by -0.45, -1.60 and -1.55 per cent per year respectively during 9th FYP. During this plan area and production were found to be decreased from 45.02 (1997-98) to 37.04 lakh ha (2001-02) and 71.54 (1997-98) to 60.01 lakh tones (2001-02) respectively, while the productivity was increased from 16.55 (1997-98) to 16.91 q/ha (2001-02) with decreasing trend due to drastic decrease in the year 2000-01 (15.35 q/ha) as compared to year 1999-2000 (19.38 q/ha).

The growth of area, production and productivity of wheat in Madhya Pradesh was found to be increased from 33.81 to 42.75 lakh ha, 49.23 to 78.48 lakh tones and 15.20 to 19.16 q/ha respectively with AAGR of 3.60% (Area), 8.46% (Production) and 3.27% (Productivity) per annum respectively during 10th Five Year Plan (2002-03 to 2006-07). The production was found to be increased due to increase in area and productivity of wheat in the state during this particular plan period.

Table 2.1: Trend in Area, Production and Productivity of Wheat & Paddy in Madhya Pradesh

Year	Paddy			Wheat		
	Area (lakh ha)	Production (Lakh T)	Productivity (Q/ha)	Area (lakh ha)	Production (Lakh T)	Productivity (Q/ha)
1997-98	16.18	11.90	7.35	45.02	71.54	16.55
1998-99	16.33	13.83	8.47	45.75	82.57	18.83
1999-00	17.01	19.00	10.50	46.69	86.87	19.38
2000-01	16.97	8.33	6.14	33.11	48.69	15.35
2001-02	17.66	16.92	8.49	37.04	60.01	16.91
9th Plan Avg. AGR	**3.02**	**18.33**	**4.34**	**-0.45**	**-1.60**	**-1.55**
2002-03	16.71	10.38	6.08	33.81	49.23	15.20
2003-04	17.09	18.68	9.78	40.91	73.65	18.79
2004-05	16.76	12.94	8.04	42.00	73.27	18.21
2005-06	17.11	16.94	10.45	37.85	62.00	17.10
2006-07	16.84	13.96	8.74	42.75	78.48	19.16
10th Plan Avg. AGR	**-0.90**	**4.79**	**5.66**	**3.60**	**8.46**	**3.27**
2007-08	16.45	13.32	8.53	41.01	67.37	17.14
2008-09	17.17	15.78	9.69	40.10	72.80	18.95
2009-10	16.03	13.63	8.96	44.71	88.73	20.71
2010-11	16.03	17.72	11.67	46.45	92.27	20.73
2011-12	17.03	22.80	14.13	52.61	145.44	27.70
11th Plan Avg. AGR	**0.33**	**11.79**	**11.00**	**4.47**	**15.48**	**8.60**

The growth of area, production and productivity of wheat was also found to be increased from 41.01 (2007-08) to 52.61 lakh ha (2011-12), 67.37 (2007-08) to 145.44 lakh tones (2011-12) and 17.14 (2007-08) to 27.70 q/ha (2011-12) with AAGR of 4.47, 15.48

and 8.60 per cent per year respectively during the 11th FYP period. This drastic change in the production and productivity along with area was found due to the efficient implementation of NFSM-Wheat during this particular plan period, which increased the growth of production and productivity by many folds as compared to the growth rate of production and productivity during 9th and 10th FYP period.

Table 2.2: Trend in Area, Production and Productivity of Pulses in Madhya Pradesh

Year	Total Pulses		
	Area (lakh ha)	Production (Tonnes)	Productivity (Qtls/ha)
1997-98	40.15	30.81	7.67
1998-99	40.98	31.82	7.76
1999-00	42.26	34.46	8.15
2000-01	35.74	22.76	6.37
2001-02	41.03	32.22	7.85
9th Plan Avg. AGR	**1.09**	**4.26**	**1.77**
2002-03	37.08	22.40	6.04
2003-04	45.50	34.88	7.67
2004-05	44.42	33.49	7.54
2005-06	43.22	32.59	7.54
2006-07	43.39	27.21	6.27
10th Plan Avg. AGR	**1.68**	**0.41**	**-2.93**
2007-08	44.01	26.73	6.07
2008-09	46.35	37.10	8.01
2009-10	48.17	41.35	8.58
2010-11	51.91	30.22	5.82
2011-12	47.60	37.17	7.81
11th Plan Avg. AGR	**2.03**	**8.91**	**7.57**

The production of pulses in the state was also increased from 30.81 (1997-98) to 32.22 lakh t (2001-02), 22.40 (2002-03) to 27.21 lakh t (2006-07) and 26.73 (2007-08) to 37.17 lakh t (2011-12) with annual growth of 4.26, 0.41 and 8.91 per cent per year during 9th, 10th and 11th FYP respectively. The productivity of pulses was also found to be increased from 7.67 (1997-98) to 7.85 q/ha (2001-02), 6.04 (2002-03) to 6.27 q/ha (2006-07) and 6.07 (2007-08) to 7.81 q/ha (2011-12) with annual growth of 1.77, -2.93 and 7.57 per cent per year during 9th, 10th and 11th FYP respectively in Madhya Pradesh. The negative trend in productivity (-2.93%/year) was observed during 10th FYP which turned into positive to a magnitude of 7.75 per cent per year during 11th FYP period.

It can be concluded from above result that due to effective implementation of NFSM in Madhya Pradesh the area, production and productivity of wheat, paddy and pulses increased many folds during the 11th FYP as compared to 9th and 10th FYPs period due to the sincere efforts made by the scientists and officials of the Agriculture

universities and state department of Agriculture. The state could be able to won prestigious '**Krishi Karman**' Award from consecutive three times i.e. in the year 2011-12, 2012-13 and 2013-14 from the president of India.

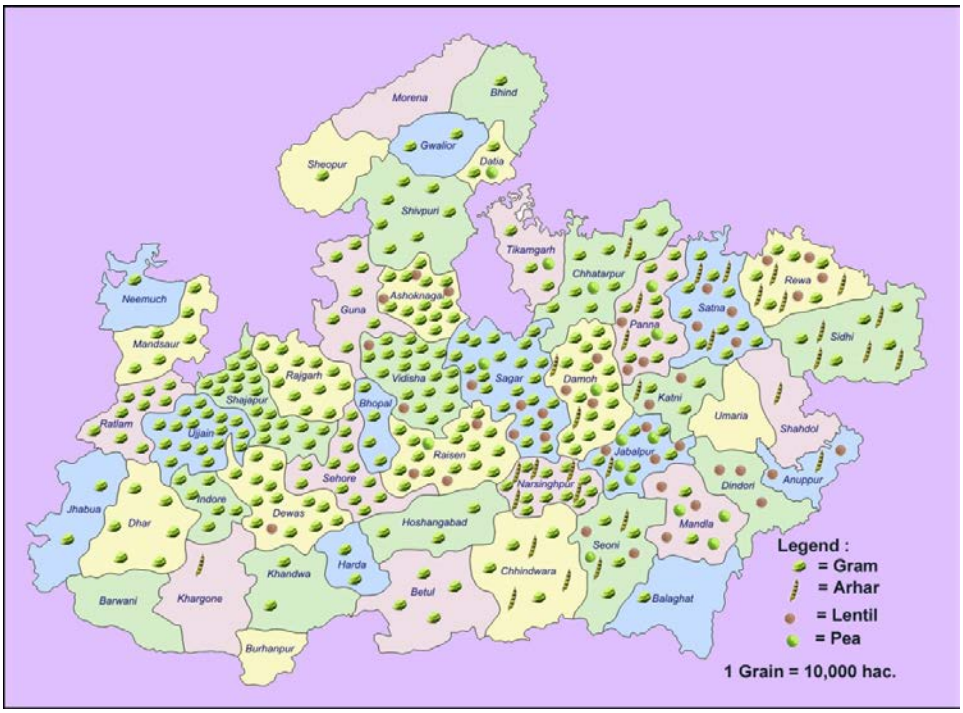

Fig. 2.9: Concentration of Pulses in different Districts of Madhya Pradesh

2.3 District wise Growth of Paddy, Wheat and Pulses and Impact of NFSM

The district wise growth in area, production and productivity of paddy, wheat and pulses in NFSM and Non-NFSM districts of Madhya Pradesh have been worked out for 9th, 10th and 11th FYPs and presented in table 2.3, 2.4 and 2.5 respectively.

Out of 51 districts NFSM-Paddy was implemented in only 9 districts in Madhya Pradesh. The growth of area, production and productivity of paddy was analyzed during 9th, 10th and 11th FYPs period in these NFSM districts and presented in table 2.3. It is observed from the data that the growth in area of paddy was positive during 9th FYP (3.39%/year) and become negative during 11th FYP (-0.56%/year), while the growth of production and productivity was positive during 9th FYP with the magnitude of 16.26 and 11.44 per cent per year respectively in NFSM-Paddy districts and increased to 19.44 and 18.41 per cent per year respectively during 11th FYP period.

Table 2.3: Average AGR in Area, Production and Yield of Paddy in NFSM and Non-NFSM districts in M.P.

Districts	9th FYP			10th FYP			11th FYP		
	Area (%)	Production (%)	Yield (%)	Area (%)	Production (%)	Yield (%)	Area (%)	Production (%)	Yield (%)
NFSM Districts									
Anuppur	0	0	0	0.74	31.01	30.14	-0.28	11.10	10.93
Damoh	-2.36	5.60	-3.53	0.49	25.80	15.04	0.16	16.78	17.25
Dindori	3.39	24.12	19.57	0.66	3.65	2.46	0.36	9.76	9.06
Katni	0.48	28.51	25.66	0.19	7.31	1.74	-0.11	52.96	39.65
Mandla	-6.93	7.47	7.43	2.04	4.97	-0.58	2.09	16.76	13.95
Panna	0.25	6.47	-6.35	-0.74	6.41	3.03	2.22	29.64	27.01
Rewa	3.44	21.97	8.48	3.12	10.27	-0.26	-2.70	25.42	24.39
Satna	5.06	61.39	30.49	5.28	9.78	-4.31	-0.70	30.78	29.82
Shahdol	-2.89	2.89	-1.41	-9.97	-10.91	6.49	-0.79	22.94	23.49
NFSM Total	3.38	16.26	11.44	0.48	6.73	1.50	-0.56	19.44	18.41
Non-NFSM Districts									
Jabalpur	-10.59	1.38	11.09	1.73	7.21	2.32	2.42	16.82	13.80
Balaghat	15.59	12.73	13.10	0.21	7.18	4.56	0.56	4.27	3.77
Chhindwara	5.69	0.26	-14.57	-3.21	19.88	18.80	-2.54	26.01	29.08
Seoni	2.68	25.61	20.12	1.08	25.55	18.58	0.14	6.69	6.39
Narshingpur	10.90	16.65	2.98	0.90	6.22	3.34	-2.24	10.39	13.14
Sagar	1.54	-3.95	-12.28	0.37	11.74	3.54	-4.48	4.83	9.66
Tikamgarh	-4.66	-1.57	-12.06	11.78	73.99	6.89	-2.72	48.74	44.24
Chhatarpur	-2.48	1.10	-0.30	3.32	25.27	-0.87	-9.31	15.68	26.14
Sidhi	3.15	17.84	3.50	0.39	8.68	7.93	-9.57	-3.41	7.23
Singroli							-1.83	14.47	18.51
Umariya	2.01	-1.78	-5.44	0.89	18.96	15.11	-1.43	14.05	15.44
Indore	-6.52	-9.33	-8.23	-7.26	4.22	11.77	-11.83	-4.83	7.21
Dhar	-3.67	-5.13	-11.18	0.58	25.75	26.57	-10.74	2.97	13.75
Jhabua	-10.55	-10.47	-4.26	-8.34	3.54	12.90	-11.51	-4.10	9.21
Khargone	-6.85	-8.89	-3.21	-3.18	-0.08	3.06	-8.03	7.10	19.60
Barwani	-3.45	-2.70	-0.80	-13.70	-8.48	7.51	-5.45	-0.23	7.54
Khandwa				-11.50	-11.49	-0.02	-10.77	-2.22	9.55
Burhanpur							-4.04	18.25	22.43
Alirajpur	-6.90	-7.15	-8.27	-1.03	11.68	10.38	-7.23	-2.38	5.45
Ujjain	1.19	2.33	-6.86	-8.69	-7.95	0.88	-12.67	-5.00	11.39
Mandsour	-8.69	-16.67	-14.48	-8.33	-7.71	-1.19	-16.67	0.00	30.00
Neemuch	-6.33	-9.32	7.98	19.74	18.93	4.47	79.00	40.67	5.33
Ratlam	-11.31	14.46	26.19	-3.07	44.03	28.79	31.36	41.20	10.61
Dewas	4.11	31.43	32.15	-17.44	-23.03	-0.66	695.13	627.58	11.68
Shajapur	12.42	14.78	10.85	-1.64	50.61	21.38	29.57	73.35	12.86
Morena	5.79	5.94	2.00	2.59	96.74	41.36	14.29	33.21	13.26
Sheopur Kalan	4.92	12.97	-0.73	-13.16	1.52	26.07	-5.36	4.67	11.27
Bhind				0.37	-4.66	-4.18	5.67	10.33	3.94
Gwalior	42.00	35.25	1.17	-1.09	16.86	8.56	48.74	68.51	8.12
Shivpuri	0.48	1.00	-11.29	0.00	0.08	0.08	-3.33	21.67	25.67
Guna	-1.11	4.82	-4.80	-3.38	-3.00	0.60	56.37	90.35	22.31
Ashoknagar	8.90	2.05	-11.86	20.85	26.20	3.44	19.24	45.92	20.29
Datia	0.36	-4.00	-18.09	-4.63	21.07	20.74	14.00	22.00	6.53
Bhopal	8.03	8.52	1.04	-1.17	4.89	5.62	0.94	11.40	10.49
Sehore	-7.99	3.07	1.13	-3.23	20.97	26.74	-12.63	-5.00	8.87
Raisen	-0.59	-2.74	7.13	9.74	15.03	4.18	10.88	22.92	10.03
Vidisha	-5.41	0.34	6.13	-6.13	4.12	8.19	-12.69	-0.78	17.10
Betul	-14.82	-16.55	-6.37	0.00	0.00	0.00	0.00	0.00	0.00
Rajgarh	2.17	8.82	6.62	-1.08	7.38	5.38	1.28	8.93	7.69
Hoshangabad	2.65	11.68	8.37	-0.37	6.87	3.37	0.35	11.78	10.98
Harda	-10.59	1.38	11.09	1.73	7.21	2.32	2.42	16.82	13.80
Sub total	15.59	12.73	13.10	0.21	7.18	4.56	0.56	4.27	3.77
Non-NFSM	5.69	0.26	-14.57	-3.21	19.88	18.80	-2.54	26.01	29.08

As regards to Non-NFSM-Paddy districts of Madhya Pradesh are concerned the indirect affect of NFSM was seen in these districts, as the growth of area of paddy was found positive during 9th FYP period with the magnitude of 5.69 per cent per year and decreased to -2.54 per cent per year during 11th FYP period. The production and productivity of these districts were also found to be increased from 0.26 to 26.01 per cent per year (production) and -14.57 to 29.08 per cent per year (productivity) during 11th FYP.

Amongst different NFSM-Paddy districts the growth in area was found positive in all the districts except in Damoh (-2.36%/year), Mandla (-6.93%/year) and Shahdol (-2.89%/year) district during 9th FYP period, while it was found negative in all the districts except Damoh (0.16%/year), Dindori (0.36%/year), Mandla (2.09%/year) and Panna (2.22%/year) during 11th FYP period. The growth in production of paddy was found positive in all the NFSM-Paddy districts and it was found maximum in Satna followed by Katni, Dindori, Rewa Mandla, Panna and Damoh during 9th FYP.

The growth in production of Paddy during 11th FYP was also found positive in all NFSM-Paddy districts of Madhya Pradesh and it was found maximum in Katni followed by Satna, Panna, Rewa, Shahdol, Mandla, Damoh, Anuppur and Dindori.

The growth in productivity of paddy was also found negative in all the NFSM-Paddy districts except Dindori, Katni, Mandla, Rewa and Satna during 9th FYP period, which was turned out to be positive in all the NFSM-Paddy districts during 11th FYP period and it was found maximum in Katni followed by Satna, Panna, Rewa, Shahdol, Damoh, Mandla, Anuppur and Dindori.

It is clear from the above results that the impact of NFSM-Paddy was clearly seen in area, production and productivity of paddy in NFSM as well as non-NFSM-Paddy districts during 11th FYP period.

The impact of NFSM-Paddy also reflects on Non-NFSM paddy districts especially on growth in productivity during 11th FYP period. The growth of productivity of paddy which was found negative in almost all the non-NFSM districts during 9th FYP period except Jabalpur, Balaghat, Seoni, Narsinghpur, Sidhi, Morena, Neemuch, Ratlam, Dewas, Shajapur, Bhind, Bhopal, Sehore, Raisen, Vidisha, Gwalior, Shivpuri,

Betul, Rajgarh, Hoshangabad and Harda district which was turned into positive in all non-NFSM-Paddy districts during 11th FYP period.

The growth of area, production and productivity of wheat was observed in NFSM and non-NFSM districts of Madhya Pradesh and presented in table 2.4. It is observed from the data that the growth in area, production and productivity of wheat in NFSM and non-NFSM districts was found negative during 9th FYP which is turned into positive in 10th and 11th FYP period except in area (-2.04%/year) of NFSM districts in 10th FYP period.

As regards to growth of area, production and productivity in different plans periods amongst different NFSM districts the growth in area which was found negative in almost all the districts except Seoni (2.28%/year), Chhatarpur (0.84%/year), Rewa (0.71%/year), Sidhi (4.96%/year), Indore (3.86%/year), Dhar (27.60%/year), Jhabua (96.40%/year) Dewas (6.65%/year), Guna (5.95%/year), Sehore (8.87%/year), Raisen (0.56%/year) and Betul (14.65%/year) in 9th FYP period and turned out to be positive in all the NFSM districts except in Dindori (-3.03%/year), Rewa (-0.07%/year), Sidhi (-6.88%/year), Dhar (-0.52%/year), and Betul (-2.20%/year) district during 11th FYP period.

The production is also shown negative growth during 9th FYP period in all the NFSM districts except Balaghat (17.32%/year), Seoni (10.24%/year), Mandla (27.90%/year), Dindori (112.96%/year), Damohh (0.94%/year), Chhatarpur (0.91%/year), Rewa (4.69%/year), Sidhi (5.54%/year), Satana (1.24%/year), Dhar (15.11%/year), Jhabua (247.33%/year), Dewas (13.70%/year), Bhind (5.20%/year), Shivpuri (1.46%/year), Guna (3.12%/year), Sehore (5.67%/year), Raisen (4.01%/year), Betul (22.05%/year) and Harda (14.99%/year) which turned out to be positive during 11th FYP.

The growth in productivity also shown positive trend in almost all the districts and the districts which shown negative trend (Katni, Tikamgarh, Chhatarpur, Shahdol, Indore, Dhar, Khargone, Ujjain, Dewas, Sehore and Rajgarh) during 9th FYP period were also turned out to be positive during 11th FYP period in Madhya Pradesh.

Table 2.4: Average AGR in Area, Production and Yield of Wheat in NFSM and Non-NFSM districts in M.P.)

Districts	9th FYP			10th FYP			11th FYP		
	Area (%)	Production (%)	Yield (%)	Area (%)	Production (%)	Yield (%)	Area (%)	Production (%)	Yield (%)
NFSM Districts									
Jabalpur	-8.98	-2.17	9.26	0.00	6.15	6.50	2.70	11.99	8.89
Katani	-5.33	-3.75	-0.34	-3.87	-3.76	-3.35	9.81	59.97	40.77
Balaghat	-0.48	17.32	8.11	1.71	7.18	-0.40	2.68	14.54	12.80
Seoni	2.28	10.24	5.34	1.95	5.09	2.81	3.02	27.93	23.16
Mandla	-13.89	27.90	28.06	1.58	0.09	0.31	15.01	47.74	17.77
Dindori	-6.95	12.96	10.14	-1.38	-1.40	-0.50	-3.03	17.76	19.45
Sagar	-2.46	-0.32	1.18	-2.78	-3.07	-0.36	4.23	22.72	15.52
Damoh	-2.32	0.94	3.07	-2.48	-4.56	-1.72	6.32	12.36	8.00
Panna	-2.94	-1.96	0.59	-0.97	-4.00	-3.25	3.50	24.20	18.56
Tikamgarh	-0.14	-0.11	-0.38	-6.40	-4.32	-3.57	72.03	159.39	24.68
Chhatarpur	0.84	0.91	-0.32	-4.62	-10.30	-7.11	21.05	61.44	24.45
Rewa	0.71	4.69	3.79	-1.39	-5.36	-5.11	-0.07	34.86	29.98
Shidhi	4.96	5.54	0.47	-0.07	0.53	0.36	-6.88	15.93	23.91
Satna	-2.01	1.24	2.25	-2.73	-4.60	-2.22	1.71	38.76	30.27
Shahdol	-10.59	-10.15	-0.70	-7.77	-5.51	3.13	3.21	37.33	31.81
Indore	3.86	-9.88	-13.02	45.47	107.18	20.10	5.63	20.79	17.16
Dhar	27.60	15.11	-14.51	35.81	78.13	18.22	-0.52	3.27	3.34
Jhabua	96.40	247.33	6.16	34.82	52.52	7.57	1.63	5.57	3.42
Khargone(EN)	-5.93	-3.89	-1.90	20.61	26.09	1.76	15.03	23.14	3.73
Ujjain	-0.56	-5.26	-10.62	94.35	173.98	25.89	0.52	6.55	3.93
Dewas	6.65	13.70	-0.91	10.53	20.82	6.20	8.57	17.75	11.31
Bhind	-0.38	5.20	10.98	2.28	6.17	-1.92	5.62	24.26	16.93
Shivpuri	-2.10	1.46	2.68	24.72	53.73	1.53	15.49	34.95	13.59
Guna	5.95	3.12	8.99	-10.87	3.56	14.94	4.92	24.47	16.75
Sehore	8.87	5.67	-0.64	3.57	9.59	4.40	7.22	25.48	15.59
Raisen	0.56	4.01	2.22	0.87	5.33	4.36	4.94	29.98	19.82
Vidisha	-2.90	-2.62	0.01	1.42	5.98	3.88	3.36	11.55	6.22
Betul	14.65	22.05	4.37	7.01	22.75	12.64	-2.20	10.59	12.52
Rajgarh	-2.30	-1.86	-4.38	42.83	79.00	7.03	17.30	33.41	10.34
Harda	-2.32	14.99	17.20	3.54	-0.38	-5.71	10.14	51.20	34.29
NFSM Districts	-0.92	-1.22	-2.04	1.94	8.97	4.65	4.04	16.55	10.91
Non-NFSM Districts									
Chhindwara	-4.67	7.46	6.94	12.40	22.86	7.92	5.46	19.31	9.33
Narshingpur	1.69	7.89	11.16	-4.72	-6.30	-1.54	7.88	5.02	-2.43
Singroli	0	0	0	0	0	0	0.50	109.40	108.00
Umaria	-5.75	-0.14	9.62	-0.64	-0.18	0.29	1.70	34.57	30.51
Anuppur	0	0	0	-1.60	2.82	5.33	-2.73	37.55	38.02
Barwani	-8.29	-4.05	2.05	19.53	38.64	5.83	5.10	22.90	21.68
Khandwa	9.39	13.42	-1.67	7.69	10.98	3.56	8.40	17.93	8.69
Burhanpur	0	0	0	3.23	4.55	-0.48	3.25	8.91	5.95
Alirajpur	0	0	0	0	0	0	2.20	4.10	1.92
Mandsaure	-9.46	2.15	4.98	61.94	103.31	6.60	7.79	33.00	15.00
Neemuch	-6.79	-3.68	-5.29	34.54	41.06	-3.13	3.96	14.23	8.23
Ratlam	-6.16	-12.99	-8.38	91.70	129.56	10.51	4.57	-3.18	-2.86
Shajapur	0.14	-3.31	-6.34	29.50	49.04	8.32	8.22	20.92	9.10
Morena	-7.23	-6.65	-1.67	3.76	9.18	2.93	6.88	18.82	10.77
Sheopur Kalan	-8.27	-11.53	-3.73	119.18	257.47	7.02	16.66	37.34	19.44
Gwalior	-3.46	2.64	7.81	17.66	20.11	-4.88	6.92	27.63	14.38
Ashoknagar	0	0	0	-0.93	4.57	5.82	2.06	17.65	14.52
Datia	8.90	16.08	3.82	9.42	8.33	-3.93	7.37	17.93	9.41
Bhopal	-2.85	-2.38	-0.18	3.40	6.59	2.02	1.87	13.07	10.97
Hoshangabad	205.13	3.43	-4.49	4.82	6.06	1.13	3.69	17.19	12.89
Non-NFSM	2.09	-1.78	-2.39	12.23	14.20	-0.58	5.54	14.34	7.92
M.P.	-0.41	-1.63	-2.31	4.37	10.58	3.52	4.49	15.49	9.72

As far as the Non-NFSM-wheat districts are concerned the growth of area under Non-NFSM districts of Madhya Pradesh was found negative in all the districts (20) except in Narshingpur (1.69%/year), Khandwa (9.39%/year), Shajapur (0.14%/year), Datia (8.90%/year) and Hoshangabad (205.13%/year) district during 9th FYP and turned out to be positive in all the Non-NFSM districts during 11th FYP period except in only Anuppur (-2.73%/year) district.

The growth in production under non-NFSM districts was also found negative in almost all the districts except in Chhindwara (7.46%/year), Narshingpur (7.89%/year), Khandwa (13.42%/year), Mandsoure (2.15%/year), Gwalior (2.64%/year), Datia (16.08%/year) and Hoshangabad (3.43%/year) district which turned out to be positive in all the districts except in Ratlam (-3.18%/year) during 11th FYP period.

The growth in productivity of wheat under non-NFSM districts of Madhya Pradesh during 9th FYP period was found to be negative in almost all the districts which turned out to be positive during 11th FYP except in Narshingpur (-2.43%/year) and Ratlam (-2.86%/year) district in 11th FYP period.

The impact of area, production and productivity of NFSM-Pulses also observed in all the NFSM districts of Madhya Pradesh during 9th, 10th and 11th FYP and presented in table 2.5. It is observed from the data that the growth of area, production and productivity which was found only 1.09, 4.26 and 1.77 per cent per year respectively during 9th FYP period was increased to 2.03, 8.91 and 7.57 per cent per year in area, production and productivity respectively during 11th FYP period in Madhya Pradesh. Amongst all the NFSM districts-Pulses of Madhya Pradesh the growth of area of NFSM-Pulses districts was still found negative during 11th FYP period in Narshingpur, Sagar, Sidhi, Jhabua, Barwani, Burhanpur, Alirajpur, Neemauch, Bhind, Gwalior, Datia, Bhopal, Sehore, Raisen, Vidisha and Hoshangabad districts.

The growth of production of pulses was found positive in all NFSM-Pulses districts except in Sidhi, Jhabua, Khargone, Khandwa, Alirajpur, and Rajgarh district during 11th FYP.

Table 2.5: Average AGR in Area, Production and Yield of Total Pulses in NFSM districts in M.P.

Districts	9th FYP			10th FYP			11th FYP		
	Area (%)	Production (%)	Yield (%)	Area (%)	Production (%)	Yield (%)	Area (%)	Production (%)	Yield (%)
NFSM DISTRICTS									
Jabalpur	-2.10	8.18	8.60	1.82	8.78	9.96	1.34	10.48	9.57
Katni	2.47	4.32	0.79	3.79	7.03	5.14	8.42	19.34	10.95
Balaghat	-4.16	11.61	11.38	2.91	2.40	-0.49	0.42	5.01	4.24
Chhindwara	-1.37	-4.01	-4.58	9.84	16.47	39.09	4.20	18.47	15.13
Seoni	-11.69	23.69	59.15	27.13	0.77	-9.58	5.38	7.73	3.35
Mandla	-10.95	225.14	207.15	9.22	3.99	-1.60	17.66	8.45	-3.82
Dindori	-3.17	10.11	5.52	9.09	6.50	-5.12	11.21	9.96	8.91
Narsinghpur	2.39	7.18	4.07	2.10	1.32	-0.37	-0.44	1.10	2.11
Sagar	5.09	10.45	4.72	4.21	16.01	14.18	-0.58	10.74	12.37
Damoh	6.56	14.16	6.66	4.65	14.97	9.62	2.40	12.47	13.64
Panna	4.84	8.98	3.23	2.48	6.37	3.64	7.10	9.76	3.20
Tikamgarh	8.56	8.85	0.17	-1.04	-15.52	-7.56	8.04	20.14	5.87
Chhatarpur	4.56	6.77	2.01	-2.35	-7.97	-1.26	8.75	26.93	15.78
Rewa	1.93	3.50	2.17	0.81	-2.50	-2.75	8.17	10.69	10.16
Sidhi	0.00	-1.23	-1.14	0.66	-1.60	0.42	-7.58	-3.84	12.49
Singroli	0.00	0.00	0.00	0.00	0.00	0.00	0.05	4.78	5.73
Satna	7.61	10.14	2.74	3.41	-2.41	0.67	0.74	6.43	10.04
Shahdol	-9.89	-6.35	3.19	-9.97	-12.37	0.49	4.43	1.01	-1.54
Umaria	-1.22	0.49	0.84	2.83	1.69	-1.39	16.94	18.01	15.75
Anuppur	0.00	0.00	0.00	0.00	0.00	0.00	4.09	9.98	8.41
Indore	9.78	9.51	-2.21	-0.38	8.10	7.80	21.61	39.53	16.98
Dhar	3.93	35.52	8.04	1.56	16.22	5.64	11.54	15.10	2.72
Jhabua	-7.12	-3.65	0.39	0.85	6.67	6.45	-12.89	-12.02	1.41
Khargone (wn)	-12.89	-4.64	5.56	-1.37	2.34	-3.48	1.24	-4.11	-4.15
Barwani	-6.73	3.53	9.65	-0.91	-6.47	-8.40	-2.67	0.82	3.95
Khandwa (en)	-5.56	3.57	6.32	-5.94	-5.31	-0.52	1.11	-1.13	-1.56
Burhanpur	0.00	0.00	0.00	0.00	0.00	0.00	-0.79	3.92	4.43
Alirajpur	0.00	0.00	0.00	0.00	0.00	0.00	-0.88	-10.28	-8.32
Ujjain	65.09	29.67	-8.08	20.80	37.88	9.94	8.23	13.93	4.72
Mandsaur	14.24	35.63	1.54	4.20	14.93	0.23	3.22	11.99	8.14
Neemuch	-17.80	-15.67	-5.77	11.89	41.08	10.59	-3.09	1.28	3.70
Ratlam	18.48	16.11	-3.19	24.17	50.35	9.01	5.97	13.89	7.03
Dewas	18.26	29.97	1.46	5.22	7.64	2.92	2.93	3.64	0.68
Shajapur	4.69	3.94	-6.03	26.44	27.00	4.66	2.31	15.30	14.85
Morena	10.48	18.86	5.93	-17.44	-23.49	-2.45	14.82	6.85	-1.10
Sheopur kalan	33.20	29.09	-3.50	72.66	190.18	10.36	15.46	16.79	2.57
Bhind	5.34	17.55	9.26	-14.16	-22.01	-4.51	-3.84	4.86	9.33
Gwalior	5.04	9.13	5.73	-6.50	-9.93	0.89	-1.73	5.80	8.05
Shivpuri	2.88	7.84	4.33	8.71	43.25	5.80	1.15	9.69	8.22
Guna	3.76	12.81	9.10	-16.25	-18.29	12.58	0.54	25.25	24.75
Askhonagar	0.00	0.00	0.00	0.00	0.00	0.00	2.78	19.67	16.06
Datia	13.63	19.07	4.58	-5.98	-16.13	-2.71	-3.33	8.17	13.66
Bhopal	-0.95	0.41	0.86	1.29	1.63	1.87	-0.83	20.60	23.55
Sehore	0.96	6.43	2.02	5.67	0.53	-0.25	-0.75	10.82	15.13
Raisen	1.07	3.16	1.72	1.34	-3.05	-0.18	-3.17	5.84	11.25
Vidisha	1.91	5.51	3.77	5.15	-1.85	-0.69	-2.27	6.52	8.48
Rajgarh	-2.69	4.90	10.95	22.70	37.36	4.46	5.89	19.55	13.26
Hoshangabad	-7.27	-2.40	6.11	-8.14	-9.34	-3.76	-9.10	-9.15	0.63
Harda	0.40	10.27	8.91	-8.45	-8.24	5.69	5.34	6.33	15.29
Betul	1.99	7.28	2.41	5.30	6.25	3.66	1.37	46.50	51.62
Non reported	13.49	75.87	37.38	-0.11	-0.18	-0.17	0.00	0.55	0.55
NFSM total	1.09	4.26	1.77	1.68	0.41	0.43	2.03	8.91	7.57

The growth of productivity of pulses was also found positive in all NFSM-Pulses districts except in Mandla, Shahdol, Khargone, Khandwa, Alirajpur, and Morena during 11th FYP. Hence, special care should be taken up in these districts so that the production of pulses can be increased in the state.

2.4 Trend in Area and Input Use

The growth of net irrigated area (NIA), gross irrigated area (GIA), net sown area (NSA), percentage net irrigated to net sown area, irrigation intensity, cropping intensity and fertilizer consumption (kg/ha of NSA) was worked out for 9th (1997-98 to 2001-02), 10th (2002-03-2006-07) and 11th (2007-08 to 20011-12) FYP to have complete idea about the changes which are being taking place due to implementation of NFSM in the State and the results are presented in table 2.3.

The increase in growth of NIA (6.71%/year), GIA (6.34%/year), percentage Irrigated to NSA (6.72%/year), cropping intensity (1.33%/year) and fertilizer consumption (11.11%/year) was found maximum during 10th FYP as compared to 9th and 11th FYP, while growth of NSA (0.54%/year), irrigation intensity (0.29%/year) was found maximum during 11th FYP as compared to 9th and 10th FYP.

Table 2.6: Trend in Area and Fertilizer Use - MP

Year	Net irrigated Area (lakh ha)	Gross irrigated Area (lakh ha)	Net sown area (lakh ha)	% net irrigated to net sown area	Irrigation intensity (%)	Cropping intensity (%)	Fertilizer consumption (Kg/ha of NSA)
1997-98	5224	6527.1	19940	26.20	124.94	130.74	48.94
1998-99	5514	6813.7	19954	27.63	123.57	130.93	49.43
1999-00	5661	5827.8	15070	37.56	102.95	135.49	62.61
2000-01	4135	4284.9	14767	28.00	103.63	121.72	48.43
2001-02	4735	4898.6	14962	31.65	103.46	127.97	51.63
9th Plan AAGR*	**-0.88**	**-4.54**	**-4.99**	**5.73**	**-3.52**	**0.23**	**3.32**
2002-03	4494	4630.9	14621	30.74	103.05	124.35	48.20
2003-04	5631	5776.1	15049	37.42	102.58	132.18	65.35
2004-05	6042	6192.8	15078	40.07	102.50	134.67	70.72
2005-06	5682	5878.3	15074	37.69	103.45	130.76	62.41
2006-07	6365	6543.2	14838	42.90	102.80	136.24	81.22
10th Plan AAGR	**6.71**	**6.54**	**-0.15**	**6.72**	**-0.13**	**1.33**	**11.11**
2007-08	6418	6567.3	14687	43.70	102.32	139.01	88.64
2008-09	6506	6714.3	14941	43.55	103.20	138.26	95.27
2009-10	6892	7162.2	14972	46.03	103.93	143.01	110.95
2010-11	7140	7421.2	15119	47.22	103.94	145.82	123.54
2011-12	7887	8227.5	15237	51.76	104.32	147.77	124.17
11th Plan AAGR	**4.44**	**4.75**	**0.54**	**3.89**	**0.29**	**1.65**	**8.99**

In spite of higher growth in NIA (6.11%), GIA (6.34%), percentage net irrigated area to NSA (6.72%), cropping intensity (1.33%) and fertilizer consumption (11.11%) during 10th FYP, the growth in the above described parameters was also found to be increased by 4.44, 4.75, 3.89, 1.65, and 8.99 per cent respectively during 11th FYP period in the State. This might be due to excellent efforts made by the Govt. in implementation of NFSM.

2.5 Financial Progress under NFSM in the 11th & 12th FYP

The financial progress under NFSM in Madhya Pradesh is presented in table 2.7.

Table 2.7: Financial Progress under NFSM in Madhya Pradesh

Year	Amount Released (Rs. in lakhs)	Achievement (Expenditure) (Rs. in lakhs)	Percentage of Achievement
2007-08	466.7	89.7	19.22
2008-09	984.7	551.1	55.97
2009-10	1028.0	838.4	81.56
2010-11	3924.7	1512.8	38.55
2011-12	2014.5	1562.0	77.54
11th Plan AAGR	87.13	162.55	
2012-13	4476.4	4311.7	96.32
2013-14	4750.5	3425.0	72.10

It is observed from data that amount released as well as expenditure incurred during 11th FYP have been found to be increased from Rs 466.7 (2007-08) to 2014.5 lakh (2011-12) and Rs 89.7 (2007-08) to 1562.0 lakh (2011-12) with the growth of 87.13 and 162.55 per cent per year respectively. The percent achievement of amount released was also found to be increased by 19.22 (2007-08) to 77.54 per cent (2011-12) during 11th FYP which was found maximum in the year 2009-10 (81.56%) under NFSM in Madhya Pradesh.

The percent achievement of financial targets for NFSM during the 11th FYP in Madhya Pradesh at overall level amongst the different interventions (Table 2.8) was found to be maximum in water management (364.68%) followed by distribution on subsidy (303.46%), demonstration (83.60%), farmers training (76.29%), Production subsidy (69.25%), plant protection chemical (65.77%), IPM (65.73%), local initiatives (35.78%), farm machines (57.73%), micro nutrients (53.31%), project management team (44.43%), soil amendments (27.77%) and training of extension workers (25.17%). In

total 142.30 per cent achievement has been observed against the total financial target (84753.44 Lakh) for NFSM during 11th FYP period in Madhya Pradesh.

Table 2.8: Category wise Interventions Outlay and Expenditure for Wheat in the 11th FYP in Madhya Pradesh (2007-08 to 2011-12)

Interventions	Outlay (Rs in Lakh)	Expenditure (Rs in Lakh)	% Achievement
Demonstrations	13773.46 (16.25)	11514.574 (9.55)	83.60
Distribution Subsidy	11888.77 (14.03)	36078.047 (29.91)	303.46
Farm Machines	8881.90 (10.48)	5127.082 (4.25)	57.73
Farmers Training	1733.74 (2.05)	1322.641 (1.10)	76.29
Integrated Pest Management (IPM)	4321.81 (5.10)	2840.779 (2.36)	65.73
Local Initiatives	9635.50 (11.37)	3447.614 (2.86)	35.78
Micro Nutrients	6896.96 (8.14)	3676.972 (3.05)	53.31
Plant Protection Chemical	2079.93 (2.45)	1367.985 (1.13)	65.77
Production Subsidy	5847.48 (6.90)	4049.341 (3.36)	69.25
Project Management Teams	2087.79 (2.46)	927.626 (0.77)	44.43
Publicity	378 (0.45)	0	0.00
Seed Minikits	0.00	0.00	0.00
Soil Amendments (Lime/Gypsum)	3719.93 (4.39)	1033.128 (0.86)	27.77
Water Management	13496.17 (15.92)	49217.519 (40.41)	364.68
Training Of Extension Workers	12 (0.01)	3.02 (0.003)	25.17
Total	84753.44	120606.33	142.30

Note: Figure in parenthesis indicates percentage

It is also observed from the data that Rs. 378 lakh was released for publicity intervention but nothing can be achieved in this particular head in 11th FYP.

2.6 Correlation between Per Cent Change in NFSM Expenditure and Irrigation / Fertilizer in Madhya Pradesh

The correlation between percentage change in NFSM expenditure & percentage change in Net Irrigated Area and percentage change in NFSM expenditure & percentage change in fertilizer consumption in Madhya Pradesh have been analyzed, which shows high degree negative but non-significant correlation (-0.79) between percentage change in NFSM expenditure & percentage change in net irrigated area. The correlation between percentage change in NFSM expenditure & percentage change in fertilizer consumption (0.31) was found moderately positive but non-significant in Madhya Pradesh (Table 2.9).

Table 2.9: Correlation between Per Cent Change in NFSM Expenditure and Irrigation / Fertilizer in Madhya Pradesh

Year	% Change Total NFSM Expenditure	% Change of Net Irrigated Area	% Change of Fertilizer
Change over 2007-08			
Change over 2008-09	125.81	1.37	7.48
Change over 2009-10	1.29	5.92	16.46
Change over 2010-11	226.63	3.60	11.34
Change over 2011-12	-48.50	10.46	0.51
Correlation Coefficient		-0.79 ^{NS}	0.31 ^{NS}

NS- non-significant

The correlation between percentage change in total NFSM expenditure & percentage change in area, and percentage change in total NFSM expenditure & percentage change in production in Madhya Pradesh has also been analyzed, which shows moderate degree of positive correlation (0.27) between percentage change in total NFSM expenditure and percentage change in area of paddy, wheat and pulses. The correlation between percentage change in total NFSM expenditure and percentage change in production for paddy, wheat and pulses was found -0.85, which is negatively correlated with high degree of correlation in Madhya Pradesh (Table 2.10).

Table 2.10: Correlation between NFSM Expenditure and Area and Production of Paddy, Wheat and Pulses in Madhya Pradesh

Year	% Change Total NFSM Expenditure	% Change of Area Lakh ha	% Change Production '000 tonnes
Change over 2007-08			
Change over 2008-09	125.81	2.11	17.00
Change over 2009-10	1.29	5.12	14.34
Change over 2010-11	226.63	5.03	-2.43
Change over 201-12	-48.50	2.49	46.50
Correlation Coefficient	-	0.27 ^{NS}	-0.85 ^{NS}

NS- non-significant

Both the correlation coefficients were found non-significant. As percentage change in total NFSM expenditure is not tuned with percentage change of net irrigated area, percentage change in fertilizer consumption, percentage change in area and production of paddy, wheat and pulses therefore sincere efforts are needed to increase net irrigated area, fertilizer consumption, area and production of paddy, wheat and pulses with respect to NFSM expenditure.

2.7 Summary of the Chapter

This chapter deals with the impact of NFSM on foodgrains production in Madhya Pradesh. The growth of area, production and productivity of major food grain crop viz. paddy, wheat and pulses during 9th, 10th and 11th FYP period has been observed in different NFSM and Non-NFSM districts of Madhya Pradesh. The growth in net irrigated area, gross cropped area, net area sown, percentage to net irrigated area to net sown area, irrigation intensity, cropping intensity, fertilizer consumption, amount release and expenditure incurred during 10th and 11th FYP period as also been considered to drown conclusion. The correlation between percentage change in NFSM expenditure and percentage change in net irrigated area, fertilizer and production of food grains in Madhya Pradesh has also been analyze for the study. As far as the growth of area, production and productivity of paddy concerned it was found to be positive and increased by 3.02, 18.33 and 4.34 per cent per year respectively during 9th FYP with increase in area, production and productivity from 16.18 (1997-98) to 17.66 lakh ha (2001-02), 11.90 (1997-98) to 16.92 lakh t (2001-02) and 7.35 (1997-98) to 8.49 q/ha (2001-02) respectively. The growth of area was found to be decreased with a magnitude of 0.90 per cent per year during 10th FYP period while, the growth of production and productivity was found to be increased by 4.79 and 5.66 per cent per year respectively in Madhya Pradesh. The area, production and productivity of paddy was found to be increased with a growth of 0.33, 11.79 and 11.00 per cent per year respectively during 11th FYP period.

The growth in area, production and productivity of wheat was found to be decreased by -0.45, -1.60 and -1.55 per cent per year respectively during 9th FYP. During this plan area and production were found to be decreased from 45.02 (1997-98) to 37.04 lakh ha (2001-02) and 71.54 (1997-98) to 60.01 lakh tones (2001-02) respectively, while the productivity was increased from 16.55 (1997-98) to 16.91 q/ha (2001-02) with decreasing trend due to drastic decrease in the year 2000-01 (15.35 q/ha) as compared to year 1999-2000 (19.38 q/ha). The growth of area, production and productivity of wheat in Madhya Pradesh was found to be increased from 33.81 to 42.75 lakh ha, 49.23 to 78.48 lakh tones and 15.20 to 19.16 q/ha respectively with AAGR of 3.60% (Area), 8.46% (Production) and 3.27% (Productivity) per annum respectively during 10th Five Year

Plan (2002-03 to 2006-07). The production was found to be increased due to increase in area and productivity of wheat in the state during this particular plan period. The growth of area, production and productivity of wheat was also found to be increased from 41.01 (2007-08) to 52.61 lakh ha (2011-12), 67.37 (2007-08) to 145.44 lakh tones (2011-12) and 17.14 (2007-08) to 27.70 q/ha (2011-12) with AAGR of 4.47, 15.48 and 8.60 per cent per year respectively during the 11th FYP period.

The production of pulses in the state was also increased from 30.81 (1997-98) to 32.22 lakh t (2001-02), 22.40 (2002-03) to 27.21 lakh t (2006-07) and 26.73 (2007-08) to 37.17 lakh t (2011-12) with annual growth of 4.26, 0.41 and 8.91 per cent per year during 9th, 10th and 11th FYP respectively. The productivity of pulses was also found to be increased from 7.67 (1997-98) to 7.85 q/ha (2001-02), 6.04 (2002-03) to 6.27 q/ha (2006-07) and 6.07 (2007-08) to 7.81 q/ha (2011-12) with annual growth of 1.77, -2.93 and 7.57 per cent per year during 9th, 10th and 11th FYP respectively in Madhya Pradesh. The negative trend in productivity (-2.93%/year) was observed during 10th FYP which turned into positive to a magnitude of 7.75 per cent per year during 11th FYP period. It can be concluded from above result that due to effective implementation of NFSM in Madhya Pradesh the area, production and productivity of wheat, paddy and pulses increased many folds during the 11th FYP as compared to 9th and 10th FYPs period due to the sincere efforts made by the scientists and officials of the Agriculture universities and state department of Agriculture. The state could be able to prevailed prestigious '**Krishi Karman**' Award from consecutive three times i.e. in the year 2011-12, 2012-13 and 2013-14 from the president of India.

In spite of higher growth in NIA (6.11%), GIA (6.34%), percentage net irrigated area to NSA (6.72%), cropping intensity (1.33%) and fertilizer consumption (11.11%) during 10th FYP, the growth in the above described parameters was also found to be increased by 4.44, 4.75, 3.89, 1.65, and 8.99 per cent respectively during 11th FYP period in the State. This might be due to excellent efforts made by the Govt. in implementation of NFSM.

The percent achievement of financial targets for NFSM during the 11th FYP in Madhya Pradesh at overall level amongst the different interventions was found to be maximum in water management (364.68%) followed by distribution on subsidy

(303.46%), demonstration (83.60%), farmers training (76.29%), Production subsidy (69.25%), plant protection chemical (65.77%), IPM (65.73%), local initiatives (35.78%), farm machines (57.73%), micro nutrients (53.31%), project management team (44.43%), soil amendments (27.77%) and training of extension workers (25.17%). In total 142.30 per cent achievement has been observed against the total financial target (84753.44 Lakh) for NFSM during 11th FYP period in Madhya Pradesh.

The correlation between percentage change in total NFSM expenditure & percentage change in area, and percentage change in total NFSM expenditure & percentage change in production in Madhya Pradesh has also been analyzed, which shows moderate degree of positive correlation (0.27) between percentage change in total NFSM expenditure and percentage change in area of paddy, wheat and pulses. The correlation between percentage change in total NFSM expenditure and percentage change in production for paddy, wheat and pulses was found -0.85, which is negatively correlated with high degree of correlation in Madhya Pradesh. As percentage change in total NFSM expenditure is not tuned with percentage change of net irrigated area, percentage change in fertilizer consumption, percentage change in area and production of paddy, wheat and pulses therefore sincere efforts are needed to increase net irrigated area, fertilizer consumption, area and production of paddy, wheat and pulses with respect to NFSM expenditure.

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CHAPTER III

HOUSEHOLD CHARACTERISTICS, CROPPING PATTERN AND PRODUCTION STRUCTURE

This chapter deals with HHs characteristics, socio economic profile, characteristics of operational holding, sources of irrigation, structure of tenancy, cropping pattern and production structure along with per acre cost and return of wheat. In this chapter assets holding by the sample HHs along with sources and purpose of credit were also taken into account and described briefly.

3.1 Socio Economic Profile of Sample Households

It is imperative to have the complete knowledge about various socio economic characteristics of the sample farmers before going into detail about the study to understand their preferences, customs, traditions for drawing conclusion on the basis of findings about adoption and non-adoption of different technologies provided under the NFSM and to suggest policy implications for the future course of action. Socio economic profile of the sample HHs and their characteristics such as HHs members engaged in farming, age group and education status of the family members, caste composition, occupation, income from different sources, area operated under various size of holdings and the numbers of holdings in each size group along with average size of holdings were studied for this reason and depicted in Table 3.1.

Table 3.1 shows that out of 300 NFSM and 100 Non-NFSM sample HHs 68 and 65 percent were found to be engaged in farming, their average size of family in was found to be 6 & 5 members respectively. In case of NFSM and Non-NFSM HHs, the percent of male and female were found to be 92.7 & 7.3 and 95 & 5 per cent respectively. As for as composition of age group of the family members of the HHs is concerned, under NFSM 41, 35 and 24 per cent and under Non- NFSM 42, 36 and 22 per cent were found to be adult males (>15 years), adult female (>15 years) and children (<15 years), respectively. The education level of the HHs indicate that the percent of HHs having matriculation and above degrees were found to be more in case of NFSM (63.3 %) as compared to Non-NFSM (46 %) HHs, while the per cent of HHs who are illiterate or educated up to middle level were found to be more in

case of Non-NFSM (54 %) as compare to NFSM (36.7 %) HHs. The caste composition shows that the OBC and General Categories were found more in case of Non-NFSM (81 %) as compared to NFSM (61 %) HHs, while ST and SC categories were found to be more in case of NFSM (39 %) as compared to Non-NFSM HHs (19 %).

Table 3.1: Socio-Economic Profile of the Sample HH (% of HH)

Characteristics			NFSM	Non-NFSM
Total HHs surveyed: numbers			300	100
HHs size: numbers			6	5
% of HH members engaged in farming			68	65
Gender of the Respondent (%)		Male	92.7	95.0
		Female	07.3	05.0
Age group of the family members (%)		Adult Males (›15 yrs)	41.0	42.0
		Adult Females (›15 yrs)	35.0	36.0
		Children (‹15 yrs)	24.0	22.0
Education status of the family members (%)		Illiterate	04.7	08.0
		Primary	08.3	18.0
		Middle	23.7	28.0
		Matriculation/secondary	20.7	20.0
		Higher secondary	24.3	16.0
		Degree/Diploma	16.3	09.0
		Above Degree	02.0	01.0
Caste of HHs (%)		SC	06.0	03.0
		ST	33.0	16.0
		OBC	47.7	53.0
		General	16.3	28.0
Occupation income (Rs. /annum/HH)		Only agriculture	208296	193170
		Own business	16319	00.00
		Salaried/pensioners	7425	12004
		Wage earners	00.00	00.00
		Others*	7759	18796
		Income from all sources	239798	223970
Net operated area	% of area	Marginal (0.1 to 2.5 ac)	07.2	04.6
		Small (2.51 to 5 ac)	23.1	17.9
		Medium (5.1 to 10 ac)	25.9	17.5
		Large (10.1 and above)	43.8	60.0
	% of holdings	Marginal (0.1 to 2.5 ac)	25.0	29.0
		Small (2.51 to 5 ac)	37.7	18.0
		Medium (5.1 to 10 ac)	22.6	36.0
		Large (10.1 and above)	14.7	17.0
	Average size	Total (acres)	6.6	07.7

*Income from others includes dairy, poultry and fisheries etc.

The main source of income of NFSM and Non-NFSM HHs was found to be agriculture. In case of NFSM and Non-NFSM HHs, annual income per HHs was found to be Rs. 208296 & Rs. 193170, Rs. 7425 & Rs. 12004, Rs. 7759 & Rs. 18796

from agriculture, salaries/ pension and other (Dairy, poultry, fishries etc.) occupations respectively. NFSM HHs were also engaged in their own business and earn Rs. 16319/annum/HH. None of the HHs was found to be engaged as wage earner. The annual income per HHs from all sources was found to be more in case of NFSM (Rs. 239798/-) as compared to Non-NFSM (Rs. 223970/-) HHs. As for as average size of holdings is concerned, it was found 6.6 and 7.7 acres in case of NFSM and Non-NFSM HHs, respectively. The numbers and area operated under NFSM HHs were found to be 25 & 7.2% (marginal), 37.7 & 23.1% (small), 22.7 & 25.9% (medium) and 14.7 & 43.8% (large), while in case of Non-NFSM HHs it was 29 & 4.6, 18 & 17.9, 36 & 17.5 and 17 & 60 percent respectively.

3.2 Characteristics of Operational Holdings

The characteristics of operational holdings of sample HHs (NFSM and Non-NFSM) described about total owned land, uncultivated land/fallow land, cultivated land (own), leased in land, leased out land, net operated area, cropping intensity, irrigation intensity, net operated area per HHs & total owned land per HHs and presented in table 3.2.

Table 3.2: Characteristics of Operational Holdings of Sample HH (acres per HH)

Particulars	NFSM	Non-NFSM
1. Total owned land	6.2	7.6
2. Un-cultivated land/Fallow land	0.0	0.0
3. Cultivated land (Own)	6.2	7.6
4. Leased-in land	0.4	0.1
5. Leased-out land	0.0	0.0
6. Net Operated Area(3+4)	6.6	7.7
7. Cropping Intensity (%)	208	200
8. Irrigation Intensity (%)	209	200
9. Net operated area per HH	6.6	7.7
10. Total owned land per HH	6.2	7.6

*Cropping Intensity= (Gross Cropped Area/Net Cropped Area)*100
**Irrigation Intensity= (Gross Irrigated Area/Net Irrigated Area)*100

The data shows that the total owned land and cultivated land per HHs were found to be 6.2 and 7.6 acres in case of NFSM and Non-NFSM respectively, out of which the leased in land was found to be 0.4 and 0.1 acres per HHs. The leased out land was not found in practice in the area under study. The cropping and irrigation intensity was found to be higher in case of NFSM HHs (208 & 209 %) as compared to Non-NFSM HHs (200 & 200 %). The cropping intensity and irrigation intensity were found to be equal in case of NFSM and Non NFSM HHs, it might be due to farmers used to cultivate the crop twice in a year and their net cultivated area and

because of the irrigation available round the year, the respondents are able to harvest the crop twice in a year. On an average NFSM HH used to cultivate 8 per cent of net cultivated area in Zaid also.

3.3 Source of Irrigation and Structure of Tenancy

The various sources of irrigation in which tube well, canal+ tube well, canals, tank and open wells were found to be prevalent in the area under study. The area irrigated through different sources along with total rainfed and irrigated area is depicted in table 3.3.

Table 3.3 : Distribution of Area by Source of Irrigation (% to the total area)

Land details	NFSM	Non-NFSM
Only Canal	5.7	0.9
Only Tube well (Electric/diesel)	37.7	54.9
Canal+ Tube well (Electric/diesel)	33.6	0.5
Tank and others (Open well)	16.7	42.3
Rainfed area	6.3	1.5
Total irrigated area per HH (acres)	6.2	7.6
Total rainfed area per HH (acres)	0.4	0.1

*Figures in the parenthesis indicates percentage to the total

Tube wells were found to be major source of irrigation in case of NFSM and Non-NFSM HHs and found to irrigate 37.7 and 54.9 percent of area respectively. After tube well, the major source of irrigation was found to be canal+tube well (33.6 %), tank and open well (16.7 %) and canal (5.7 %) in case of NFSM HHs, while only 6.3 percent of total area under NFSM HHs remain rainfed. In case of Non-NFSM HHs other major sources of irrigation were found to be tank and open well (42.3%) followed by canal (0.9%) and canal+tube well (0.5%), while the rainfed area was reported to be only 1.5 percent. The total irrigated area and total rainfed area was found to be 6.2 and 0.4 acre incase of NFSM and 7.6 and 0.1 acre in case of Non-NFSM HHs.

Table 3.4 : Nature of Tenancy in Leasing-in/Leasing-out Land

(% to the total leased-in/leased-out area)

Particulars	NFSM		Non-NFSM	
	Leasing-in	Leasing-out	Leasing-in	Leasing-out
Share cropping	0.0	0.0	0.0	0.0
Fixed rent in cash	**100.0**	**0.0**	**100.0**	**0.0**
Fixed rent in kind	0.0	0.0	0.0	0.0
Both (cash and kind)	0.0	0.0	0.0	0.0
Against labour	0.0	0.0	0.0	0.0
Others	0.0	0.0	0.0	0.0
Aggregate	**100.0**	**0.0**	**100.0**	**0.0**

The nature of tenancy in leasing-in/leasing-out was also observed in the study area and illustrated in table 3.4. The cent percent HHs whether related to NFSM or non-NFSM were found to operate leased in land on fixed rent in cash basis. The other nature of leased in land was not found to be prevalent in the area under study (Table 3.4).

3.4 Cropping Pattern and Per Acre Cost and Returns

Cropping pattern indicates the proportion of area under various crops at a point of time. It is a dynamic concept because no cropping pattern can be said to be ideal for all times to a particular region. It changes over space and time with a view to meet requirements and is governed largely by the physical as well as cultural, technological factors and market forces. The change in a cropping pattern from one year to the next can occur by changing the relative acreage of existing crops, and/or by introducing new crops, and/or by cropping existing crops due to changes that have taken place in the agricultural development. These changes are brought about by socioeconomic influence.

Table 3.5: Cropping Pattern of Sample HH (% of Gross Cropped Area)

Name of the Crop	NFSM	Non-NFSM
Rabi		
Paddy	25.8	14.7
Soyabean	21.0	35.0
Kharif		
Wheat	36.3	42.8
Gram	10.1	7.1
Other pulses (Lentil)	0.8	0.1
Zaid		
Moong	6.0	0.3
Total	**100**	**100**

As for as cropping pattern of NFSM HHs is concerned, it is dominated by wheat (36.3%) followed by paddy (25.8%), soybean (21.0%), gram (10.1%), moong (6.0%) and other pulses (0.8%), while in case of Non-NFSM HHs the maximum area was covered by wheat (42.8%) followed by soybean (35.0%), paddy (14.7%), gram (7.1%), moong (0.3%) and other pulses (0.1%). It is clear from the cropping pattern of NFSM and Non-NFSM HHs that soybean and paddy were found to be dominating crops in kharif season, while in rabi season cropping pattern is dominated by wheat and gram. (Table 3.5)

The value of output, cost of production, net returns of NFSM and Non-NFSM HHs along with non-farm income and total income are presented in the table 3.6.

The value of output and net return per HHs from agriculture were calculated and found to be Rs. 335174 & Rs. 208296 for NFSM HHs and Rs. 344667 & Rs. 193170 for Non-NFSM HHs. The value of output and net return in terms of Rs./acre were obtained as Rs. 50784 & Rs. 31560 and Rs. 44762 & Rs. 25087 in case of NFSM and Non-NFSM HHs, respectively. The cost of cultivation was also analyzed and found to be Rs. 19224 (126878 Rs./HH) and 19675 (Rs. 151498/HH) in case of NFSM and Non-NFSM HHs, respectively.

Table 3.6 : Household Income from Agricultural and Non Agricultural Sources.

Costs and returns particulars	NFSM		Non-NFSM	
	Rs. /HH	Rs. /acre	Rs. / HH	Rs. /acre
Value of output (main + by-product)	335174	50784	344667	44762
Cost of Cultivation	126878	19224	151498	19675
Net returns (Farm business income)	208296	31560	193170	25087
Non-farm income	31502	4773	30800	4000
Total income	239798	**36333**	223970	**29087**

The non-farm income and total income were also analyzed in terms of Rs. per HH and found to be Rs. 31503 & Rs. 239798 (NFSM) and Rs. 30801 & Rs. 223970 Non-NFSM. In terms of Rs./acre they were found to be Rs.4773 & Rs. 36333 and Rs. 4000 & Rs. 29087 for NFSM and Non-NFSM HHs, respectively. It clearly shows that as far as total income with respect to Rs. /HH and Rs. /acre is concerned, it is more in case of NFSM HHs as compare to Non-NFSM HHs, which clearly signify the impact of NFSM over Non-NFSM.

Table 3.7 : Crop wise Per Acre Costs and Returns Among the Sample HHs.

Name of the Crop	NFSM				Non-NFSM			
	Yield* (Qtls/ acre)	Gross returns (Rs. /acre)	Cost of cultivation (Rs. /acre)	Net Returns (Rs. /acre)	Yield* (Qtls/ acre)	Gross returns (Rs. /acre)	Cost of cultivation (Rs. /acre)	Net Returns (Rs. /acre)
Paddy	13.7	19823	8362	11461	13.1	18928	8290	10638
Soybean	4.1	11221	6412	4809	3.1	8371	6126	2245
Average (Kharif)		**15522**	**7387**	**8135**		**13650**	**7208**	**6442**
Wheat	19.2	29676	11880	17796	14.9	23053	11722	11331
Gram	3.4	9124	2916	6208	3.7	11134	4180	6954
Lentil	4.0	13801	3069	10732	2.5	8750	2000	6750
Average (Rabi)		**17534**	**5955**	**11579**		**14312**	**5967**	**8345**
Moong (zaid)	5.0	17728	5882	11846	4.8	16800	6500	10300
Overall Average		50784	19224	31560		44762	19675	25087

Table 3.7 shows that paddy, soybean, wheat, gram, lentil and moong were the crops grown by NFSM and Non-NFSM HHs. In case of NFSM HHs, the yield (19.2 q/acre.) and net returns (Rs. 17796/acre) were found maximum in case of wheat, while minimum yield (3.4 q/acre) was obtained in case of gram. The minimum net returns was found in soybean (Rs. 4809/acre). The yield (14.9q/acre) as well as net

returns (Rs. 11331/acre) was found maximum in wheat in case Non-NFSM HHs also, while minimum yield (2.5q/acre) was found in case of lentil and minimum net return (Rs. 2245/acre) was obtained in case of soybean under Non-NFSM HHs.

The cost of cultivation (Rs/acre) was found maximum in case of wheat (Rs. 11880 and 11722/acre) and minimum in case of lentil (Rs. 3069 and 2000/acre) under NFSM and Non-NFSM HHs, respectively. As for as choice of crop is concerned, it is clear from the above discussion that wheat should be preferred for getting higher productivity and net return under NFSM and Non-NFSM HHs.

3.5 Assets Holding

The holding of assets make a person an efficient one in performing different operations on time which ultimately reflect the level of production and income.

Table 3.8: Farm Assets Holding by Sample HHs (Rs./HH)

Equipment code	Implements	NFSM Value (Rs.)	Non-FSM Value (Rs.)
Land development, tillage and seed bed preparation equipments (1 to 7)			
1	Tractor/mini tractor	62583	56500
2	Rotavator	2603	2250
3	Tiller/Trolly	25966	22750
4	Cultivators	--	--
5	Ploughs	--	--
6	Harrow	--	--
7	Others	--	--
Sowing and Planting equipments (8 to 13)			
8	Seed drill	8493	9170
9	Drum seeder	--	--
10	Transplantor	--	--
11	Furrow opener	--	--
12	Seed cum fertilizer drill	--	--
13	Others (Bullock cart)	2883	8300
Plant protection equipments (14 & 15)			
14	Sprayers	820	1235
15	Other Plant protection equipments	--	--
Harvesting and threshing equipments (16 to 20)			
16	Cutters	--	--
17	Harvesters	--	--
18	Thresher	7233	9730
19	Laveller blade	--	--
20	Others	--	--
Equipments for residue management (21 to 23)			
21	Brush cutter	--	--
22	crusher	---	--
23	Others (weeder)	--	187
Post harvest and agro-processing machines (24 & 25)			
24	Chopper	--	--
25	Others	--	--
Water lifting implements (26 to 27)			
26	Pumpset	15947	18270
27	Sprinkler	10507	15530
Others			
28	Others	48030	62990
Grand Total		185065	206912

The value of tractor was found to be Rs. 62683 & Rs. 56500/HH, tiller (Rs. 23867 & Rs. 22750/HH) and Rotavator (Rs. 2603 & Rs. 2250/HH) under land development, tillage and seed bed preparation equipment owned by NFSM and Non-NFSM HHs, respectively. In case of NFSM an an average HHs was found to have sowing and planting equipments, seed drill, sprayers, threshers, pump sets sprinklers and other (bullock) equipment of Rs. 8493, Rs. 2883, Rs. 820, Rs. 7233, Rs. 15947, Rs. 10507, Rs. 48030 and as for as Non-NFSM HHs are concerned on average HHs have similar assets of Rs. 9170, Rs. 8300, Rs. 1235, Rs. 9730, Rs. 18270, Rs. 15530, Rs. 62990, respectively. The total assets per HHs was found to be Rs 185065 and Rs 206912 in case of NFSM and Non-NFSM HHs respectively. As far as assets holding situation is concerned, Non-NFSM HHs were found to have better situation as compared to NFSM HHs. (Table 3.8)

3.6 Source and Purpose of Credit

Various sources are available to provide credit to the farming community for different purposes to satisfy their farm and family needs, about 80 per cent NFSM and 62 per cent Non-NFSM HHs were taken credit from different sources (Table 3.9). The main sources to obtained credit was commercial banks by NFSM (58%) and Non-NFSM (42%) HHs followed by Primary Agriculture Cooperative Society (PACS). In case of PACS this percentage was found to be 22 and 20 per cent respectively. The outstanding amount of commercial banks and PACS in case of NFSM and Non-NFSM HHs was found to be Rs. 40753/HH & Rs. 53710/HH, and Rs. 2843/HH & Rs. 5360/HH, respectively.

Table 3.9: Details of Source of Credit by the Sample HHs

Source of credit	NFSM		Non-NFSM	
	No. of HH of the total in %	Outstanding amount (Rs. /HH)	No. of HH of the total in %	Outstanding amount (Rs. /HH)
Commercial Banks	58	40753	42	53710
Primary Agriculture Cooperative Society (PACS)	22	2843	20	5360
Government Agency	--	--	--	--

Agriculture was found to be the main and only purpose of credit from the above sources. The amount of credit borrowed by a HH for this purpose was found to be Rs. 43596 and Rs. 59070 in case of NFSM and Non-NFSM HHs, respectively (Table 3.10).

Table 3.10: Details of Purpose of Credit by the Sample HHs (Rs. /HH)

Purposes	Purpose of credit	NFSM (Rs. /HH)	Non-NFSM (Rs. /HH)
Productive uses	Agriculture	43596	59070
	Animal Husbandry	--	--
	Others	--	--
	Total	43596	59070
Non productive uses	Daily consumption	--	--
	Social	--	--
	Others	--	--
	Total	--	--

3.7 Summary of the Chapter

The chapter deals with the socioeconomics profile of sample HHs. It is observed that 68 per cent of NFSM and 65 per cent of Non-NFSM HHs were engaged in farming and majority of them matriculated and above degrees holder and belongs to OBC category. The annual income (agriculture) and annual income (all sources) per HH was found to be more in case of NFSM as compared to Non-NFSM. The percentage of holding under NFSM HHs were found to be maximum in small category, while in case of Non-NFSM HHs it was more in medium category and percentage of area in both the cases was found maximum in large category. The average total owned land was found to be 6.2 and 7.6 acres in case of NFSM and Non-NFSM HHs, while net operated area was found to be 6.6 (NFSM) and 7.7 acres (Non-NFSM). Only leasing in land (0.4 and 0.1 acre/HHs) was found to be in practice through fixed rent in cash basis among NFSM and Non NFSM HHs respectively. The cropping and irrigation intensity were found to be higher in case of NFSM as compared to Non-NFSM HHs. The tube wells followed by canal + tube well and well were found to be major sources of irrigation in case of NFSM and Non-NFSM HHs. The total irrigated and rainfed area was found to be 6.2 and 0.4 acre in case of NFSM and 7.6 and 0.1 acre in case of Non-NFSM HHs, respectively.

As far as cropping pattern of sample NFSM and Non-NFSM HHs is concerned, it is dominated by wheat followed by paddy, soybean, gram, moong and other pulses. The average value of output and net return per HHs from agriculture was found to be Rs. 335174 & Rs. 208296 for NFSM HHs and Rs. 344667 & Rs. 193170 for Non-NFSM HHs. The average value of output and net return in terms of Rs./acre were obtained as Rs. 50784 & Rs. 31560 and Rs. 44762 & Rs. 25087 in case of NFSM and Non-NFSM HHs, respectively. The average cost of cultivation was found to be

Rs. 19224 (126878 Rs./HH) and 19675 (Rs. 151498/HH) in case of NFSM and Non-NFSM HHs, respectively.

As regards to average cost of cultivation of different crops grown by the HHs, the yield (19.2 q/acre.) and net return (Rs. 17796/acre) were found maximum in case of wheat, while minimum yield (3.4 q/acre) was obtained in case of gram by NFSM HHs. The average cost of cultivation was found maximum in case of wheat (Rs. 11880 and 11722/acre) and minimum in case of lentil (Rs. 3069 and 2000/acre) under NFSM and Non-NFSM HHs respectively. The average total asset per HHs was found to be Rs. 185065 and Rs. 206912 in case of NFSM and Non-NFSM HHs respectively. As far as assets holding situation is concerned, Non-NFSM HHs were found to be in better situation as compared to NFSM HHs. The main sources to obtain credit by HHs were found to be Commercial Banks followed by Primary Agriculture Cooperative Society (PACS). Agriculture was found to be the main and only purpose of credit from the above sources. The amount of credit borrowed by a HH for this purpose was found to be Rs. 43596 and Rs. 59070 in case of NFSM and Non-NFSM HHs, respectively in the area under study.

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CHAPTER IV

NFSM INTERVENTIONS AND ITS IMPACT ON FARMING

This chapter describe about benefits availed under the programme by the NFSM beneficiaries through various interventions and its impact on farming which includes awareness of NFSM among the sample beneficiaries, sources of awareness, usages of farm equipments, benefits from farm equipment, per acre cost and return of wheat, impact of the benefits availed under NFSM and marketed surplus in different marketing channels of wheat.

4.1 Awareness of NFSM

Awareness of NFSM among the sample beneficiaries and their sources of awareness viz. news paper, Agriculture Department, State Agriculture Universities, Krishi Vigyan Kendra, Raitha Sampark Kendra, farmers and friends, input supply, agri-exhibitions, Zilla Panchaya/Zanpad Panchayat/ gram panchayat and T.V/ radio have been analyzed and reported in table 4.1 and 4.2 respectively.

Table 4.1: Awareness of NFSM among the Sample Beneficiaries

Details of awareness	Percentage
Beneficiaries aware about the NFSM	100
Beneficiaries not aware about the NFSM	--
Beneficiaries who did not reply	--

It is clear from the table 4.1 that cent per cent sample beneficiaries were found to be aware about the NFSM, which shows that all the NFSM HHs are very well aware about the NFSM programme.

Table 4.2: Sources of Awareness of NFSM among the Sample Beneficiaries

	Sources of Awareness	% of beneficiaries aware about NFSM
1	Newspaper	82.0
2	Agriculture Dept	99.7
3	State Agricultural Universities	6.7
4	Krishi Vignana Kendra	10.7
5	Raitha Samparka Kendra	0.0
6	Farmers/Friends	93.3
7	Input Suppliers	11.3
8	Agri Exhibitions	3.7
9	ZP/TP/GP	0.0
10	Any other (TV / RADIO)	94.0

It is clear from the table 4.2 that the major source of awareness of NFSM among the sample beneficiaries was found to be Agriculture Department (99.7%) followed by T.V/radio (94%), farmers/ friends (93.3%), news paper (82.0%), input suppliers (11.3%), Krishi Vigyan Kendra (10.7%), State Agricultural Universities (6.7%) and agri-exhibitions (3.7%) as reported by sample HHs. Since the scheme is being implemented through Department of Farmers Welfare and Agriculture Development (Agriculture Department), the most of the farmers could be able to know about the scheme through this department, while the other major sources were found to be T.V/Radio, Farmers /Friends and news papers.

4.2 Cost and Subsidy Availed under NFSM

There are number of benefits are being given under the NFSM, since it started from the year 2007-08 and till now the benefits are being given to the sample beneficiaries through various interventions were analyzed and reported in table 4.3

Table 4.3: Benefit Availed by Sample Households.(2007-08 up to 2013-14)

Sl. No	Benefit Item Name	No. of beneficiaries benefitted	Avg. total cost (Rs. /HH benefited)	Subsidy as a % of total cost
1	Production of seeds- Certified seed	6 (1.1)	3218.7	100.00
2	Seed minikits of high yielding varieties/hybrid Paddy	73 (13.4)	3083.8	100.00
3	Incentive for micro nutrients (in deficit soils)		-	-
4	Incentive for lime in acid soils		-	-
5	Machineries/Tools		-	-
6	Cono weeder	1 (0.2)	1500	40.0
7	Zero till seed drills		-	-
8	Multi-crop planters		-	-
9	Seed drills	33 (6.1)	45530	32.7
10	Rotavators	12 (2.2)	84500	39.0
11	Pump sets	54 (9.9)	21599	47.5
12	Power weeder		-	-
13	Knap Sack Sprayers (Manual and Power Operated)	93 (17.1)	762	87.5
14	Sprinkler	74 (13.6)	21809	55.1
15	Plant protection chemicals	79 (14.5)	465	100.0
16	Integrated Nutrient Management		-	-
17	Integrated Pest Management	79 (14.5)	387	100.0
18	Training		-	-
19	Others (Pipline)	40 (7.4)	20648	69.9
	Total	**544 (100.0)**	**203503**	**45.7**

It is observed from the data that the total number of HHs benefited were found to be 544, which indicates 244 NFSM HHs (81%) availed benefits from more than one intervention. The NFSM HHs got hundred per cent subsidy for production of certified seed (6), seed minikits of HYV/hybrid Paddy (73), plant protection chemicals (79) and integrated pest management (79) through which per HHs was found to be benefited by Rs. 3218.7, Rs. 3083.8, Rs. 465 and Rs. 387 per HH respectively. About 93 HHs were benefited by knap sack sprayer and got benefits of Rs. 762/HH with subsidy of 87.5 per cent. For pipelines 69.9 percent subsidy was given which benefited 40 HHs by Rs. 20648/HH. The sprinklers were also distributed to 74 HHs with 55.1 per cent subsidy and availed the benefits of Rs. 21809/HH. The pump sets were also given 54 HHs with 47.5 per cent subsidy benefiting by Rs. 21599/HH. Cono weeder was supplied to only one HH, who got the benefit of Rs. 1500 with 40 per cent subsidy. The rotavators were supplied to 12 HHs and seed drill to 33 HHs, who were benefited by Rs. 845 and Rs. 45513/HH with 39.0 and 32.7 per cent subsidy respectively. The maximum benefits per HHs was availed through rotavators (Rs. 84500) followed by seeddrills (Rs. 45530), sprinklers (Rs. 21809), pumpsets (Rs. 21599) and pipeline (Rs. 20648), while in other items benefits varies from Rs. 387 to Rs. 3218.7/HH. The average total cost (Rs./HH benefited) was found to be Rs. 203503 and they were benefited by 45.7 per cent subsidy.

4.3 Annual Usage of Farm Equipments and their Benefits

Annual uses of farm equipments in term of number of days per annum per HH, area in acre covered per HH, imputed value (Rs. /HH) and rented value (Rs. /HH) were also analyzed for sprinkler, sprayer, pump set, seed drill, pipeline, rotavator and cono weeder.

Table 4.4: Annual Usage of Farm Equipments Availed under NFSM (Per annum)

S.No.	Name of the implement	No. of days used per benefited HH	Area covered per benefited HH (acres)	Imputed value own use (Rs. / benefitted HH)	Rented value (Rs. / benefitted HH)
1	Sprinkler	22	6.5	3180	0.0
2	Sprayer	12	6.4	616	0.0
3	Pumpset	22	5.5	3124	0.0
4	Seed drill	9	13.2	6955	10037
5	Pipeline	23	5.6	2734	0.0
6	Rotavator	14	23.1	6792	19750
7	Cono weeder	8	3.5	500	0.0
Total		**110**	**63.8**	**23901**	**29787**

The equipment from which per HH was benefited during the year for maximum number of days was found to be pipeline (22) followed by pump set and sprinkler (22), rotavator (14), sprayer (12) and seed drill (9) and cono weeder (8). The maximum area covered per HH by these equipments was found to be maximum in case of rotavator (23.1 acre) followed by seed dril (13.2 acre), sprinkler (6.5 acre), sprayer (6.4 acre), pipeline(5.6 acre), pump set (5.5 acre) and cono weeder (3.5 acre).

The imputed value in terms of Rs. /HH for using these equipments was found to be maximum in case of seed drill (Rs. 6955) followed by rotavator (Rs. 6792), sprinkler (Rs. 3180), pumpset (Rs. 3124), pipeline (Rs. 2734), sprayer (Rs. 616) and conoweeder (Rs. 500). The HHs benefited by providing rotavator and seed drill on rent basis and got benefit of Rs. 19750 and Rs. 10037 per HH respectively.

Table 4.5: Benefits Derived from Farm Equipments (% of benefitted HH)

S.No	Benefit derived/Name of the implement	Sprinkler	Sprayer	Pump set	Seed drill	Pipe lines	Rotavator	Cono weeder
1	Solved labour shortage	10.8	4.3	0.0	9.1	17.5	0.0	100
2	Timely operations	0.0	11.8	16.7	30.3	0.0	0.0	0
3	Saved water	56.8	0.0	20.4	0.0	80.0	0.0	0
4	Weed control	0.0	60.2	0.0	0.0	0.0	41.7	0
5	Good plant growth	20.3	23.7	0.0	24.2	0.0	58.3	0
6	Reduced drudgery	0.0	0.0	0.0	0.0	0.0	0.0	0
7	Helped in transportation	0.0	0.0	0.0	0.0	0.0	0.0	0
8	Reduced cost of cultivation	12.2	0.0	63.0	36.4	2.5	0.0	0
9	Increased cropping intensity	0.0	0.0	0.0	0.0	0.0	0.0	0
10	Reduced post harvest losses	0.0	0.0	0.0	0.0	0.0	0.0	0
	Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100**

The NFSM HHs was benefited by using various farm equipments which helped in driving benefits in various ways. The use of sprinkler benefited 56.8, 20.3, 12.2 and 10.8 per cent HHs in driving benefits by saving water, good plant growth, reduction in cost of cultivation and solving the problem of shortage of labour respectively. The sprayer helped in control of weeds, good plant growth, timely operations and labour shortage as reported by 60.2, 23.7, 11.8 and 4.3 per cent of NFSM HHs. Pump sets were found beneficial in reduction of cost of cultivation, saving water, timely operations as expressed by 63, 20.4 and 16.7 per cent of NFSM

HHs. Through seed drill 36.4, 30.3, 24.2 and 9.1 per cent of NFSM HHs were benefited by reduction in cost of cultivation, timely operation, good plant growth, and solved the labour shortage respectively. The maximum number of NFSM HHs (80%) expressed that water can be saved by using pipelines, 17.5 and 2.5 per cent expressed that pipelines are also useful in case of labour shortage and reduces the cost of cultivation respectively. Rotavator was found useful in good plant growth and control of weeds as expressed by 58.3 and 41.7 per cent NFSM HHs. All the NFSM HHs reported that cono weeder is useful in case of labour shortage. (Table 4.5)

The benefit availed under NFSM through seed drill, rotavators, pump set, sprayers, Chloropyriphos and 2- 4 D, pipeline, cono weeder and seed, their impact on productivity, reduction in material cost, water use, labour cost and losses after intervention, improvement in soil health is presented in terms of percentage in table 4.6.

Table 4.6: Impact of the Benefit Availed under NFSM (%)

Benefit derived/Name of the implement	Seed drill	Rotavators	Pump set	Sprayer	Sprinkler	Chloropy riphos & 2-4D	Pipe line	Conoweeder	Seed
Increase in productivity	10	05	10	05	15	10	10	05	40
Reduction in material cost	15	15	--	--	10	--	20	--	--
Reduction in water use (e.g., sprinkler)	05	--	05	--	20	--	--	--	--
Reduction in labour cost	05	05		20	25	20		15	
Reduction in losses after intervention	05	--	--	05	--	--	05	--	--
Improvement in soil health	--	--	--	--	10	--	10	--	--

The maximum increase in productivity was found due to good quality seed (40%) followed by sprinkler (15%). Each intervention vis. seed drill, pump set and pipeline, Chlorpyriphose and 2-4D were found to be responsible for increase in productivity by 10% per cent followed by 5 per cent increase by each intervention i.e. rotavator, sprayer and cono weeder. The 20 per cent reduction in material cost was found due to pipeline followed by seed drill and rotavator by 15 per cent each and 10 per cent due to sprinkler. Sprinkler were found to be beneficial for reduction in water use by 20 per cent followed by 5 per cent through seed drill and pump set

each. The labour cost was also found to be reduced by 25 per cent due to use of sprinkler and 20 per cent by use of sprayer and chlorpyriphose & 2-4D each. Cono weeder helps in reduction in labour cost by 15 per cent, while seed drill and rotavator reduce the labour cost by 5 per cent in each case. The per cent reduction in losses after intervention like seed drill, sprayer and pipeline was reported to be 5 per cent in each case. The improvement in soil health was noticed by 10 per cent of HHs using sprinklers. Similar observations were recorded by 10 per cent HHs, who were installed pipe line under NFSM.

4.4 Per Acre Cost and Return of Wheat 2012-13

The total cost per acre, cost of production per quintal, gross return and different variable cost along with net income were worked out in physical and monitory term for NFSM over Non-NFSM HHs and are presented in table 4.7.

The total cost of cultivation of wheat was found to be Rs. 18265/acre in case of NFSM HHs, which is higher than the Non-NFSM HHs (Rs. 15948/acre). The per acre quantity of main product, by-product and net income were found to be 19.2q, 11q, Rs. 19194 and 14.9q, 9.54q, Rs. 13783 in case of NFSM and Non-NFSM HHs respectively.

Table 4.7: Per Acre Cost and Return of Wheat in Rabi 2012-13

Particulars	NFSM		Non-NFSM		% Different over Non-NFSM
	Quantity	Value Rs.	Quantity	Value Rs.	
Hired labour (Mandays)	37	2594 (14.2)	9.0	1381 (8.7)	64.0
Family Labour (Mandays)	19	2356 (12.9)	23	3700 (23.2)	-44.4
Bullocks (Pair/day)	0.9	273 (1.5)	0.4	129 (0.8)	84.8
Tractor/Tiller (Hours)	3.7	2584 (14.1)	2.0	1466 (9.2)	53.9
Seed (Kg)	58	1583 (8.7)	55	1517 (9.5)	-8.9
FYM/Organic (Tonnes)	490	1038 (5.7)	872	1351 (8.5)	-32.9
Fertilizers (Kg)	112	1451 (7.9)	117	1353 (8.5)	-6.4
Pesticides (Kg/lit)	1.4	835 (4.6)	0.0	0.0	100
Irrigation charges (Rs.)	3.0	1741 (9.5)	3.0	1495 (9.4)	1.7
Harvesting (Rs.)	--	3171 (17.4)	--	3007 (18.9)	-7.9
Bagging (Rs.)	--	639 (3.5)	--	549 (3.4)	1.6
Total cost (Rs.)	--	18265	--	15948	14.53
Main product (q/acre)	19.2	29676	14.9	23053	28.73
By-product (q/acre)	11.0	7783	9.54	6678	16.55
Gross Income (Rs.)	--	37459	--	29731	25.99
Net Income (Rs.)	--	19194	--	13783	39.26
Cost per quintal (Rs.)	--	617	--	786	-21.50

which shows that although the cost of cultivation of wheat was seems to be lower in case of Non-NFSM HHs, even then the productivity and net income was found to be apparently higher in case of NFSM HHs. The cost of production per q. was also found to be less in case of NFSM HHs (Rs. 617/q) as compare to Non-NFSM HHs (786/q). The above discussion clearly indicates positive impact of NFSM over Non-NFSM HHs in production of wheat is the area under study.

4.5 Marketed Surplus and Marketing Channels

The marketed surplus and marketing channels of wheat were observed and presented in table 4.8.

Table 4.8: Marketing Channels and Marketed Surplus of Wheat

Sl. No.	Particulars of output sold	NFSM		Non-NFSM	
		% of HH to the total	% of the value marketed	% of HH to the total	% of the value marketed
1	Wholesale market	07.0	04.0	09.0	02.0
2	Co-operative	93.0	96.0	91.0	98.0
Total		100	100	100	100

The 93 and 91 per cent HHs prefer to sold out wheat through cooperative marketing society and the per cent of the value of wheat marketed through this society was found to be 96 and 98 per cent, while the per cent of total HHs sold out wheat in wholesale market were found to be only 7 and 9 per cent and the per cent of value of wheat marketed by them was only 4 and 2 per cent in case of NFSM and Non-NFSM HHs respectively.

4.6 Summary of the Chapter

The chapter deals with the impact of different NFSM intervention on farmers in Madhya Pradesh. it is observed that all NFSM HHs were found to be well aware about the NFSM. The major source of awareness among them was found to be Agriculture Department followed by T.V., news paper and farmers friends. The HHs got cent percent subsidy for production of certified seeds, seed minikits of HYV/hybrid Paddy and plant protection chemicals. The maximum number of HHs were benefited by knap sack sprayer and got benefits with high subsidy as compare to pipelines, sprinklers, pump sets, cono weeder, rotavators and seed drill. The maximum benefits per HHs was availed through rotavators followed by seeddrills, sprinklers, pumpsets and pipeline. The equipment from which per HHs was

benefited during the year for maximum number of days was found to be sprinkler, while the maximum area covered per HHs by rotavator. However, more than 80 per cent of selected NFSM HHs availed more than one benefits. The imputed value in terms of Rs. /HH for using these equipments was found to be maximum in case of seed drill (Rs.6955) followed by rotavator (Rs.6792), sprinkler (Rs.3180), pumpset (Rs.3124), pipeline (Rs.2734), sprayer (Rs.616) and cono weeder (Rs. 500).

The sprayer helped in control of weeds (60.2%), good plant growth (23.7%), timely operations (11.8%) and labour shortage (4.3%) as reported by maximum number of NFSM HHs, while pump sets were found beneficial in reduction of cost of cultivation, saving water and timely operations. The major benefits as reported by maximum per cent of HHs through seed drill were reduction in cost of cultivation, timely operation, good plant growth, and it solved problem of labour shortage. The maximum number of NFSM HHs (80 per cent) expressed that pipe line was found useful in case of labour shortage, reduces the cost of cultivation and also saved water. Rotavator was found to be useful in good plant growth and control of weeds. All the NFSM HHs reported that cono weeder is useful in case of labour shortage.

The maximum increase in productivity (40%) was found due to good quality seed and reduction in material and labour cost. The sprinkler was found to reduce water use and labour cost. The improvement in soil health was observed by HHs due to introduction of sprinkler and pipe line etc. in their field. The total cost of cultivation (Rs. per acre) of wheat was found to be higher in case of NFSM than the Non-NFSM HHs. The per acre productivity, gross income and net income were found to be apparently higher in case of NFSM as compared to Non-NFSM HHs. The cost of production per quintal was also found to be less in case of NFSM HHs as compared to Non-NFSM HHs. The cooperative market society was found to be most popular marketing channel in the area under study through which more than 90 per cent HHs sold more than 95 per cent of marketed surplus in the market.

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CHAPTER - V

PARTICIPATION DECISION, CONSTRAINTS AND SUGGESTIONS FOR IMPROVEMENT OF NFSM

Before suggesting some points about improvement in any programme, it is important to have complete idea about how the decision of participation in that particular programme is gets affected and what are the major constraints are being faced by the households in availing the benefits of the programme in complete sense. In this context, this chapter deals with factors influencing participation of farmers in NFSM, constraints faced in availing NFSM benefits, suggestions for improvement and reasons for non-participation in the NFSM along with suggestions for the inclusion of non- beneficiary for availing benefits under NFSM.

5.1 Factors influencing participation in NFSM

The logistic regression equation was employed to analyze the factors influencing participation in NFSM by the beneficiaries. The independent variable such as age in years (x_1), education in number of years in school (x_2), operational holdings (acres) (x_3), family size or no. of family members dependent on farming (x_4), SC/ST (x_5), OBC (x_6), income from farming (x_7), credit availed (per acre) (x_8) and farm asset value (Rs.) (x_9), have been considered to analyse the participation in NFSM (Y).

Table 5.1: Factors influencing participation in NFSM

(Dependent variable (y): 1 for NFSM beneficiaries; otherwise :0)

Independent variables	Coefficient(S.E)	P-Value
Age (in Years) (x_1)	-0.032 (0.012)	0.007
Education in no. of years in school (x_2)	0.155 (0.043)	0.000
Operational holdings (acres) (x_3)	-0.055 (0.035)	0.117
Family size or No. of family members dependent on farming (x_4)	.166 (0.061)	0.007
Caste SC/ST (x_5) OBC (x_6)	 1.249(0.394) 0.435(0.319)	 0.002 0.173
Income from farming (x_7)	0.000 (0.000)	0.058
Credit availed (per acre) (x_8)	0.000 (0.000)	0.052
Farm asset value (Rs.) (x_9)	0.000 (0.000)	0.706
Constant (a)	-0.476(0.88)	0.555
Likelihood ratio test statistic	395.469	

Figures in parenthesis shows Standard Error.

The Likelihhod ratio test statistic was found to be 395 in the fitted logistic regression equation, which reveals that 395 out of 400 respondents likely to

participate in NFSM in the area under study with the independent variables taken into consideration. Among different independent variable, age (-0.032) was found to be negative and highly significant to the participation, while caste i.e. SC/ST (1.249), numbers of family members dependent on farming (0.166), income from farming (0.000), credit availed (0.000) were also found to be positive and significant as far as participation in NFSM is concerned. Whereas caste OBC (0.435) farm asset value (0.000) were positive but non-significant to the participation in NFSM. Operational land holdings (-0.055) was found to be negative and non significant. It shows that respondents related to SC/ST having young age, more education, more number of family member dependent on farming, more income from farming, more credit availed from different institutions and small holdings are likely to participate more in the NFSM.

5.2 Constraints faced in availing the NFSM benefits

In future course of action and its adoption in large scale with its deeper penetration in the area of operation and across the region , understanding the scheme and its operationalization at apex and grass root level in a holistic manner along with constraints faced by the household is a prerequisite for betterment of any programme. There were various constraints faced by NFSM HHs, while availing the benefits under the are reported in table 5.2

Table 5.2: Constraints faced in availing the NFSM benefits (only Beneficiary)

S.No.	Constraints	Yes (%)
1	Information about NFSM not reaches comprehensively to the households	11.7
2	Eligibility or criteria for availing the subsidy is not provided to the households	11.3
3	Complicated procedure for the subsidy	16.7
4	More documentation	19
5	Subsidy paid after purchase while initial payment remains the highest problem	18.7
6	Lack of institutional financing facility	16
7	Lack of capacity building	13
8	Long time gap between the purchase and receiving the subsidy amount	20.3
9	Lack of technical advice	11
10	Biased towards large land owners	9
11	Poor quality of materials/machinery are supplied	9.7

The data revealed that the maximum number of beneficiaries reported that they did not face any constraints in availing the NFSM benefits, however few beneficiaries reported that the long time gap between the purchase and receiving the subsidy amount (20.3%), more documentation (19%), subsidy paid after purchase while initial payment remains the highest problem (18.7%), complicated procedure

for the subsidy (16.7%), lack of institutional financing facility (16%), lack of capacity building (13%), information about NFSM not reaches comprehensively to the households (11.7%), eligibility or criteria for availing the subsidy is not provided to the households (11.3%), lack of technical advice (11%), poor quality of materials/machinery are supplied (9.7%) and biased towards large land owners (9%) were the constraints in availing the NFSM benefites.

5.3 Suggestions for improvement in the NFSM

Suggestions for improvement in the NFSM as expressed by the beneficiaries are presented in the table 5.3.

Table 5.3: Suggestions for improvement of the NFSM (only Beneficiary)

Sl. No.	Suggestions	% of the beneficiaries
1	Timely supply of input	73
2	Quality material should be provided under the programme	26
3	Input delivery system should be strengthened to make the availability round the year and year to come	56
4	Financial facility should be available for margin money	86
5	Time lag between purchase of item and release of subsidy amount should be reduced.	23
6	Farmers visit/field days should be arranged for each intervention wherever it has been taken to demonstrate among the farmers for its wide publicity.	72

It is observed from the data that the major suggestion as reported by the maximum percentage of beneficiary HHs was the financial facility should be available for margin money (86%) followed by timely supply of input (73%), farmers visit/field days should be arranged for each intervention wherever it has been taken to demonstrated among the farmers for its wide publicity (72%), input delivery system should be strengthened to make the availability round the year and year to come (56%), quality material should be provided under the programme (26%) and time lag between purchase of item and release of subsidy amount should be reduced (23%).

Suggestions for improvement in the NFSM as expressed by the non-beneficiaries are presented in the table 5.3.

Table 5.4: Suggestions for improvement of the NFSM (Non-Beneficiary)

Sl. No.	Suggestions	% of the non-beneficiaries
1	Increase targets under different interventions and the number of beneficiaries	67
2	The programme should be designed in such a way so that every farmer should have equal opportunity to be benefited from it, so that more number of farmers will be able to get benefit from at least one intervention.	48
3	The farmers who have been taken benefit from any intervention of the programme will not be eligible to get benefit from another intervention.	74
4	Most of the non-beneficiaries farmers expressed that they were not preferred by govt. officials while providing benefits through different interventions under the programme. Hence, preference should be given to them	31

It is observed from the data the maximum percentage of non-beneficiary HHs reported that the farmers who have taken benefits from any intervention will not be eligible to get benefit from another intervention (74%), increase targets under different interventions and the number of beneficiaries (67%), the programme should be designed in such a way so that every farmer should have equal opportunity to be benefited from it, so that more number of farmers will be able to get benefit from at least one intervention (48%) and most of the non-beneficiaries farmers expressed that they were not preferred by govt. officials while providing benefits through different interventions under the programme, hence, preference should be given to them (31%).

5.4 Reasons for non-participation in the NFSM

There were two major reasons reported for non-participation by the non-beneficiaries i.e. lack of willingness (91%) followed by lack of knowledge (85%).

Table 5.5: Reasons for non-participation in the NFSM (Only non-beneficiary)

Sl. No.	Suggestions	% of the non- beneficiaries
1	Lack of knowledge	85
2	Lack of willingness	91

5.5 Suggestions for the inclusion of non- beneficiary for availing benefits under NFSM

The majority of non-beneficiaries reported that regular monitoring and concurrent evaluation (93%) along with wider publicity through gram shabha,

primary and secondary school teachers (87%) are needed for the inclusion of non-beneficiary for availing benefits under NFSM.

Table 5.6: Suggestions for the inclusion of non- beneficiary for availing benefits under NFSM (only non-beneficiary)

Sl. No.	Suggestions	% of the non- beneficiaries
1	Regular monitoring and concurrent evaluation	93
2	Wider publicity through gram shabha, primary and secondary school teachers	87

5.6 Summary of the Chapter

This chapter deals with participation decision and suggestions for improvement of NFSM in area under study. The logistic regression equation was employed to analyze the factors influencing participation in NFSM by the beneficiaries. The independent variable such as age in years (x_1), education in number of years in school (x_2), operational holdings (acres) (x_3), family size or no. of family members dependent on farming (x_4), SC/ST (x_5), OBC (x_6), income from farming (x_7), credit availed (per acre) (x_8) and farm asset value (Rs.) (x_9), have been considered to analyse the participation in NFSM (Y). The Likelihhod ratio test statistic was found to be 395 in the fitted logistic regression equation, which reveals that 395 out of 400 respondents likely to participate in NFSM in the area under study with the independent variables taken into consideration. Among different independent variable, age (-0.032) was found to be negative and highly significant to the participation, while caste i.e. SC/ST (1.249), numbers of family members dependent on farming (0.166), income from farming (0.000), credit availed (0.000) were also found to be positive and significant as far as participation in NFSM is concerned. Whereas caste OBC (0.435) farm asset value (0.000) were positive but non-significant to the participation in NFSM. Operational land holdings (-0.055) was found to be negative and non significant. It shows that respondents related to SC/ST having young age, more education, more number of family member dependent on farming, more income from farming, more credit availed from different institutions and small holdings are likely to participate more in the NFSM.

The maximum number of beneficiaries reported that they did not face any constraints in availing the NFSM benefits, however few beneficiaries reported that the long time gap between the purchase and receiving the subsidy amount (20.3%), more documentation (19%), subsidy paid after purchase while initial payment remains the highest problem (18.7%), complicated procedure for the subsidy

(16.7%), lack of institutional financing facility (16%), lack of capacity building (13%), information about NFSM not reaches comprehensively to the households (11.7%), eligibility or criteria for availing the subsidy is not provided to the households (11.3%), lack of technical advice (11%), poor quality of materials/machinery are supplied (9.7%) and biased towards large land owners (9%) were the constraints in availing the NFSM benefites.

The major suggestion as expressed by maximum percentage of beneficiary HHs was the financial facility should be available for margin money (86%) followed by timely supply of input (73%), farmers visit/field days should be arranged for each intervention wherever it has been taken to demonstrated among the farmers for its wide publicity (72%), input delivery system should be strengthened to make the availability round the year and year to come (56%), quality material should be provided under the programme (26%) and time lag between purchase of item and release of subsidy amount should be reduced (23%).

The maximum percentage of non-beneficiary HHs reported that the farmers who have taken benefit from any intervention will not be eligible to get benefit from another intervention (74%), increase targets under different interventions and the number of beneficiaries (67%), the programme should be designed in such a way so that every farmer should have equal opportunity to be benefited from it, so that more number of farmers will be able to get benefit from at least one intervention (48%) and most of the non-beneficiaries farmers expressed that they were not preferred by govt. officials while providing benefits through different interventions under the programme, hence, preference should be given to them (31%).

There were two major reasons reported for non-participation by the non-beneficiaries i.e. lack of willingness (91%) followed by lack of knowledge (85%) and the majority of them also reported that regular monitoring and concurrent evaluation (93%) along with wider publicity through gram sabha, primary and secondary school teachers (87%) are needed for the inclusion of non- beneficiary for availing benefits under NFSM.

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CHAPTER- VI

CONCLUDING REMARKS AND POLICY SUGGESTIONS

In order to combat the challenge of deficit food availability in the country, the Government of India launched National Food Security Mission (NFSM) in 2007-08 at the beginning of 11th Five Year Plan. The NFSM Programme targeted to escalate production of paddy, wheat and pulses by 10, 8, and 2 million tonnes, respectively by the end of Eleventh Five Year Plan.

The mission adopted twofold strategy to bridge the demand-supply gap. First strategy was to expand area, and the second was to bridge the productivity gap between potential and existing yield of food crops. Expansion of area approach was mainly confined to pulses and wheat only, and paddy was mainly targeted for productivity enhancement. The chief measures adopted to augment the productivity included: (1) acceleration of quality seed production; (2) emphasizing INM and IPM; (3) promotion of new production technologies; (4) supply of adequate and timely inputs; (5) popularizing improved farm implements; (6) restoring soil fertility; and (7) introduction of pilot projects like community generator and blue bull. A total amount of Rs 4500 crores have been spent under NFSM during the 11th FYP (GoI 2014).

The National Development Council (NDC) in its 53rd meeting held on 29th May, 2007 adopted a resolution to launch a Food Security Mission comprising paddy, wheat and pulses to increase the production of paddy by 10 million tons, wheat by 8 million tons and pulses by 2 million tons by the end of the Eleventh Plan (2011-12). Accordingly, a Centrally Sponsored Scheme, 'National Food Security Mission' (NFSM), was launched in October 2007 for five years (11th FYP) to increase production and productivity of wheat, paddy and pulses on sustainable basis so as to insure food security of the country. The aim is to bridge the yield gap in respect of these crops through dissemination of improved technologies and farm management practices. This mission has been for three components in 11th FYP i.e. (i) NFSM-Paddy; (ii) NFSM-Wheat; (iii) NFSM-Pulses.

The Mission is being continued during 12th Five Year Plan with new targets of additional production of food grains of 25 million tons of food grains comprising of 10 million tons paddy, 8 million tons of wheat, 4 million tons of pulses and 3 million tons of coarse cereals by the end of 12th Five Year Plan. The National Food Security Mission (NFSM) during the 12th Five Year Plan will have five components (i) NFSM- Paddy; (ii) NFSM-Wheat; (iii) NFSM-Pulses; (iv) NFSM-Coarse cereals and (v) NFSM-Commercial Crops.

The NFSM is extended to 12th Five Year Plan due to its success in achieving the targeted goal of production enhancement. It is essential to evaluate and measure the extent to which the programme and approach has stood up to the expectations. The study would enlighten the policy makers to incorporate necessary corrective measures to make the programme more effective and successful during the 12th Five Year Plan. The study intends to achieve the following specific objectives:

1. To analyse the trends in area, production, productivity of food grains in the NFSM and non NFSM districts in Madhya Pradesh.
2. To analyse the socio-economic profile of NFSM vis-a-vis Non-NFSM beneficiary farmers of wheat.
3. To assess the impact of NFSM on input use, production and income among the beneficiary farmers.
4. To identify factors influencing participation under NFSM; and
5. To identify the constraints hindering the performance and suggest ways and means for improvement of the programme.

The study is based on the survey data collected from sample wheat growers in selected NFSM districts of the State as shown in Table 1. For selection of farmers, a multi-stage sampling design was used for selection of respondents (Fig. 1.1). At the first stage, two NFSM districts viz. Harda and Balaghat were selected for the study. For the selection of districts in the State, production of wheat in the NFSM districts for the year 2012-13 was arranged in descending order. Among the NFSM districts, the district having highest production (Harda) and district having lowest production (Balaghat) were finally selected for the survey of Wheat.

Two talukas were selected from each district at the second stage, drawing one taluk from the nearby district headquarters and the second at a distance of 15-20 kilometres from the district headquarter. Subsequently, at the third stage, 75 beneficiaries and 25 non beneficiaries were selected purposefully from each taluka totalling to a sample size of 400 households comprised of 300 beneficiary households and 100 non beneficiary households in Madhya Pradesh.

For the selection of beneficiary households in each taluk, the beneficiary list was obtained from the Department of Agriculture/State Officials at the taluk level. While collecting the list, an attempt should be made to collect the households who have obtained benefits of various components irrespective of the year of benefit. The list contained the benefits obtained by the households for the whole of 11th Plan (2007-08 to 2011-12) and two years of 12th Plan (2012-13 and 2013-14). After obtained the beneficiary list, the households were selected in such a way that all the major components covered under the programme were got due representation. While selecting the households, a due care were taken for the crop development programme under which benefit pertained to only one year, e.g., seed, fertilizer, pesticides, etc., were distributed for the latest year while, machinery and equipment (that have much longer use) represented for the previous year including the period of 11th Plan. The selection of non-beneficiary households were done in the peripheral areas in such a way that a similar cropping pattern and baseline characteristics were represented by the non-beneficiary households as well. Giving representation to different size classes and various socio-economic characteristics were tried while selection of the beneficiary and non-beneficiary sample farmers.

In order to fulfill the first objective of analysing the trends in production, productivity of wheat in NFSM districts and Non-NFSM districts, secondary data on area, production and productivity of major food grains i.e. paddy, wheat and pulses for 9th, 10th and 11th FYPs were used. Average Annual Growth Rates (AAGR), correlation and graphical analysis were applied to draw conclusions.

For meeting the remaining objectives, primary household data were taken into consideration. The primary data relating to general information about the sample farmers, socio-economic profiles, cropping pattern, details on various inputs used in wheat cultivation, irrigation details, yield, returns, reasons for adoption/non-

adoption of NFSM interventions, constrains faced for availing the benefits, suggestions for improvement, etc., were collected from the sample beneficiary and non-beneficiary farmers using a pre-tested interview schedule. The primary household data were collected mainly pertaining to the agricultural year 2013-14, which is the latest agricultural year. In order to fulfill the remaining objectives, descriptive analysis, gross margin analysis, logistic regression equation and correlation techniques were used to draw conclusions.

The major finding of the study are :

The implementation of NFSM in the state has been quite satisfactory as during the 11th FYP the area, production and productivity of paddy, wheat and pulses were found to be increased during 11th FYP as compared to 10th FYP. The growth in area, production and productivity in all NFSM districts was found to be negative during 9th FYP, while it was found positive during 10th and 11th FYP.

As far as the growth of area, production and productivity of paddy concerned it was found to be positive and increased by 3.02, 18.33 and 4.34 per cent per year respectively during 9th FYP with increase in area, production and productivity from 16.18 (1997-98) to 17.66 lakh ha (2001-02), 11.90 (1997-98) to 16.92 lakh t (2001-02) and 7.35 (1997-98) to 8.49 q/ha (2001-02) respectively. The growth of area was found to be decreased with a magnitude of 0.90 per cent per year during 10th FYP period while, the growth of production and productivity was found to be increased by 4.79 and 5.66 per cent per year respectively in Madhya Pradesh. The area, production and productivity of paddy was found to be increased with a growth of 0.33, 11.79 and 11.00 per cent per year respectively during 11th FYP period.

The growth in area, production and productivity of wheat was found to be decreased by -0.45, -1.60 and -1.55 per cent per year respectively during 9th FYP. During this plan area and production were found to be decreased from 45.02 (1997-98) to 37.04 lakh ha (2001-02) and 71.54 (1997-98) to 60.01 lakh tones (2001-02) respectively, while the productivity was increased from 16.55 (1997-98) to 16.91 q/ha (2001-02) with decreasing trend due to drastic decrease in the year 2000-01 (15.35 q/ha) as compared to year 1999-2000 (19.38 q/ha). The growth of area, production and productivity of wheat in Madhya Pradesh was found to be increased from 33.81 to 42.75 lakh ha, 49.23 to 78.48 lakh tones and 15.20 to 19.16 q/ha respectively with

AAGR of 3.60% (Area), 8.46% (Production) and 3.27% (Productivity) per annum respectively during 10th Five Year Plan (2002-03 to 2006-07). The production was found to be increased due to increase in area and productivity of wheat in the state during this particular plan period. The growth of area, production and productivity of wheat was also found to be increased from 41.01 (2007-08) to 52.61 lakh ha (2011-12), 67.37 (2007-08) to 145.44 lakh tones (2011-12) and 17.14 (2007-08) to 27.70 q/ha (2011-12) with AAGR of 4.47, 15.48 and 8.60 per cent per year respectively during the 11th FYP period.

The production of pulses in the state was also increased from 30.81 (1997-98) to 32.22 lakh t (2001-02), 22.40 (2002-03) to 27.21 lakh t (2006-07) and 26.73 (2007-08) to 37.17 lakh t (2011-12) with annual growth of 4.26, 0.41 and 8.91 per cent per year during 9th, 10th and 11th FYP respectively. The productivity of pulses was also found to be increased from 7.67 (1997-98) to 7.85 q/ha (2001-02), 6.04 (2002-03) to 6.27 q/ha (2006-07) and 6.07 (2007-08) to 7.81 q/ha (2011-12) with annual growth of 1.77, -2.93 and 7.57 per cent per year during 9th, 10th and 11th FYP respectively in Madhya Pradesh. The negative trend in productivity (-2.93%/year) was observed during 10th FYP which turned into positive to a magnitude of 7.75 per cent per year during 11th FYP period. It can be concluded from above result that due to effective implementation of NFSM in Madhya Pradesh the area, production and productivity of wheat, paddy and pulses increased many folds during the 11th FYP as compared to 9th and 10th FYPs period due to the sincere efforts made by the scientists and officials of the Agriculture universities and state department of Agriculture. The state could be able to prevailed prestigious '**Krishi Karman**' Award from consecutive three times i.e. in the year 2011-12, 2012-13 and 2013-14 from the president of India.

In spite of higher growth in NIA (6.11%), GIA (6.34%), percentage net irrigated area to NSA (6.72%), cropping intensity (1.33%) and fertilizer consumption (11.11%) during 10th FYP, the growth in the above described parameters was also found to be increased by 4.44, 4.75, 3.89, 1.65, and 8.99 per cent respectively during 11th FYP period in the State. This might be due to excellent efforts made by the Govt. in implementation of NFSM.

The percent achievement of financial targets for NFSM during the 11th FYP in Madhya Pradesh at overall level amongst the different interventions was found to

be maximum in water management (364.68%) followed by distribution on subsidy (303.46%), demonstration (83.60%), farmers training (76.29%), Production subsidy (69.25%), plant protection chemical (65.77%), IPM (65.73%), local initiatives (35.78%), farm machines (57.73%), micro nutrients (53.31%), project management team (44.43%), soil amendments (27.77%) and training of extension workers (25.17%). In total 142.30 per cent achievement has been observed against the total financial target (84753.44 Lakh) for NFSM during 11th FYP period in Madhya Pradesh.

The correlation between percentage change in total NFSM expenditure & percentage change in area, and percentage change in total NFSM expenditure & percentage change in production in Madhya Pradesh has also been analyzed, which shows moderate degree of positive correlation (0.27) between percentage change in total NFSM expenditure and percentage change in area of paddy, wheat and pulses. The correlation between percentage change in total NFSM expenditure and percentage change in production for paddy, wheat and pulses was found -0.85, which is negatively correlated with high degree of correlation in Madhya Pradesh. As percentage change in total NFSM expenditure is not tuned with percentage change of net irrigated area, percentage change in fertilizer consumption, percentage change in area and production of paddy, wheat and pulses therefore sincere efforts are needed to increase net irrigated area, fertilizer consumption, area and production of paddy, wheat and pulses with respect to NFSM expenditure.

The socioeconomics characteristics of sample HHs reveals that 68 per cent of NFSM and 65 per cent of Non-NFSM HHs were engaged in farming and majority of them matriculated and above degrees holder and belongs to OBC category. The annual income (agriculture) and annual income (all sources) per HH was found to be more in case of NFSM as compared to Non-NFSM. The percentage of holding under NFSM HHs were found to be maximum in small category, while in case of Non-NFSM HHs it was more in medium category and percentage of area in both the cases was found maximum in large category. The average total owned land was found to be 6.2 and 7.6 acres in case of NFSM and Non-NFSM HHs, while net operated area was found to be 6.6 (NFSM) and 7.7 acres (Non-NFSM). Only leasing in land (0.4 and 0.1 acre/HHs) was found to be in practice through fixed rent in cash basis among NFSM and Non NFSM HHs respectively. The cropping and irrigation

intensity were found to be higher in case of NFSM as compared to Non-NFSM HHs. The tube wells followed by canal + tube well and well were found to be major sources of irrigation in case of NFSM and Non-NFSM HHs. The total irrigated and rainfed area was found to be 6.2 and 0.4 acre in case of NFSM and 7.6 and 0.1 acre in case of Non-NFSM HHs, respectively.

As far as cropping pattern of sample NFSM and Non-NFSM HHs is concerned, it is dominated by wheat followed by paddy, soybean, gram, moong and other pulses. The average value of output and net return per HHs from agriculture was found to be Rs. 335174 & Rs. 208296 for NFSM HHs and Rs. 344667 & Rs. 193170 for Non-NFSM HHs. The average value of output and net return in terms of Rs./acre were obtained as Rs. 50784 & Rs. 31560 and Rs. 44762 & Rs. 25087 in case of NFSM and Non-NFSM HHs, respectively. The average cost of cultivation was found to be Rs. 19224 (126878 Rs./HH) and 19675 (Rs. 151498/HH) in case of NFSM and Non-NFSM HHs, respectively.

As regards to average cost of cultivation of different crops grown by the HHs, the yield (19.2 q/acre.) and net return (Rs. 17796/acre) were found maximum in case of wheat, while minimum yield (3.4 q/acre) was obtained in case of gram by NFSM HHs. The average cost of cultivation was found maximum in case of wheat (Rs. 11880 and 11722/acre) and minimum in case of lentil (Rs. 3069 and 2000/acre) under NFSM and Non-NFSM HHs respectively. The average total asset per HHs was found to be Rs. 185065 and Rs. 206912 in case of NFSM and Non-NFSM HHs respectively. As far as assets holding situation is concerned, Non-NFSM HHs were found to be in better situation as compared to NFSM HHs. The main sources to obtain credit by HHs were found to be Commercial Banks followed by Primary Agriculture Cooperative Society (PACS). Agriculture was found to be the main and only purpose of credit from the above sources. The amount of credit borrowed by a HH for this purpose was found to be Rs. 43596 and Rs. 59070 in case of NFSM and Non-NFSM HHs, respectively in the area under study.

As far as the awareness about the NFSM is concerned all the NFSM HHs were found to be well aware about the NFSM. The major source of awareness among them was found to be Agriculture Department followed by T.V., news paper and farmers friends. The HHs got cent percent subsidy for production of certified

seeds, seed minikits of HYV/hybrid paddy and plant protection chemicals. The maximum number of HHs were benefited by knap sack sprayer and got benefits with high subsidy as compare to pipelines, sprinklers, pump sets, cono weeder, rotavators and seed drill. The maximum benefits per HHs was availed through rotavators followed by seeddrills, sprinklers, pump sets and pipeline. The equipment from which per HHs was benefited during the year for maximum number of days was found to be sprinkler, while the maximum area covered per HHs by rotavator. However, more than 80 per cent of selected NFSM HHs availed more than one benefits. The imputed value in terms of Rs. /HH for using these equipments was found to be maximum in case of seed drill (Rs.6955) followed by rotavator (Rs.6792), sprinkler (Rs.3180), pumpset (Rs.3124), pipeline (Rs.2734), sprayer (Rs.616) and cono weeder (Rs. 500).

The sprayer helped in control of weeds (60.2%), good plant growth (23.7%), timely operations (11.8%) and labour shortage (4.3%) as reported by maximum number of NFSM HHs, while pump sets were found beneficial in reduction of cost of cultivation, saving water and timely operations. The major benefits as reported by maximum per cent of HHs through seed drill were reduction in cost of cultivation, timely operation, good plant growth, and it solved problem of labour shortage. The maximum number of NFSM HHs (80 per cent) expressed that pipe line was found useful in case of labour shortage, reduces the cost of cultivation and also saved water. Rotavator was found to be useful in good plant growth and control of weeds. All the NFSM HHs reported that cono weeder is useful in case of labour shortage.

The maximum increase in productivity (40%) was found due to good quality seed and reduction in material and labour cost. The sprinkler was found to reduce water use and labour cost. The improvement in soil health was observed by HHs due to introduction of sprinkler and pipe line etc. in their field. The total cost of cultivation (Rs. per acre) of wheat was found to be higher in case of NFSM than the Non-NFSM HHs. The per acre productivity, gross income and net income were found to be apparently higher in case of NFSM as compared to Non-NFSM HHs. The cost of production per quintal was also found to be less in case of NFSM HHs as compared to Non-NFSM HHs. The cooperative market society was found to be most popular marketing channel in the area under study through which more than 90 per cent HHs sold more than 95 per cent of marketed surplus in the market.

This chapter deals with participation decision and suggestions for improvement of NFSM in area under study. The logistic regression equation was employed to analyze the factors influencing participation in NFSM by the beneficiaries. The independent variable such as age in years (x_1), education in number of years in school (x_2), operational holdings (acres) (x_3), family size or no. of family members dependent on farming (x_4), SC/ST (x_5), OBC (x_6), income from farming (x_7), credit availed (per acre) (x_8) and farm asset value (Rs.) (x_9), have been considered to analyse the participation in NFSM (Y). The Likelihhod ratio test statistic was found to be 395 in the fitted logistic regression equation, which reveals that 395 out of 400 respondents likely to participate in NFSM in the area under study with the independent variables taken into consideration. Among different independent variable, age (-0.032) was found to be negative and highly significant to the participation, while caste i.e. SC/ST (1.249), numbers of family members dependent on farming (0.166), income from farming (0.000), credit availed (0.000) were also found to be positive and significant as far as participation in NFSM is concerned. Whereas caste OBC (0.435) farm asset value (0.000) were positive but non-significant to the participation in NFSM. Operational land holdings (-0.055) was found to be negative and non significant. It shows that respondents related to SC/ST having young age, more education, more number of family member dependent on farming, more income from farming, more credit availed from different institutions and small holdings are likely to participate more in the NFSM.

The maximum number of beneficiaries reported that they did not face any constraints in availing the NFSM benefits, however few beneficiaries reported that the long time gap between the purchase and receiving the subsidy amount (20.3%), more documentation (19%), subsidy paid after purchase while initial payment remains the highest problem (18.7%), complicated procedure for the subsidy (16.7%), lack of institutional financing facility (16%), lack of capacity building (13%), information about NFSM not reaches comprehensively to the households (11.7%), eligibility or criteria for availing the subsidy is not provided to the households (11.3%), lack of technical advice (11%), poor quality of materials/machinery are supplied (9.7%) and biased towards large land owners (9%) were the constraints in availing the NFSM benefites.

The major suggestion as expressed by maximum percentage of beneficiary HHs was the financial facility should be available for margin money (86%) followed

by timely supply of input (73%), farmers visit/field days should be arranged for each intervention wherever it has been taken to demonstrated among the farmers for its wide publicity (72%), input delivery system should be strengthened to make the availability round the year and year to come (56%), quality material should be provided under the programme (26%) and time lag between purchase of item and release of subsidy amount should be reduced (23%).

The maximum percentage of non-beneficiary HHs reported that the farmers who have taken benefit from any intervention will not be eligible to get benefit from another intervention (74%), increase targets under different interventions and the number of beneficiaries (67%), the programme should be designed in such a way so that every farmer should have equal opportunity to be benefited from it, so that more number of farmers will be able to get benefit from at least one intervention (48%) and most of the non-beneficiaries farmers expressed that they were not preferred by govt. officials while providing benefits through different interventions under the programme, hence, preference should be given to them (31%).

There were two major reasons reported for non-participation by the non-beneficiaries i.e. lack of willingness (91%) followed by lack of knowledge (85%) and the majority of them also reported that regular monitoring and concurrent evaluation (93%) along with wider publicity through gram sabha, primary and secondary school teachers (87%) are needed for the inclusion of non- beneficiary for availing benefits under NFSM.

The following policy implication from the above findings:

1. It is held that nearly 40 percent of potential yield of paddy, wheat and pulses remains untapped, thus underlining the need to increase the percent production level of food grains there is a need to closely look into the factors that led to the progress.
2. It is observed during the investigation that seed committee are not in functioning in the area. Hence, seed committees are constituted in each district and made effective in dealing with supply of seed to the farmers well in time since any shortage of seed will adversely impact the production of crops.

3. It is also observed during the investigation the conventional method of transfer of funds is still in operation in the district. Hence, efforts need to be made to use electronic banking for quick transfer of fund.
4. Collaboration/Synergy among Line Departments and convergence of scheme concept which is lacking in the programme as present needs to be considered seriously.
5. Efforts are required to be made also to involve farmers KVK, different agricultural stations of SAUs, Non-Government Organizations (NGOs), Growers' Associations, Self Help Groups, State Institutions and other similar entities in the implementation of mission's programmes. Since, such entities more particularly the KVKs and different Stations of SAUs/Colleges sector being of grass level institutions with excellent report with the farmers particularly marginal and small farmers, their involvements will be very useful.
6. The farmer to farmer interaction is very effective way of transfer technology, more and more farmers' facilitators (Kisan Mitra) the mission's programme. The concerned should be rewarded with payment of suitable honorarium.
7. Field visit/field days should be arranged for each intervention wherever it has been taken to demonstrate it among the farmers for its wider publicity, adaptation and deeper penetration.
8. An intensive publicity campaign is required to be undertaken as presently a large majority of the beneficiary farmers was relying on the State Agriculture Department for information. Use of standard marketing strategy with wide use of electronic and print media will bring increased awareness among all the categories of farmers. Hence, improve the coverage and the delivery of the service.
9. The capacity building at all level- farmers, field level workers, technical officers and developing orientation skills of all the stake holder in the context of changing world in agriculture need to be intensified. More and more training programs for all the stakeholders should be organized.

10. There is a need to Involve PRIs and other voluntary etc. in the section progress to make the same more wide and transparent. This will help in improving the delivery system.

11. There are many success stories in the implementation of the programme of the mission. Some of such stories may be documented and used for propagation/publicity of the programme.

12. The post harvest losses in wheat throw away the productivity gain that has been laboriously achieved through decades of research and development. Introduction of more efficient technologies for handling, drying, storage and milling wheat at the village level is essential to reduce post-production losses. Hence, intervention about post harvest handling of production should be introduced in the mission.

13. Efficient marketing technology also increases the quantum of marketed surplus in the market. Hence, marketing technology related to crops should be introduced in the mission.

14. Benefit of mission should be designed in such a way to that each farmer will be benefited at least once from one intervention. The farmer who had already benefited farm any intervention will not be eligible for getting benefit from another intervention. In this way more number of farmers should get benefited.

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Annexure-I

COORDINATOR'S COMMENTS ON THE DRAFT REPORT AND ACTION TAKEN IN FINAL REPORT

1. **Title of the draft report examined:**

Impact of National Food Security Mission (NFSM) on Input use, Production, Productivity and Income in Madhya Pradesh

2. **Date of receipt of the Draft report:** 20 February, 2015

3. **Date of dispatch of the comments:** 30 March 2015

4. **Comments on the Objectives of the study:**

The objectives of the study have been fully addressed except objective 1, which is to analyze the trends in area, production, yield of rice, wheat and pulses in the NFSM and non NFSM districts in the Madhya Pradesh (see attached chapter outline and table templates). Though authors have selected wheat for the primary analysis, it was suggested to include the spacio-temporal trends for remaining NFSM crops i.e paddy and pulses in your case(see attached chapter outline and table templates). By doing so, we can draw some inferences for paddy and pulses also.

5. **Comments on the methodology:**

The common methodology proposed for the collection of primary data and tabulation of results has been followed.

6. **Comments on analysis, organization, presentation etc.**

The authors have adhered to the chapter outline and table formats given by the coordinating centre except chapter 2 and references list. Although the report has given useful information about the NFSM program and its impacts, the report needs few changes for further improvement, which are given as follows:

Chapter 1: Introduction

- Section 1.4 (Page 4): First two paragraphs are not related to the Madhya Pradesh and hence include in section 1.2 appropriately. Include some background information of NFSM in MP and continue with the third paragraph.

  Action: Done as suggested.

- Author needs to include the logistic regression methodology giving details about the reasons for selection of independent variables in the section 1.6.

Action: Done as suggested.

Chapter 2: Impact of NFSM on foodgrains production in the state – A time series analysis

- Follow the structure and table formats as per the guidelines given by us as it facilitates easy consolidation of state reports. For instance, Table 2.1 was supposed to be on Trend in Area and Fertilizer use, which you have included in section 2.3.

  Action: Chapter structure was followed.

- Include spacio-temporal analysis for remaining NFSM crops also i.e paddy and pulses (see attached chapter outline and table templates).

  Action: Done as per suggestion.

- The yield rate presented in Table 2.1 is in kg per hectare and not quintals per hectare, so please make the correction. The estimated values of Average Annual growth rates (AAGR) presented in Tables 2.1 to 2.4 are incorrect. For instance, consider Table 2.1 (page 10) for area data for the 9th FYP, the estimated year to year growth rates were 1.62%,2.05%,-29.09%,11.87%. The AAGR is estimated by adding all these four values and then dividing by 4, which works out to -3.38%. In this chapter, -18.65 was mentioned instead of 0.96. Similar mistake was found in most of the tables and graphs.. Modify the entire write-up after incorporating the new estimates of AAGR. The formula for calculating annual growth rate is (current year - previous year) / previous year * 100. How the AAGR should be calculated for the plan period a demonstration is given below:

  The AAGR (average year on year change) is estimated by using the formula: (current year- previous year)*100/previous year. Please consider the data of last year of previous plan for estimation of year to year change for the first year of the plan for which the AAGR is estimated. For instance: AAGR estimation for NIA using the 10th plan data is estimated as follows:

	Years	Net Irrigated Area in '000' ha	AGR
Value pertains to previous plan period	2001-02	6640	
10th Plan	2002-03	6287	-5.31627
	2003-04	6753	7.41212
	2004-05	6794	0.607138
	2005-06	6729	-0.95673
	2006-07	6893	2.437212
Average Annual Growth Rate(AAGR)			0.836696

Action: Done as per suggestion.

- Table 2.2 (page 13): Include AAGR values for NFSM, Non-NFSM and Madhya Pradesh instead of NFSM total, Non-NFSM total and Madhya Pradesh. Follow the same procedure for Rice and Pulses tables which you have not presented.

  Action: Done as per suggestion.

Chapter 3: Household characteristics, cropping pattern and production structure

- Table 3.1 (3rd row): Mention the average values of family size in the row pertaining to the HHs size. Why for NFSM, percentage of education (illiterate + primary +...+ above degree) exceeds 100. It is 103. Please make correction.

  Action: Done as per suggestion.

- Table 3.2: Justification is needed as the cropping and irrigation intensities are same within the NFSM and Non-NFSM categories.

  Action: Justified in the text.

- Section 3.4 (page 30): Delete initials from the reference cited (Morgan and Munton, 1971) and delete also "*search reference*"

  Action: Deleted.

- Table 3.5: Include all crops grown in three seasons in the cropping pattern table (both irrigated and rainfed). If you have already included all crops then no need to change the table.

  Action: suggestion incorporated crops are classified in three seasons.

- Agricultural and non-agricultural income values in table 3.6 and table 3.1 are not consistent. Please recheck the figures and include the correct values.

  Action: Done as per suggestion.

- Comparing the value of output, cost of cultivation and net returns per acre in Table 3.6 and the same figures crop wise in Table 3.7, it is seen that the difference between the two is inconsistent. Given the cropping intensity around 2.0 the output, cost and income per acre should be near and around twice that of crop output, cost and income. However, for NFSM, the value of output per acre is 1.09 lakh while value of output per crop varies between Rs 9 thousand to Rs 30 thousand. How can per acre output value be almost four times to crop output when in a year only two crops are grown. The same range appears for non NFSM households as well. Please recheck and if possible recalculate the values as seemingly the values calculated at per acre

are incorrect while crop productivity seems to be correct. This also verifies that the per household income shown from agriculture in Table 3.1 is 194675 whereas per household income shown in Table 3.6 is Rs 720430 while presumably the value in Table 3.1 is correct. Please redo the calculations carefully.

Action: Corrected as per comments.

- Table 3.7: Include estimate costs and returns for all crops grown in three seasons (both irrigated and rainfed). If you have already all crops included then no need to change the table.

  Action: Done as per suggestion.

Chapter 4: Impact of NFSM on farming

- Table 4.3 (page 37): Is the households benefitted are total number or percentage of total. If you are presenting absolute numbers than you don't mention numbers of hhs benefited to aggregate beneficiaries, then you mention only number of beneficiaries benefited. Also present Avg cost and subsidy percentage at the total (for 544 households).

  Action: Done as per suggestion.

- Table 4.4 (page 38): Include "total" at the end.

  Action: Included at the end of the table.

- Table 4.6 (page 40): Have you asked farmers to respond to the impacts of interventions in multiples of 5? if yes/ no then reasons for the same is necessary?.

  Answer: Yes it is in multiple of five and same as per the schedule provided by the coordinator.

Chapter 5: Participation decision, constraints and suggestions for improvement of NFSM

- Discussion of logistic coefficient values with the existing literature and field experience during data collection is needed for better understanding of the results. While running the logistic model, education status should be used alternately and not simultaneously all the education variables together. What is presented in the parentheses is not clear. If it is t values then how income from farming and credit availed can be significant at 5 per cent when t value is too low. Present the figure up to the digit where it shows some value and it cannot be zero values for the coefficients and t values.

  Action: Done as per comments.

Chapter 6: Concluding remarks and policy suggestions

- It seems that all the policy implications drawn are not from the results and hence policy implications pertaining from the present analysis may be retained. Additionally some more implications can be inserted from results presented in the chapter 4 & 5,

  Action: Done as per suggestion.

General remarks

- There is ample scope for correction of errors, improvement of the grammar and language. Hence proofread the report carefully before submitting to us as well the ministry.

- Insert discussion of results (from existing literature and field experience gained during data collection) wherever significant findings are presented in chapter 3, 4 and 5.

- Summaries in each chapter, conclusions and policy suggestions and executive summary has to be modified after incorporating the above comments and suggestions.

7. Overall view on acceptability of report

The draft report can be accepted for consolidation and further submission to the ministry after it's been revised in accordance with the comments/suggestions. The soft copy of the revised report and excel data can be sent to us at the earliest as it helps in consolidating the state reports.

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Area of Paddy (in 000' ha) in different NFSM and non-NFSM districts

SN	District	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
NFSM DISTRICTS																	
1	Anuppur	0	0	0	0	0	0	0	99	101.1	101.8	101.2	101.0	100.2	97.1	97.6	99.7
2	Damoh	62.98	52.60	53.1	53.3	54	55.1	42.3	52.6	53.2	53.3	53.3	53.9	56.3	55.6	50.2	53.3
3	Dindori	0	0	0	71.2	73.2	76.1	74.6	77.3	78.2	78.3	78.6	79.1	79.3	69.3	78.4	78.7
4	Katni	0	0	0	110.4	108.1	111.4	93.6	110.8	110.4	110.4	109.2	88.0	105.9	69.6	83.5	94.2
5	Mandla	172.16	173.80	173.9	107.9	102	109.9	86.5	112.6	114.1	114.9	114.1	114.2	114.8	110.8	112.7	125.8
6	Panna	62.82	62.60	58.7	64.2	62.5	63.2	46.5	59.5	62.8	60.7	56.2	49.8	57.1	58.3	53.7	61.0
7	Rewa	123.16	123.20	125.5	135	134.8	145.4	93.1	147.1	141.6	143.3	137.7	131.6	136.9	124.9	102.1	116.3
8	Satna	90.21	90.80	82.8	101.6	101.2	112.5	55.6	102.4	102.4	103.8	94.9	89.7	90.3	82.6	71.7	88.2
9	Shahdol	243.26	244.40	245.6	214.5	204.3	208.4	198	107.4	110.1	108.7	108.3	107.9	107.2	101.2	100.9	103.9
	Sub Total	754.59	747.4	739.6	858.1	840.1	882	690.2	868.7	873.9	875.2	853.5	815.2	848	769.4	750.8	821.1
NON-NFSM DISTRICTS																	
10	Jabalpur	160.72	161.8	162.4	54.3	56.2	61.3	56.6	67.4	70.14	58.5	64.2	65.8	67.4	65.6	67.6	72.2
11	Balaghat	138.93	243.9	240.1	249.7	246.6	249.5	239.1	252.1	224.8	248.7	248.6	249.8	249.8	247.8	247.9	255.5
12	Chhindwara	19.9	19.7	19.4	25.4	24.8	25.4	20.1	24.3	22.682	21.6	20.6	20.5	19.3	18.8	18.3	18.1
13	Seoni	101.64	102.8	105	107.6	111.1	116	102	120.6	113.898	118.3	119.4	119.0	115.6	116.8	116.3	120.1
14	Narshingpur	8.68	8.2	6.6	9.4	10.8	13.2	12	13.3	14.027	13	13.6	12.9	13.1	13.4	12.5	12.1
15	Sagar	8.96	8.7	8.6	8.7	9.8	9.6	6.6	9.7	9.502	8.6	8.4	6.6	6.4	6.0	6.0	6.5
16	Tikamgarh	31.29	21.8	21.2	20.3	22.7	23.2	8.7	22.9	19.891	18.4	14.5	11.7	12.9	12.7	12.0	12.3
17	Chhatarpur	19.77	19.9	20.1	19.5	18.3	17.4	8.2	16.2	15.682	15.1	11.9	11.3	11.3	9.7	8.9	7.2
18	Sidhi	107.16	105.8	106.9	117.7	119.9	124.7	120.4	122.1	121.755	124.6	127	122.6	72.7	70.3	58.2	68.0
19	Singroli	0	0	0	0	0	0	0	0	0	0	0	0	49.7	46.1	44.3	46.8
20	Umariya	0	0	0	41	40.2	42.6	37.8	43.3	43.535	44	43.8	45.7	45.6	37.7	38.1	40.0
21	Indore	0	0	0	0	0	0	0	0	0.028	0	0	0.0	0.0	0.0	0.0	0.0
22	Dhar	3.97	3.9	3.7	3	2.9	2.8	2.6	2.6	2.351	2.3	1.9	1.7	1.4	1.2	1.2	1.0
23	Jhabua	27.17	27.4	26.3	25.2	23.7	22.5	20.2	22.4	22.712	22.5	22.9	22.8	14.2	13.2	12.8	12.1
24	Khargone	10.79	10.4	10	6.7	6.2	5.9	5.8	5.3	4.912	4.3	3.8	3.5	3.2	3.2	2.8	2.0
25	Barwani	0	0	0	3	2.7	2.6	2.7	2.5	2.297	2.3	2.2	2.1	2.3	1.9	1.5	1.4
26	Khandwa	27.25	25.5	23.4	23.5	23.2	22.8	22	15	12.975	12.5	10.5	10.2	9.7	8.6	6.9	7.7
27	Burhanpur	0	0	0	0	0	0	0	4.2	3.478	3.1	2.9	2.3	2.3	1.8	1.7	1.6
28	Alirajpur	0	0	0	0	0	0	0	0	0	0	0	0	7.7	7.2	7.1	6.8
29	Ujjain	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
30	Mandsour	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
31	Neemuch	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
32	Ratlam	3.5	3.7	3.6	3.4	2.8	2.4	2.5	2.7	2.232	2.5	2.2	2.1	1.8	1.8	1.7	1.5
33	Dewas	0.8	0.6	0.7	0.8	0.8	0.8	0.8	0.8	0.685	0.6	0.5	0.6	0.4	0.2	0.2	0.2
34	Shajapur	0.8	0.8	0.8	0.7	0.6	0.5	0.5	0.4	0.48	0.4	0.3	0.2	0.2	0.2	0.1	0.1
35	Morena	3.5	5.2	4.3	2.2	2	1.9	0.3	0.2	0.163	0.6	0.4	0.1	0.5	0.1	0.2	0.3
36	Sheopur Kalan	0	0	0	7	6	5.5	3	3.8	3.453	3.6	3.9	4.7	7.0	10.0	9.5	14.2
37	Bhind	12.9	13	13.8	13.7	14	15.7	5	1.3	1.797	3.7	0.4	0.3	10.3	1.6	5.6	5.7
38	Gwalior	24.8	29.8	29	37.5	38.9	43.4	9.2	14.9	14.64	17.5	15.9	11.7	31.0	21.0	24.5	30.6
39	Shivpuri	4.9	5	4.9	5.3	6.4	6.4	3.5	6.1	5.732	6.1	5.1	5.1	8.0	8.0	8.3	9.2
40	Guna	1.4	1.5	1.3	1.7	1.7	1.7	1.5	1	0.836	0.8	0.8	0.8	0.8	0.8	0.7	0.6
41	Ashoknagar	0	0	0	0	0	0	0	0.8	0.875	0.9	0.8	0.8	0.6	0.5	0.6	0.9
42	Datia	0.5	0.6	0.5	1.2	2	2	1	1.4	1.754	1.7	1.4	1.5	4.0	4.3	5.7	7.4
43	Bhopal	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.601	0.6	0.6	0.6	0.5	0.5	0.5	0.5
44	Sehore	1.8	1.8	1.8	1.8	1.7	1.7	1.8	1.5	1.4	1.3	1.4	2.3	4.6	5.0	6.1	11.4
45	Raisen	3.8	3.8	3.1	4.1	5.2	5.4	4.3	5.3	5.906	8.3	12.4	18.0	22.1	21.9	26.2	28.7
46	Vidisha	0.8	0.8	0.7	0.7	0.7	0.8	0.6	0.7	0.66	0.6	0.6	0.5	0.5	0.6	0.4	0.8
47	Betul	31	30.8	26.7	34.9	41.9	43.3	40.4	41	41.16	42.2	40.7	43.9	43.0	44.1	43.7	42.5
48	Rajgarh	1.86	1.9	1.9	1.5	1.3	1.2	1.2	1.1	0.955	0.9	1	0.9	0.7	0.6	0.5	0.5
49	Hoshangabad	10.1	10	9.3	8.7	9.7	9.7	9.2	10.5	11.625	14	15.2	16.5	17.1	19.9	23.7	25.3
50	Harda	0	0	0	1.9	1.8	1.7	1	1.9	1.849	1.2	0.7	0.6	0.8	0.5	0.4	0.3
	Non-Reported	39.4	39.4	39.4	39.4	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
	Sub Total	808.69	909.1	896.1	882.1	867.5	894.4	761.4	850.1	811.668	835.5	830.7	829.9	868.7	833.8	832.9	882.3
	Grand Total	1563.28	1656.5	1635.7	1740.2	1707.6	1776.4	1451.6	1718.8	1685.568	1710.7	1684.2	1645.1	1716.7	1603.2	1583.7	1703.4

Production of Paddy (in 000' t.) in different NFSM and non-NFSM districts

SN	District	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
NFSM DISTRICTS																	
1	Anuppur	**0**	**0**	**0**	**0**	**0**	**0**	**0**	63.4	48.6	109.5	99.7	64.5	104.6	56.4	63.0	102.7
2	Damoh	**34.8**	34.70	36.6	44.5	23	34.4	12.6	41	36.5	34.4	28.8	31.1	43.4	37.5	51.9	57.9
3	Dindori	**0**	**0**	**0**	80.6	27.9	59.6	36.8	58.8	59.2	66.4	55.7	64.1	61.7	47.8	54.3	79.5
4	Katni	**0**	**0**	**0**	110	41	90.1	40	95.8	84.4	93.6	50.2	37.9	101.8	32.3	71.4	119.9
5	Mandla	**139.6**	106.50	123.2	85.9	35.3	82.8	48.4	88.6	75	75.7	74.0	77.2	75.2	58.4	103.2	131.8
6	Panna	**36.3**	40.30	34.5	47.3	23.1	34.6	15.4	27.3	24.9	37.7	25.5	23.2	44.5	28.6	51.6	62.3
7	Rewa	**89.3**	62.40	123.7	80.1	74	136.6	62.2	138.2	89.5	138.1	89.2	69.0	133.7	79.8	67.5	142.9
8	Satna	**38.1**	45.90	39.4	60.5	29.1	116.1	40.7	97.4	106.3	123.3	60.9	33.9	59.1	53.5	74.3	144.5
9	Shahdol	**189.3**	152.90	171	195.8	142.4	191.7	104.2	103.6	76.9	104.4	85.3	62.3	92.1	82.9	129.0	191.2
	Sub Total	**527.4**	**442.7**	**528.4**	**704.7**	**395.8**	**745.9**	**360.3**	**714.1**	**601.3**	**783.1**	**569.3**	**463.2**	**716.1**	**477.2**	**666.2**	**1032.7**
NON-NFSM DISTRICTS																	
10	Jabalpur	**91.8**	86.2	113.2	63.4	31.0	54.8	40.7	78.5	78.5	52.3	53.5	43.2	55.3	46.5	83.6	93.2
11	Balaghat	**252**	257.7	299.4	333.3	209.4	358.2	202.9	370.4	246.491	365.3	299.3	354.2	275.1	338.2	353.0	346.1
12	Chhindwara	**16.4**	14.9	12.1	21.1	11	11.3	8.8	21.1	15.223	16.5	16.7	18.2	14.5	14.2	30.2	39.5
13	Seoni	**104.9**	91.8	125.6	148.3	43.9	112.4	69.6	175.7	84.097	144.0	135.8	147.9	117.3	122.4	153.9	177.2
14	Narshingpur	**9.3**	9.0	7.7	12.0	9.1	15.4	8.6	15.6	14.953	13.9	14.6	12.7	12.2	14.9	19.5	22.6
15	Sagar	**6.3**	5.7	5.3	6.2	5.3	5	2.5	6	5.413	4.6	4.3	3.6	3.4	3.7	4.5	5.2
16	Tikamgarh	**18.3**	18.2	16.4	19.8	15.3	16	3	19.3	9.379	9.0	5.7	2.0	7.3	5.2	5.4	9.1
17	Chhatarpur	**17.4**	13.9	15.8	20.4	8.4	11.9	3.7	13.9	10.424	9.7	5.0	3.6	7.4	4.4	5.5	6.4
18	Sidhi	**54.4**	43.8	65.3	82.9	52.5	88.9	75.6	130	84.412	91.9	103.5	80.3	50.9	44.0	51.0	71.2
19	Singroli	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	22.0	29.4	40.3	29.3
20	Umariya	**0**	**0**	**0**	28.4	14	20.6	13.7	27.6	18.98	36.5	24.0	24.8	30.5	26.6	35.1	43.8
21	Indore	**0**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.014	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	Dhar	**2.6**	2.3	2.7	1.7	0.8	1.1	1.4	2	1.222	1.2	1.1	1.0	0.8	0.7	0.9	0.8
23	Jhabua	**15.6**	16.8	16.0	17.5	3.2	4.6	9	14.6	12.841	10.4	10.6	12.5	7.7	5.0	8.4	8.6
24	Khargone	**7.1**	6.4	6.3	3.3	1.4	2.3	3	3.4	2.056	1.9	2.3	2.4	2.1	1.7	2.2	1.7
25	Barwani	**0**	**0**	**0**	1.5	0.9	1.1	1.4	1.5	1.034	0.7	0.9	0.9	0.8	0.8	1.1	1.2
26	Khandwa	**25.6**	26.4	23.1	27.2	13.7	17.5	16.8	15.8	10.536	11.1	10.6	11.5	10.0	6.9	9.2	9.3
27	Burhanpur	**0**	**0**	**0**	**0**	**0**	**0**	**0**	4.5	3.764	3.2	3.1	2.7	2.2	1.7	2.5	2.4
28	Alirajpur	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3.6	3.0	5.2	5.1
29	Ujjain	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	Mandsour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	Neemuch	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	Ratlam	**2.4**	2.5	2.6	2.8	1.1	1.2	1.3	1.9	1.175	1.8	1.6	1.5	1.3	1.3	1.3	1.4
33	Dewas	**0.5**	0.5	0.5	0.6	0.4	0.5	0.4	0.5	0.413	0.3	0.3	0.4	0.3	0.2	0.2	0.2
34	Shajapur	**0.6**	0.6	0.6	0.6	0.3	0.2	0.2	0.2	0.28	0.2	0.1	0.1	0.1	0.1	0.1	0.1
35	Morena	**7.6**	9.8	10.5	5.0	4.2	3.6	0.5	0.4	0.326	1.1	0.9	0.3	1.0	0.3	0.5	0.7
36	Sheopur Kalan	**0**	0.0	0.0	19.2	6.7	13	2.5	9.9	5.884	6.6	8.8	17.7	16.8	24.9	28.3	41.9
37	Bhind	**29.1**	15.6	34.0	29.7	13.2	33.5	11.8	3.5	4.098	7.9	0.8	0.6	17.9	3.5	15.3	18.8
38	Gwalior	**57.8**	63.7	50.3	83.6	81.7	98.7	8.4	36.7	30.884	40.5	37.4	16.8	81.8	54.1	64.0	96.3
39	Shivpuri	**5.6**	5.4	5.6	6.8	5.5	7	1.2	8.6	5.909	5.9	4.8	3.9	9.1	10.9	13.2	14.6
40	Guna	**1**	1.1	0.9	1.7	1.3	1.4	0.5	1	0.729	0.6	0.7	0.6	0.5	0.7	0.8	0.8
41	Ashoknagar	**0**	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.714	0.6	0.6	0.6	0.4	0.4	0.5	0.8
42	Datia	**0.6**	0.7	0.8	1.7	1.9	2.3	0.7	2	1.147	1.5	1.2	1.4	5.0	5.0	7.1	9.0
43	Bhopal	**0.4**	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.376	0.4	0.4	0.4	0.4	0.3	0.4	0.8
44	Sehore	**1.4**	1.0	1.9	1.6	0.9	1.1	1.2	1.2	1.015	0.8	0.9	1.8	3.5	5.2	6.8	18.9
45	Raisen	**3.4**	3.4	2.8	4.3	2.9	3.1	2.3	3.3	3.622	5.1	8.3	19.0	21.1	21.2	33.2	44.0
46	Vidisha	**0.5**	0.5	0.5	0.5	0.4	0.4	0.2	0.5	0.397	0.5	0.5	0.4	0.4	0.5	0.4	0.9
47	Betul	**32.7**	33.9	30.6	42.5	25.4	38.1	27.9	41.7	31.475	38.0	40.1	46.1	45.2	46.2	60.8	67.0
48	Rajgarh	**1.1**	1.4	1.4	1.4	0.3	0.5	0.3	0.8	0.612	0.5	0.6	0.6	0.4	0.3	0.4	0.4
49	Hoshangabad	**13.4**	12.8	12.5	13.2	11.2	11.5	11	14	11.298	18.0	20.2	26.8	25.2	33.0	54.4	50.1
50	Harda	**0**	0.0	0.0	2.6	1.7	2.3	0.9	2.1	1.689	1.8	1.1	1.4	1.5	1.0	1.2	0.9
	Non-Reported	**40**	40.0	40.0	40.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
	Sub Total	**819.8**	**786.4**	**904.8**	**1045.3**	**586.3**	**946.8**	**539.3**	**1036.2**	**708.3**	**911.2**	**827.2**	**868.8**	**861.9**	**885.3**	**1107.3**	**1247.2**
	Grand Total	**1347.2**	**1229.1**	**1433.2**	**1750**	**982.1**	**1692.7**	**899.6**	**1750.3**	**1309.582**	**1694.3**	**1396.5**	**1332**	**1578**	**1362.5**	**1773.5**	**2279.9**

Productivity of Paddy (in kg/ha) in different NFSM and non-NFSM districts

SN	District	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
NFSM DISTRICTS																	
1	Anuppur								640	481	1076	985	639	1044	581	645	1030
2	Damoh	**1116**	660	689	835	426	624	298	779	686	645	540	577	771	674	1034	1086
3	Dindori				1132	381	783	493	761	757	848	709	810	778	690	693	1010
4	Katni				996	379	809	427	865	764	848	460	431	961	464	855	1273
5	Mandla	**1277**	613	708	796	346	753	560	787	657	659	649	676	655	527	916	1048
6	Panna	**1207**	644	588	737	370	547	331	459	396	621	454	466	779	491	961	1021
7	Rewa	**2117**	506	986	593	549	939	668	939	632	964	648	524	977	639	661	1229
8	Satna	**1945**	506	476	595	288	1032	732	951	1038	1188	642	378	654	648	1036	1638
9	Shahdol	**1482**	626	696	913	697	920	526	965	698	960	788	577	859	819	1278	1840
	Sub Total	**699**	**592**	**714**	**821**	**471**	**846**	**522**	**822**	**688**	**895**	**667**	**568**	**844**	**620**	**887**	**1258**
NON-NFSM DISTRICTS																	
10	Jabalpur	**1115**	533	697	1168	552	894	719	1165	1119	894	833	657	820	709	1237	1291
11	Balaghat	**980**	1057	1247	1335	849	1436	849	1469	1096	1469	1204	1418	1101	1365	1424	1355
12	Chhindwara	**1308**	756	624	831	444	445	438	868	671	764	811	888	751	755	1650	2182
13	Seoni	**1151**	893	1196	1378	395	969	682	1457	738	1217	1137	1243	1015	1048	1323	1475
14	Narshingpur	**1159**	1098	1167	1277	843	1167	717	1173	1066	1069	1074	984	931	1112	1560	1868
15	Sagar	**1156**	655	616	713	541	521	379	619	570	535	512	545	531	617	750	800
16	Tikamgarh	**1685**	835	774	975	674	690	345	843	472	489	393	171	566	409	450	740
17	Chhatarpur	**1164**	698	786	1046	459	684	451	858	665	642	420	319	655	454	618	889
18	Sidhi	**1396**	414	611	704	438	713	628	1065	693	738	815	655	700	626	876	1047
19	Singroli	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	443	638	910	626
20	Umariya	**0**	**0**	**0**	693	348	484	362	637	436	830	548	543	669	706	921	1095
21	Indore	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	500	**0**	**0**	**0**	**0**	**0**	**0**	**0**
22	Dhar	**889**	590	730	567	276	393	538	769	520	522	579	588	571	583	750	800
23	Jhabua	**1024**	613	608	694	135	204	446	652	565	462	463	548	542	379	656	711
24	Khargone	**773**	615	630	493	226	390	517	642	419	442	605	686	656	531	786	850
25	Barwani	**0**	0	0	500	333	423	519	600	450	304	409	429	348	421	733	857
26	Khandwa	**1011**	1035	987	1157	591	768	764	1053	812	888	1010	1127	1031	802	1333	1208
27	Burhanpur	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1071	1082	1032	1069	1174	957	944	1471	1500
28	Alirajpur	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	468	417	732	750
29	Ujjain	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
30	Mandsour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
31	Neemuch	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
32	Ratlam	**1077**	676	722	824	393	500	520	704	526	720	727	714	722	722	765	933
33	Dewas	**1000**	833	714	750	500	625	500	625	603	500	600	667	750	1000	1000	1000
34	Shajapur	**1000**	750	750	857	500	400	400	500	583	500	333	500	500	500	1000	1000
35	Morena	**1400**	1885	2442	2273	2100	1895	1667	2000	2000	1833	2250	3000	2000	3000	2500	2333
36	Sheopur Kalan	**0**	0	0	2743	1117	2364	833	2605	1704	1833	2256	3766	2400	2490	2979	2951
37	Bhind	**1229**	1200	2464	2168	943	2134	2360	2692	2280	2135	2000	2000	1738	2188	2732	3298
38	Gwalior	**1505**	2138	1734	2229	2100	2274	913	2463	2110	2314	2352	1436	2639	2576	2612	3147
39	Shivpuri	**1106**	1080	1143	1283	859	1094	343	1410	1031	967	941	765	1138	1363	1590	1587
40	Guna	**1000**	733	692	1000	765	824	333	1000	872	750	875	750	625	875	1143	1333
41	Ashoknagar	**0**	0	0	0	0	0	0	875	816	667	750	750	667	800	833	889
42	Datia	**1268**	1167	1600	1417	950	1150	700	1429	654	882	857	933	1250	1163	1246	1216
43	Bhopal	**2000**	667	667	833	571	667	667	667	626	667	667	667	800	600	800	1600
44	Sehore	**2779**	556	1056	889	529	647	667	800	725	615	643	783	761	1040	1115	1658
45	Raisen	**1325**	895	903	1049	558	574	535	623	613	614	669	1056	955	968	1267	1533
46	Vidisha	**2250**	625	714	714	571	500	333	714	602	833	833	800	800	833	1000	1125
47	Betul	**1102**	1101	1146	1218	606	880	691	1017	765	900	985	1050	1051	1048	1391	1576
48	Rajgarh	**1000**	737	737	933	231	417	250	727	641	556	600	667	571	500	800	800
49	Hoshangabad	**921**	1280	1344	1517	1155	1186	1196	1333	972	1286	1329	1624	1474	1658	2295	1980
50	Harda	**0**	0	0	1368	944	1353	900	1105	913	1500	1571	2333	1875	2000	3000	3000
	Non-Reported	**1000**	1015	1015	1015	676	676	676	676	676	676	676	676	676	676	676	676
	Sub Total	**1014**	**865**	**1010**	**1185**	**676**	**1059**	**708**	**1219**	**873**	**1091**	**996**	**1047**	**992**	**1062**	**1329**	**1414**
	Grand Total	**862**	**742**	**876**	**1006**	**575**	**953**	**620**	**1018**	**777**	**990**	**829**	**810**	**919**	**850**	**1120**	**1338**

Area of Wheat (in 000’ ha) in different NFSM and non-NFSM districts

SN	Districts	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
NFSM DISTRICTS																	
1	**Jabalpur**	**161.94**	185.8	186.9	103.9	94.4	88.1	89.1	84.2	85.3	85.2	87.9	85.5	92.3	95.4	95.8	100.1
2	**Katani**	**0**	0	0	84.6	59.9	71	64.1	73	71.2	71.3	56.2	44.9	65.4	66.6	66.9	81.1
3	**Balaghat**	**20.16**	13.1	19.1	18.5	14	16	15.7	16.3	11.3	16.6	15.0	14.7	15.1	14.7	15.1	17.0
4	**Seoni**	**88.2**	91.3	94.5	104.6	85.5	95.7	97	98.7	93	103	104.7	110.5	103.1	108.8	111.7	120.7
5	**Mandla**	**85.98**	76.9	76.2	41.7	23.4	30.7	44.1	30.5	29.5	30	29.0	29.1	29.4	29.7	17.5	37.4
6	**Dindori**	**0**			45.2	32.7	37.2	33.9	34.5	33.3	32.7	34.5	29.7	30.6	31.8	27.7	29.0
7	**Sagar**	**220.81**	232.8	262.1	228.6	200.6	190	165	161.8	163.8	163.8	163.7	139.6	150.1	173.0	172.5	195.6
8	**Damoh**	**91.45**	100.9	96.1	99.8	86.1	79.8	75.8	65.3	67.6	69	69.6	63.1	67.0	72.1	71.8	91.6
9	**Panna**	**77.94**	78.9	82.7	81.2	70	66.4	60.7	70.5	71.9	70.8	61.7	53.6	60.7	68.3	62.8	70.9
10	**Tikamgarh**	**120.23**	122.7	122.4	128.2	115.9	118.6	71	120.3	107	94.4	58.1	22.7	107.4	101.0	78.0	137.8
11	**Chhatarpur**	**131.22**	135.9	136.6	145.2	132.2	135.9	129.3	145.3	143.4	141.9	101.8	57.7	128.1	142.7	140.2	163.9
12	**Rewa**	**162.48**	162.7	170	169.8	165.3	168.1	159.2	170.5	167.6	169.5	155.6	147.0	155.7	155.7	134.4	151.8
13	**Shidhi**	**70.46**	73.6	74.3	86.4	84.7	89	88.5	90.7	88.2	87.5	88.6	85.8	54.0	55.1	53.8	57.1
14	**Satna**	**182.73**	189.7	185.5	186.4	161.1	163.4	162.5	160	157.6	153.9	142.0	127.8	137.9	143.2	125.4	149.5
15	**Shahdol**	**73.8**	72.8	73.1	47.4	31.2	36.6	29.1	21.1	21.3	24.1	22.9	21.2	23.0	24.1	24.7	26.6
16	**Indore**	**112.55**	115.7	115.5	128.9	50.6	83.9	36.7	116.1	117.2	62	132.3	126.7	57.9	101.5	107.9	113.4
17	**Dhar**	**131.68**	145.9	146.2	148.7	39.5	118	59.2	156.4	166.8	93.2	188.4	216.3	141.2	158.9	193.0	160.8
18	**Jhabua**	**44.42**	49.8	48.3	13.9	1.5	11	15.2	30.3	35.2	26.7	38.6	43.2	18.8	23.9	27.5	30.4
19	**Khargone**	**72.29**	78.2	80.6	57.5	20	30.6	37.6	56	56.2	38.8	62.8	70.1	42.4	82.8	92.0	88.9
20	**Ujjain**	**148.78**	166.2	157.3	189.4	36.9	55.7	26.1	131	148.8	69.8	183.2	191.0	98.8	128.9	135.1	150.4
21	**Dewas**	**95.4**	108.9	94.8	120.1	43.3	73.3	71.1	99.4	102.1	75.7	105.2	118.7	101.3	99.1	137.3	148.7
22	**Bhind**	**84.91**	85.3	84.3	88.1	98.4	81.3	48.7	76.2	70.7	71.8	72.3	73.9	84.1	84.6	89.9	94.6
23	**Shivpuri**	**128.05**	131.3	129	138.3	108.5	111.8	39.3	120.6	121.5	108.8	99.3	90.4	114.8	139.8	147.1	194.8
24	**Guna**	**199.83**	198.8	205.5	212.5	109.9	188.8	91.4	71.7	78.8	73.2	84.9	79.3	84.5	79.3	88.9	105.5
25	**Sehore**	**143.3**	157.6	162	163.8	75.8	139.6	138.9	157.2	170.6	145.3	162.0	165.4	153.1	192.1	204.2	223.9
26	**Raisen**	**171.35**	182	213.5	179.8	172.3	171	178.2	177.5	178.7	178	178.4	167.9	168.4	185.3	182.3	222.2
27	**Vidisha**	**235**	236.9	241.1	233	208.4	201.8	185.2	211.6	214.5	206	213.5	179.9	172.7	198.1	206.9	242.9
28	**Betul**	**89.58**	99.5	85.7	104.2	38.7	84.1	85.3	87.7	91.1	115.1	115.8	125.8	117.0	131.3	116.1	100.7
29	**Rajgarh**	**64.57**	74.2	71.1	80.1	31.6	39.7	17.4	57	65.3	43	69.8	72.3	56.1	77.7	94.1	137.1
30	**Harda**	**0**	0	0	88.9	76.4	83.6	81.6	91.8	110.4	85.1	93.8	99.1	105.4	116.7	141.5	151.0
NFSM Total		**3209.11**	**3367.4**	**3414.4**	**3518.7**	**2468.8**	**2860.7**	**2396.9**	**2983.2**	**3039.9**	**2706.2**	**2991.6**	**2852.9**	**2736.3**	**3082.2**	**3162.1**	**3595.4**
NON-NFSM DISTRICTS																	
31	**Chhindwara**	**85.8**	90.4	102.4	104.2	61.5	59.8	68	84.2	84.2	92	106.0	110.7	82.8	111.1	114.5	126.9
32	**Narshingpur**	**66.19**	88.5	90.4	81.5	77.3	67.7	64.6	60.5	59.2	54.5	53.1	55.0	62.3	65.1	68.8	77.3
33	**Singroli**	**0**	0	0	0	0	0	0			0	0	0	32.2	32.3	30.8	32.6
34	**Umaria**	**0**	0	0	30.4	25.6	26.7	25.9	27	27.2	26.3	25.8	25.3	25.9	26.2	26.0	28.0
35	**Anuppur**	**0**	0	0					14.4	13.6	13.8	13.7	11.9	12.4	13.1	10.9	11.6
36	**Barwani**	**0**	0	0	23.6	13.3	16.9	21.2	26.2	27.1	18.2	32.4	34.4	25.3	31.9	38.1	38.2
37	**Khandwa**	**59.55**	68.3	68.7	80.4	24.1	44.5	62.4	54.5	56.9	54.9	60.4	64.9	65.3	72.0	82.4	90.0
38	**Burhanpur**	**0**	0	0	0	0	0	0	8.3	8.7	8.4	9.1	10.4	10.6	10.8	10.8	10.6
39	**Alirajpur**	**0**	0	0	0	0	0	0	0	0	0	0.0	0.0	14.0	13.7	15.6	14.8
40	**Mandsaure**	**94.65**	96.8	83.3	65.9	21.9	33.3	9.8	24.3	51	26.1	70.8	61.1	50.0	63.7	57.4	88.0
41	**Neemuch**	**0**	0	0	32.5	17.5	23.2	7.5	17.7	25.9	24.3	39.9	27.9	32.2	29.2	38.5	43.1
42	**Ratlam**	**78.35**	87.3	80.7	81.5	19	26.8	10.9	60.3	70.5	45.3	83.1	78.5	63.2	74.3	68.7	94.7
43	**Shajapur**	**90.1**	100.7	100.7	109.4	27.6	42.8	33.4	77.5	85.4	52	86.5	87.5	66.0	83.9	90.8	117.3
44	**Morena**	**111.19**	123.3	132.8	76.1	75.6	67	54.1	71.9	67.8	68.2	75.2	78.3	80.4	81.5	96.0	104.1
45	**Sheopur Kalan**	**0**	0	0	46.9	45.8	39.3	5	39.2	34.9	34.5	38.4	42.4	40.2	47.1	69.7	78.7
46	**Gwalior**	**103.81**	109.4	91.4	99.1	98.1	84.7	38.1	96.6	92	91.4	87.0	68.9	89.3	83.4	93.8	112.5
47	**Ashoknagar**	**0**	0	0	0	0	0	0	115.6	115.5	110.4	112.3	104.9	105.3	109.1	110.3	123.3
48	**Datia**	**48.68**	48.9	75.1	70.4	65.3	67.9	55.7	73.5	68.5	73.6	97.5	88.5	117.6	123.9	130.3	133.8
49	**Bhopal**	**76.92**	78.8	77.9	79.6	61.2	64.5	49	65.6	67.2	69.4	70.4	68.2	67.4	72.0	75.3	77.0
50	**Hoshangabad**	**20.33**	234.6	235	161.4	159.6	165.9	163.5	178.5	192.7	202.6	209.2	217.6	219.0	232.5	242.3	250.6
Non-NFSM Total		**835.57**	**1127**	**1138.4**	**1142.9**	**793.4**	**831**	**669.1**	**1095.8**	**1148.3**	**1065.9**	**1270.8**	**1236.4**	**1261.4**	**1376.8**	**1471**	**1653.1**
Madhya Pradesh		**4044.68**	**4494.4**	**4552.8**	**4661.6**	**3262.2**	**3691.7**	**3066**	**4079**	**4188.2**	**3772.1**	**4262.4**	**4089.3**	**3997.7**	**4459**	**4633.1**	**5248.5**

Production of Wheat (in 000't) in different NFSM and non-NFSM districts

SN	Districts	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
NFSM DISTRICTS																	
1	Jabalpur	182.3	169.1	234.5	157.9	133.9	141.4	127.6	154.6	156.3	183.6	185.0	126.6	171.5	158.6	280.5	243.3
2	Katani	0.0			95.5	62	79.1	48	86.6	75.4	72.1	41.4	39.6	74.3	70.8	59.0	199.4
3	Balaghat	18.0	6.5	14.1	18.6	9.8	14.6	16.2	17.4	7.9	15.8	11.4	13.2	12.3	19.5	22.9	20.1
4	Seoni	151.3	40.3	71.4	95	52.1	83.1	77	93.1	77.7	91.1	101.3	93.4	90.1	90.5	102.1	242.7
5	Mandla	77.8	27.1	64	31.9	9.1	26.4	33.8	26.8	26.6	28.1	24.8	25.3	26.6	23.0	16.7	62.2
6	Dindori	0.0			29.7	12.8	23.4	17.8	21.9	24	16.8	19.2	14.9	19.4	19.1	16.0	31.8
7	Sagar	266.6	241.1	328.1	264.9	155.2	205.7	170.2	183.7	173.1	174.7	172.6	131.8	188.2	244.5	186.5	351.1
8	Damoh	125.8	131.7	130.9	147.5	89.2	113.7	97.2	96.6	97.8	102.8	88.4	99.8	131.8	136.3	171.4	150.3
9	Panna	95.7	84.7	90.2	92.2	55.5	73.7	67.4	78.9	76.7	71.8	57.9	53.2	88.3	97.1	89.1	143.8
10	Tikamgarh	220.2	249.9	247.8	280.4	212.9	208	114	250.3	174.8	126.3	78.2	28.0	209.2	168.3	99.0	371.0
11	Chhatarpur	241.6	261.4	272	274.6	203.4	238.5	197.5	249.6	243.7	200.2	119.2	60.1	195.8	203.9	169.1	412.5
12	Rewa	178.4	190.7	202.1	217.7	172.2	213.1	139.3	204.4	181.1	173.5	133.1	99.3	165.3	158.0	111.3	297.4
13	Shidhi	60.8	84.4	69.8	72.9	60.9	72	56.3	76.6	67.2	65.3	67.6	54.7	47.0	45.4	38.1	88.5
14	Satna	192.0	256.1	253.1	209	132	169.3	199.3	197.7	173.9	175.9	124.8	88.5	147.8	173.1	119.1	321.5
15	Shahdol	54.9	50.1	54	30.3	20.3	25.8	17.4	16.6	16.4	19.9	17.8	18.0	20.7	16.9	17.1	49.2
16	Indore	342.2	274.2	336.7	283.1	87.3	115.9	58.2	287.2	304.9	93.6	332.6	244.3	134.4	220.1	271.3	511.3
17	Dhar	354.4	296.6	321.1	271.1	48	135.1	84.6	350.7	341.4	162.7	436.8	500.0	298.8	354.9	453.5	433.3
18	Jhabua	99.4	92.5	96.8	25	1.2	18.1	15.9	53.7	56.6	48.7	70.9	77.3	33.6	44.6	51.6	65.5
19	Khargone	236.6	140.5	175.8	138.1	38.5	73	94.9	149.2	126.9	81.2	157.7	181.8	98.5	224.9	276.6	262.5
20	Ujjain	360.7	437.3	452.4	555.6	54	62.9	32.9	223.4	345.6	122.4	548.9	341.1	184.3	318.6	237.8	402.1
21	Dewas	220.7	235.3	207.7	282.3	68.5	146.2	128.8	218.8	225.4	155.6	270.9	215.0	211.0	247.9	247.5	479.9
22	Bhind	221.0	184	152.8	183.8	98.4	182.9	75.1	151	133.3	141.9	133.4	102.5	177.9	214.2	185.2	303.8
23	Shivpuri	239.7	242.5	238	258.7	170.6	227.5	54.6	262.4	216.5	200.8	178.3	110.1	224.0	250.4	298.1	532.8
24	Guna	230.8	268.5	261	267.5	234.9	262.5	61.9	106	103.2	118.3	131.3	119.4	143.4	127.4	187.9	328.8
25	Sehore	303.8	275	342.5	308.5	158.4	272.2	232.5	346.8	364.9	272.3	363.6	189.0	226.9	401.1	327.2	644.7
26	Raisen	240.3	196.2	317.5	255.4	224.1	242.9	285.7	277.1	279.3	304.5	311.3	203.9	266.9	376.5	278.4	663.9
27	Vidisha	334.1	328	365.8	364.9	283.2	282.7	247.1	332.9	335.2	312.8	355.8	202.4	259.6	370.4	341.6	470.4
28	Betul	142.0	84.9	118.8	165.8	49.1	118.5	90.2	125.2	128.8	254.8	250.0	412.6	369.6	407.0	137.3	212.1
29	Rajgarh	128.7	129.1	146	171.5	40.7	55.4	20.5	102.7	102.6	59.3	118.2	103.7	85.8	145.3	140.4	323.8
30	Harda	0.0	0.0	0.0	141.8	137.5	182.9	155.6	179.8	238.6	133.0	145.0	153.4	168.0	181.6	560.7	694.4
NFSM Total		3209.11	5319.8	4977.7	5564.9	5691.2	3075.7	4066.5	3017.5	4921.7	4875.8	3979.8	5047.4	4102.9	4471	5509.9	5493
NON-NFSM DISTRICTS																	
31	Chhindwara	151.3	88.7	175.4	272.7	92.9	84.9	96.1	170.2	145.6	139.5	199.0	223.4	175.2	425.2	388.9	278.8
32	Narshingpur	194.7	120.3	163.3	259.4	252.8	216.4	167.7	181.7	168.9	161.7	151.9	157.5	189.7	169.4	226.9	176.4
33	Singroli	0.0												9.1	35.0	35.1	50.3
34	Umaria	0.0			22.5	27.3	21.4	18.7	23.1	20.8	21.2	20.4	18.6	28.9	20.5	19.9	51.4
35	Anuppur	0.0	0	0					10.2	13.6	9.8	10.1	8.2	22.7	8.8	7.0	14.8
36	Barwani	0.0	0	0	43.9	23.6	32.6	39.7	61.2	50	21.5	62.9	51.9	62.1	49.1	83.1	136.3
37	Khandwa	108.8	112.5	123.6	144.2	33.1	70.9	99.8	88.1	73.5	92.8	107.8	107.9	115.6	120.1	154.8	231.6
38	Burhanpur	0.0							17.5	16.7	17.0	18.8	19.9	20.2	19.4	24.8	28.1
39	Alirajpur	0.0												25.3	24.8	28.6	28.3
40	Mandsaure	226.8	283.6	202	210.7	44.6	84.3	16	57.5	134.4	53.5	195.1	131.2	126.6	156.9	122.7	367.0
41	Neemuch	0.0	0	0	104	41.6	63.5	15.9	49	74.4	62.6	85.2	59.0	74.9	61.8	92.1	132.1
42	Ratlam	240.4	243.7	240.8	263.1	46.3	50	24.7	182.4	203.8	134.5	245.1	228.9	196.4	218.3	276.8	185.3
43	Shajapur	223.9	199.4	245.8	285.4	50.3	69.1	52	148.3	180.2	93.0	196.8	164.9	134.8	221.4	182.1	350.7
44	Morena	353.5	343.4	477.6	212	218.3	181.5	121.1	210.4	207.3	216.7	221.9	159.8	184.8	179.8	221.8	412.1
45	Sheopur Kalan	0.0	0	0	117	113	90.8	7.3	109.4	78.7	86.4	85.5	93.4	94.3	144.0	173.5	352.7
46	Gwalior	256.9	225.6	221.1	294.7	185.1	243	92.1	274.3	236.3	230.3	187.0	111.4	229.1	189.9	254.0	397.0
47	Ashoknagar	0.0							123.8	120.4	139.8	140.3	119.9	148.0	173.0	193.0	291.2
48	Datia	113.6	80.8	165	186.8	160.9	170.1	96.6	180.9	139.1	158.8	169.2	151.8	229.4	290.8	260.2	344.9
49	Bhopal	134.4	129.5	130.9	149.6	100.4	109.7	74.2	108.2	135.4	122.9	127.3	120.1	126.7	147.1	127.5	207.5
50	Hoshangabad	444.2	348.9	550.6	428	406.1	439.4	388.4	439.3	449.7	450.5	568.7	698.6	607.4	700.1	854.0	1186.4
Non-NFSM Total		835.57	2448.5	2176.4	2696.1	2994	1796.3	1927.6	1310.3	2435.5	2448.8	2212.5	2793	2626.4	2801.2	3355.4	3726.8
Madhya Pradesh		4044.68	7768.3	7154.1	8261	8685.2	4872	5994.1	4327.8	7357.2	7324.6	6192.3	7840.4	6729.3	7272.2	8865.3	9219.8

Productivity of Wheat (in 000't) in different NFSM and non-NFSM districts

SN	Districts	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
NFSM DISTRICTS																	
1	**Jabalpur**	1126	910	1255	1520	1418	1605	1432	1836	1832	2155	2105	1481	1858	1662	2928	2431
2	**Katani**	0	0	0	1129	1035	1114	749	1186	1059	1011	737	882	1136	1063	882	2459
3	**Balaghat**	893	496	738	1005	700	913	1032	1067	699	952	760	898	815	1327	1517	1182
4	**Seoni**	1715	441	756	908	609	868	794	943	835	884	968	845	874	832	914	2011
5	**Mandla**	905	352	840	765	389	860	766	879	902	937	855	869	905	774	954	1663
6	**Dindori**	0	0	0	657	391	629	525	635	721	514	557	502	634	601	578	1097
7	**Sagar**	1207	1036	1252	1159	774	1083	1032	1135	1057	1067	1054	944	1254	1413	1081	1795
8	**Damoh**	1376	1305	1362	1478	1036	1425	1282	1479	1447	1490	1270	1582	1967	1890	2387	1641
9	**Panna**	1228	1074	1091	1135	793	1110	1110	1119	1067	1014	938	993	1455	1422	1419	2028
10	**Tikamgarh**	1831	2037	2025	2187	1837	1754	1606	2081	1634	1338	1346	1233	1948	1666	1269	2692
11	**Chhatarpur**	1841	1923	1991	1891	1539	1755	1527	1718	1699	1411	1171	1042	1528	1429	1206	2517
12	**Rewa**	1098	1172	1189	1282	1042	1268	875	1199	1081	1024	855	676	1062	1015	828	1959
13	**Shidhi**	863	1147	939	844	719	809	636	845	762	746	763	638	870	824	708	1550
14	**Satna**	1051	1350	1364	1121	819	1036	1226	1236	1103	1143	879	692	1072	1209	950	2151
15	**Shahdol**	744	688	739	639	651	705	598	787	770	826	777	849	900	701	692	1850
16	**Indore**	3040	2370	2915	2196	1725	1381	1586	2474	2602	1510	2514	1928	2321	2168	2514	4509
17	**Dhar**	2691	2033	2196	1823	1215	1145	1429	2242	2047	1746	2318	2312	2116	2233	2350	2695
18	**Jhabua**	2238	1857	2004	1799	800	1645	1046	1772	1608	1824	1837	1789	1787	1866	1876	2155
19	**Khargone**	3273	1797	2181	2402	1925	2386	2524	2664	2258	2093	2511	2593	2323	2716	3007	2953
20	**Ujjain**	2424	2631	2876	2933	1463	1129	1261	1705	2323	1754	2996	1786	1865	2472	1760	2674
21	**Dewas**	2313	2161	2191	2351	1582	1995	1812	2201	2208	2055	2575	1811	2083	2502	1803	3227
22	**Bhind**	2603	2157	1813	2086	1000	2250	1542	1982	1885	1976	1845	1387	2115	2532	2060	3211
23	**Shivpuri**	1872	1847	1845	1871	1572	2035	1389	2176	1782	1846	1796	1218	1951	1791	2027	2735
24	**Guna**	1155	1351	1270	1259	2137	1390	677	1478	1310	1616	1547	1506	1697	1607	2114	3117
25	**Sehore**	2120	1745	2114	1883	2090	1950	1674	2206	2139	1874	2244	1143	1482	2088	1602	2879
26	**Raisen**	1402	1078	1487	1420	1301	1420	1603	1561	1563	1711	1745	1214	1585	2032	1527	2988
27	**Vidisha**	1422	1385	1517	1566	1359	1401	1334	1573	1563	1518	1667	1125	1503	1870	1651	1937
28	**Betul**	1585	853	1386	1591	1269	1409	1057	1428	1414	2214	2159	3280	3159	3100	1183	2106
29	**Rajgarh**	1993	1740	2053	2141	1288	1395	1178	1802	1571	1379	1693	1434	1529	1870	1492	2362
30	**Harda**	0	0	0	1595	1800	2188	1907	1959	2161	1563	1546	1548	1594	1556	3963	4599
NFSM Total		1658	1478	1630	1617	1246	1422	1259	1650	1604	1471	1687	1438	1634	1788	1737	2591
NON-NFSM DISTRICTS																	
31	**Chhindwara**	1763	981	1713	2617	1511	1420	1413	2021	1729	1516	1877	2018	2116	3827	3397	2197
32	**Narshingpur**	2942	1359	1806	3183	3270	3196	2596	3003	2853	2967	2861	2864	3045	2602	3298	2282
33	**Singroli**	0	0	0	0	0	0	0	0	0	0	0	0	283	1084	1140	1543
34	**Umaria**	0	0	0	740	1066	801	722	856	765	806	791	735	1116	782	765	1836
35	**Anuppur**	0	0	0	0	0	0	0	708	1000	710	737	689	1831	672	642	1276
36	**Barwani**	0	0	0	1860	1774	1929	1873	2336	1845	1181	1941	1509	2455	1539	2181	3568
37	**Khandwa**	1827	1647	1799	1794	1373	1593	1599	1617	1292	1690	1785	1663	1770	1668	1879	2573
38	**Burhanpur**	0	0	0	0	0	0	0	2108	1920	2024	2066	1913	1906	1796	2296	2651
39	**Alirajpur**	0	0	0	0	0	0	0	0	0	0	0	0	1807	1810	1833	1912
40	**Mandsaure**	2396	2930	2425	3197	2037	2532	1633	2366	2635	2050	2756	2147	2532	2463	2138	4170
41	**Neemuch**	0	0	0	3200	2377	2737	2120	2768	2873	2576	2135	2115	2326	2116	2392	3065
42	**Ratlam**	3068	2792	2984	3228	2437	1866	2266	3025	2891	2969	2949	2916	3108	2938	4029	1957
43	**Shajapur**	2485	1980	2441	2609	1822	1614	1557	1914	2110	1788	2275	1885	2042	2639	2006	2990
44	**Morena**	3179	2785	3596	2786	2888	2709	2238	2926	3058	3177	2951	2041	2299	2206	2310	3959
45	**Sheopur Kalan**	0	0	0	2495	2467	2310	1460	2791	2255	2504	2227	2203	2346	3057	2489	4482
46	**Gwalior**	2475	2062	2419	2974	1887	2869	2417	2840	2568	2520	2149	1617	2566	2277	2708	3529
47	**Ashoknagar**	0	0	0	0	0	0	0	1071	1042	1266	1249	1143	1406	1586	1750	2362
48	**Datia**	2334	1652	2197	2653	2464	2505	1734	2461	2031	2158	1735	1715	1951	2347	1997	2578
49	**Bhopal**	1747	1643	1680	1879	1641	1701	1514	1649	2015	1771	1808	1761	1880	2043	1693	2695
50	**Hoshangabad**	21849	1487	2343	2652	2544	2649	2376	2461	2334	2224	2718	3210	2774	3011	3525	4734
Non-NFSM Total		**2930**	**1931**	**2368**	**2620**	**2264**	**2320**	**1958**	**2223**	**2133**	**2076**	**2198**	**2124**	**2221**	**2437**	**2534**	**3159**
Madhya Pradesh		**1921**	**1592**	**1814**	**1863**	**1493**	**1624**	**1412**	**1804**	**1749**	**1642**	**1839**	**1646**	**1819**	**1988**	**1990**	**2770**

Area of Pulses (in 000’ ha) in different NFSM and non-NFSM districts

SN	Districts	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
1	**Jabalpur**	**180.9**	148.5	151	131.8	137.3	156.9	154.1	178.9	134.9	160.9	161.1	163.2	163.5	157.5	168.9	171.7
2	**Katni**	**0.0**	0	0	40.5	38.5	42.3	38.7	49.2	51	51.3	49.3	44.2	61.0	57.8	78.4	65.9
3	**Balaghat**	**38.2**	30.3	32.3	33.6	28.2	29.7	34.6	31	25.9	32.9	32.2	32.9	33.5	34.9	31.9	32.7
4	**Chhindwara**	**82.6**	81.4	89.2	86.9	66.1	73.7	68.2	38.1	74.4	74.5	78.5	72.8	66.1	75.9	94.2	92.8
5	**Seoni**	**74.5**	67.7	71.2	73.8	66.7	34.3	73.1	84.3	82.7	89.3	90.3	92.3	93.7	96.2	123.4	113.8
6	**Mandla**	**68.2**	64	68.9	42.7	23.8	30	45	40.3	41	45.5	42.7	44.5	44.4	43.8	90.3	71.8
7	**Dindori**	**0.0**	0	0	33.1	26.2	30	27.1	38.6	40.8	42.5	43.7	57.7	53.0	52.8	76.6	67.0
8	**Narsinghpur**	**180.8**	159.3	160.6	173.3	179.9	200.2	216	231.5	230.2	227.5	221.0	220.4	219.7	220.2	233.2	215.1
9	**Sagar**	**192.4**	191.5	187.7	215.4	225.1	244.5	278.4	312.1	**309.9**	309.5	296.9	296.5	297.6	287.6	301.7	287.6
10	**Damoh**	**121.8**	114.7	113.8	135.9	148.6	164.4	167	215.6	211.5	209.0	199.9	222.3	219.2	216.7	249.9	219.9
11	**Panna**	**90.4**	91.7	92	100.5	104	114.1	110.6	124.2	129.5	136.7	127.6	132.7	135.6	153.9	171.8	179.0
12	**Tikamgarh**	**74.0**	82.4	76.2	99.9	101.1	107.8	88.1	124.7	127.2	123.8	89.4	88.0	126.7	131.3	123.6	123.6
13	**Chhatarpur**	**130.7**	136.1	138.4	158.7	157	162.3	153.2	183.3	195.2	200.2	130.4	147.6	182.9	191.1	199.5	195.0
14	**Rewa**	**100.2**	111.4	110.7	93.4	105.3	107.4	104.3	114.6	118.1	116.9	111.1	112.0	113.9	117.2	176.9	149.5
15	**Sidhi**	**87.1**	88.4	92	87.9	87	86.9	84.1	91.8	**91.7**	90.5	89.4	89.3	47.4	45.8	59.8	49.0
16	**Singroli**	**0.0**	0	0	0	0	0	0	0	0	0	0	0	43.0	43.7	46.0	42.9
17	**Satna**	**102.2**	100.2	108	121.1	136.1	146.6	121.7	165.3	167.2	167.4	162.3	161.7	155.5	155.0	196.5	160.1
18	**Shahdol**	**62.5**	59.4	60.5	40.2	32.7	34.6	29	18.4	18.6	19.6	18.9	17.9	18.4	18.3	25.3	22.0
19	**Umaria**	**0.0**	0	0	18.9	17.8	18.4	16.9	20.5	20.9	20.8	20.7	23.3	23.7	23.4	43.0	37.8
20	**Anuppur**	**0.0**	0	0	0	0	0	0	18.5	**19.1**	20.3	20.6	20.1	20.8	21.6	25.8	24.8
21	**Indore**	**59.4**	53.3	50.3	44.9	19.1	44.5	35.5	30.1	36.3	28.3	38.2	38.3	96.1	70.2	65.5	59.3
22	**Dhar**	**98.6**	99.6	102.3	88.3	41.2	75.4	47.4	55.7	54.2	58.0	71.4	70.9	106.4	118.7	95.9	111.2
23	**Jhabua**	**158.8**	162.6	159.1	136.7	101.4	105.5	111.8	115	115.3	109.5	109.7	110.2	24.3	25.9	26.8	27.6
24	**Khargone (Wn)**	**93.4**	90.5	85	48.7	38.5	41.7	41.7	42.1	**40.9**	37.9	38.8	37.8	35.7	36.7	52.7	35.8
25	**Barwani**	**0.0**	0	0	36.6	32.9	31.8	31.8	32.4	32	29.8	30.3	29.6	27.8	28.7	23.4	25.8
26	**Khandwa (En)**	**66.1**	66.3	63.8	61.7	40.3	45.8	53.6	34.5	31.6	32.4	30.7	30.5	30.6	32.9	36.5	31.9
27	**Burhanpur**	**0.0**	0	0	0	0	0	0	10.3	9	9.2	8.8	8.5	8.4	9.1	8.4	8.4
28	**Alirajpur**	**0.0**	0	0	0	0	0	0	0	0	0.0	0.0	0.0	78.2	76.9	67.1	75.0
29	**Ujjain**	**119.5**	142	134	135.1	23.9	118	56.2	133.1	116.4	90.3	139.5	140.8	166.9	206.7	217.0	201.5
30	**Mandsaur**	**94.6**	119.1	153.1	88.7	28.4	64.4	41	83.1	65.9	48.3	49.3	49.4	63.3	64.0	61.4	55.7
31	**Neemuch**	**0.0**	0	0	49.8	18.9	23.9	21.9	51.6	35.7	33.8	23.1	23.0	25.7	19.0	21.6	18.5
32	**Ratlam**	**65.7**	92.4	89.7	86.1	20	47.1	25.6	67.2	64.9	48.4	64.3	64.2	72.0	87.9	85.3	84.2
33	**Dewas**	**93.3**	101	97.9	105.8	36.7	89.3	80.8	92.9	**95.4**	97.9	112.9	112.2	114.7	147.0	148.0	124.6
34	**Shajapur**	**120.8**	145.2	141.9	155.9	45.6	75.9	50.2	114.4	116.6	93.2	145.7	146.9	138.9	167.3	188.1	156.7
35	**Morena**	**27.0**	27.1	27.1	18.4	30.7	36	32.7	24.9	16.9	16.2	13.3	12.1	10.4	12.8	22.4	22.2
36	**Sheopur Kalan**	**0.0**	0	0	9.6	11	16.7	2.5	15.1	11.2	8.0	7.9	9.1	7.9	11.3	17.8	13.3
37	**Bhind**	**71.5**	67.9	70.4	78.6	78.3	91.4	81.2	82.9	74.4	63.1	40.2	34.5	32.8	36.6	32.1	32.3
38	**Gwalior**	**62.3**	70.5	38.7	36.8	48.6	63.2	32.9	62.8	41.3	36.5	25.7	29.0	27.6	31.2	25.7	22.6
39	**Shivpuri**	**111.6**	120.6	116.9	123.9	125.5	128.1	45	108	98.6	91.9	77.1	78.4	82.8	84.5	83.5	81.5
40	**Guna**	**199.7**	201.5	205.8	222.6	233.2	239.8	136	73.3	**76.9**	73.2	79.1	80.1	82.1	89.5	92.9	80.0
41	**Askhonagar**	**0.0**	0	0	0	0	0	0	161	168.2	176.6	184.8	194.5	197.6	205.6	201.2	211.6
42	**Datia**	**60.1**	61.6	102.7	93.6	92.5	100.8	75.8	118.2	110.1	89.3	57.8	53.7	55.5	68.9	46.2	44.3
43	**Bhopal**	**45.7**	45.3	46.4	47.8	37	41.9	31.8	40.5	40.2	41.3	41.8	41.4	40.9	44.2	43.7	39.8
44	**Sehore**	**100.9**	96.8	100.9	100	80	100.4	95.6	102.5	**98.1**	96.8	127.3	125.6	128.1	117.6	136.2	119.8
45	**Raisen**	**206.5**	197	213.3	206	211.2	216.7	231.3	219.9	219.4	220.9	230.7	224.0	232.7	228.8	238.3	192.3
46	**Vidisha**	**232.8**	229.9	233.1	259.2	268.3	254.1	276.5	299.1	294.5	301.2	325.3	344.7	357.6	332.1	319.4	287.2
47	**Rajgarh**	**98.9**	110.6	109.1	112.2	52.8	66.6	42.2	94.3	97.6	71.1	106.9	107.8	94.1	146.7	153.2	124.1
48	**Hoshangabad**	**131.2**	109.4	116.1	81.2	81	84.6	81.8	79.5	69.2	66.7	54.7	52.6	54.5	43.6	42.1	32.9
49	**Harda**	**0.0**	0	0	34	31.7	34.1	35.1	33	24	23.3	21.2	18.7	36.4	26.2	19.5	19.0
50	**Betul**	**65.9**	67.9	77.9	66.3	47.2	64.1	82.4	74.5	**80.2**	73.1	79.5	76.3	68.2	85.0	85.6	82.3
	Non Reported	**10.21**	10.2	10.2	10.1	16.9	17.1	17.1	16.9	16.9	17.1	17.0	16.9	16.9	16.9	16.7	17.0
	Total NFSM	**3980.63**	4015.30	4098.20	4226.20	3574.20	4103.00	3707.50	4549.70	4441.70	4322.40	4339.00	4401.10	4634.70	4817.20	5190.90	4760.40

Production of Pulses (in 000’ ha) in different NFSM and non-NFSM districts

SN	Districts	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
1	**Jabalpur**	117.2	60.9	95.4	102.4	70.2	109.8	65.8	134.9	127	132.3	106.7	92.3	118.8	117.8	72.1	127.5
2	**Katni**	0.0	0	0.0	22.6	18.6	23.5	13.5	29.4	26.5	27.9	18.0	16.0	35.8	31.0	22.5	28.1
3	**Balaghat**	23.7	7.9	15.0	22.6	15.9	18.1	21.9	19	13.9	19.3	17.8	16.9	18.8	22.4	18.6	21.7
4	**Chhindwara**	77.1	49.9	79.3	80.7	45.1	44.5	43.2	82.9	75.1	75.7	77.2	74.2	69.9	98.8	91.8	154.0
5	**Seoni**	45.4	17.7	36.1	47.4	24.1	46.6	40.8	53.5	48.3	54.9	44.6	41.7	58.7	59.5	63.0	61.2
6	**Mandla**	30.1	2.3	28.6	15.4	4.8	13.9	15.4	16.7	16.9	18.3	16.7	17.1	18.4	16.6	26.0	22.2
7	**Dindori**	0.0	0	0.0	15.0	7.2	12.4	9.0	15.1	18.2	11.8	12.6	14.5	16.6	16.6	7.1	12.6
8	**Narsinghpur**	186.9	127.4	182.8	193.3	189.7	228.3	149.5	219.5	217.3	216.7	207.1	197.3	232.1	238.5	192.4	210.0
9	**Sagar**	115.6	**133.6**	**120.9**	**147.0**	**100.6**	157.1	86.5	217	214.7	212.5	161.9	158.6	214.9	217.3	131.3	208.4
10	**Damoh**	68.8	76.3	65.9	99.1	81.1	114.6	66.8	160	151.6	162.7	122.0	128.9	184.0	195.1	109.1	165.8
11	**Panna**	56.9	61.1	51.6	63.1	43.6	70.5	53.8	77.6	72.7	93.0	83.4	85.0	121.0	134.9	101.8	119.7
12	**Tikamgarh**	65.3	61.4	54.6	71.1	59.8	87.9	67.1	83.1	71.1	67.4	28.2	29.7	72.0	69.9	49.4	42.1
13	**Chhatarpur**	93.2	95.9	95.1	106.9	85.2	119	102.0	136.6	142.5	135.9	55.5	57.4	114.0	121.6	111.3	149.6
14	**Rewa**	73.7	82.1	100.0	84.2	71.3	82.3	64.8	87.3	85.4	74.1	66.3	66.3	80.5	76.6	59.7	94.9
15	**Sidhi**	43.8	**44.7**	**43.8**	**45.6**	**37.1**	40.2	34.3	48	44.7	40.8	33.6	32.9	22.5	21.4	14.4	21.9
16	**Singroli**	0.0	0	0	0	0	0	0	0	0				20.6	25.7	18.6	21.8
17	**Satna**	53.7	58.6	57.2	68.8	55.7	79.5	63.4	98.5	96.4	92.8	54.5	50.4	72.4	84.2	56.2	63.5
18	**Shahdol**	26.6	23.5	25.5	19.2	12.1	16.1	9.3	8	8.6	8.3	7.5	7.2	8.5	7.7	8.2	7.7
19	**Umaria**	0.0	0	0.0	8.6	6.6	8.2	6.3	9.6	10.1	8.1	7.6	8.3	8.8	9.3	5.6	11.7
20	**Anuppur**	0.0	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	8.1	6.2	7.8	7.2	6.8	8.6	9.8	5.0	8.2
21	**Indore**	45.0	47.2	41.0	38.9	12.5	28.6	21.2	25.9	32.8	24.8	35.2	35.3	97.9	83.3	40.9	76.0
22	**Dhar**	59.3	57.8	59.9	41.0	10.4	39.8	18.7	29.5	32	36.9	56.3	56.9	91.0	114.0	90.4	99.4
23	**Jhabua**	73.6	77.4	69.0	39.5	20.7	36.8	40.7	56.7	50.6	49.7	47.7	55.1	12.5	12.6	13.1	12.7
24	**Khargone (Wn)**	39.5	**38.1**	**33.8**	**19.5**	**9.8**	18	17.4	20.7	15	13.0	17.8	17.5	14.1	16.6	19.4	12.8
25	**Barwani**	0.0	0	0.0	12.1	7.9	11.2	9.7	12.3	9.2	6.1	6.9	6.9	7.1	7.5	6.6	7.1
26	**Khandwa (En)**	40.2	36.8	41.9	38.0	19.3	33	38.6	26	21.5	22.6	22.9	22.6	25.6	26.3	22.9	21.2
27	**Burhanpur**	0.0	0	0	0	0	0	0	8.6	7.4	7.6	6.8	6.0	6.8	7.1	5.2	7.3
28	**Alirajpur**	0.0	0	0	0	0	0	0	0	0				37.9	38.5	33.4	27.0
29	**Ujjain**	100.5	138.6	149.2	131.1	18.9	56.8	30.2	98	100.9	65.2	94.0	94.3	128.9	194.0	136.4	152.5
30	**Mandsaur**	68.3	90.3	140.7	69.7	11.9	38.5	14.3	40.7	35.8	24.0	23.5	23.7	35.0	42.6	33.2	37.1
31	**Neemuch**	0.0	0	0	49.2	14.7	20.4	10.4	44.4	31.8	33.9	16.7	16.4	20.5	14.5	18.0	15.9
32	**Ratlam**	40.5	95.2	71.8	60.4	11.3	18.9	11.8	47.1	43	26.8	36.6	36.5	59.9	67.0	39.7	53.4
33	**Dewas**	92.1	**106.9**	**85.7**	**109.3**	**28.9**	86.6	74.3	91.1	98.6	109.0	121.0	120.8	126.9	174.0	144.1	134.6
34	**Shajapur**	118.9	138.6	141.6	161.2	29.9	50.4	30.4	82.6	99.6	75.3	80.4	79.7	112.1	181.0	100.6	120.4
35	**Morena**	26.4	25.4	33.9	17.4	29.1	42.5	29.5	25.8	17.2	16.2	10.5	9.7	9.5	11.9	11.8	14.1
36	**Sheopur Kalan**	0.0	0	0	9.7	10.4	15.7	1.3	15.7	9.5	7.8	7.2	7.6	7.3	11.8	16.4	13.4
37	**Bhind**	68.1	61.4	72.6	85.5	45.3	94.5	85.8	84.4	64.7	51.3	23.0	20.9	30.8	33.3	27.3	26.2
38	**Gwalior**	48.0	56.4	34.7	39.5	47.1	62.9	31.1	54.7	37.9	37.5	21.3	22.1	27.4	34.8	34.1	26.0
39	**Shivpuri**	92.7	117.5	97.2	122.4	99.5	121.9	22.9	105	79.3	75.2	51.6	48.7	67.0	78.2	64.9	75.8
40	**Guna**	159.7	**289.1**	**180.6**	**192.4**	**184.8**	218	52.9	61.3	59.1	63.7	40.9	40.9	92.5	84.4	93.4	91.7
41	**Askhonagar**	0.0	0	0	0	0	0	0	113.7	123.8	142.0	102.3	107.0	177.4	204.1	135.6	198.6
42	**Datia**	56.3	50.4	89.8	100.2	84.9	111.5	80.8	100.6	85.8	82.6	33.7	26.8	51.3	37.6	28.0	34.2
43	**Bhopal**	41.0	41.6	37.0	42.8	31.2	38.4	25.3	37.1	35.6	40.5	34.8	34.5	34.9	44.3	25.6	55.8
44	**Sehore**	98.7	**90.9**	**99.9**	**92.1**	**52.9**	95.5	81.1	94.7	91.7	90.0	95.4	93.1	116.8	136.5	85.3	129.4
45	**Raisen**	198.0	155.6	197.1	211.4	162.9	205.6	201.2	188.4	196	206.5	173.2	165.9	225.3	256.8	152.6	189.5
46	**Vidisha**	203.0	208.7	225.1	272.8	220.7	253.3	192.0	236	264.1	269.0	210.5	206.8	337.7	337.4	261.4	244.8
47	**Rajgarh**	87.2	104.8	91.5	124.8	32.4	50.1	27.9	96.8	95.7	58.3	72.5	72.9	80.8	162.4	106.4	127.5
48	**Hoshangabad**	145.9	121.1	98.9	83.0	89.7	117.8	92.4	93.8	73.4	74.8	69.7	68.0	66.8	56.1	49.1	42.7
49	**Harda**	0.0	0	0	32.4	29.0	38	37.5	37.8	34.7	33.4	23.8	21.2	23.0	26.9	29.2	31.7
50	**Betul**	35.0	**25.7**	**35.1**	34.5	**19.8**	33.8	**35.8**	42.6	44.5	43.5	45.3	42.8	77.7	53.4	21.4	74.4
	Non Reported	2.3	2.2	2.2	2.3	11.0	11.1	11.1	11.2	11	11.0	11.0	11.1	10.9	11.0	11.2	11.3
	Total NFSM	3018.20	3081.00	3182.00	3446.10	2275.60	3222.10	2239.70	3488.00	3349.40	3258.50	2720.90	2673.20	3710.20	4134.60	3021.70	3717.10

Productivity of Pulses (in 000’ ha) in different NFSM districts

SN	Districts	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
1	**Jabalpur**	648	410	632	777	511	700	427	754	941	822	662	566	727	748	427	743
2	**Katni**	0	0	0	558	483	556	349	598	520	544	365	362	587	536	287	426
3	**Balaghat**	620	261	464	673	564	609	633	613	537	587	553	514	561	642	583	664
4	**Chhindwara**	934	613	889	929	682	604	633	2176	1009	1016	983	1019	1057	1302	975	1659
5	**Seoni**	610	261	507	642	361	1359	558	635	584	615	494	452	626	619	511	538
6	**Mandla**	441	36	415	361	202	463	342	414	412	402	391	384	414	379	288	309
7	**Dindori**	0	0	0	453	275	413	332	391	446	278	288	251	313	314	93	188
8	**Narsinghpur**	1034	800	1138	1115	1054	1140	692	948	944	953	937	895	1056	1083	825	976
9	**Sagar**	601	698	644	682	447	643	311	695	693	687	545	535	722	756	435	725
10	**Damoh**	565	665	579	729	546	697	400	742	717	778	610	580	839	900	437	754
11	**Panna**	629	666	561	628	419	618	486	625	561	680	654	641	892	877	593	669
12	**Tikamgarh**	883	745	717	712	591	815	762	666	559	544	315	338	568	532	400	341
13	**Chhatarpur**	713	705	687	674	543	733	666	745	730	679	426	389	623	636	558	767
14	**Rewa**	735	737	903	901	677	766	621	762	723	634	597	592	707	654	337	635
15	**Sidhi**	503	506	476	519	426	463	408	523	487	451	376	368	475	467	241	447
16	**Singroli**	0	0	0	0	0	0	0	0	0	0	0	0	479	588	404	508
17	**Satna**	525	585	530	568	409	542	521	596	577	554	336	312	466	543	286	397
18	**Shahdol**	426	396	421	478	370	465	321	435	462	423	397	402	462	421	324	350
19	**Umaria**	0	0	0	455	371	446	373	468	483	389	367	356	371	397	130	310
20	**Anuppur**	0	0	0	0	0	0	0	438	325	384	350	338	413	454	194	331
21	**Indore**	758	886	815	866	654	643	597	860	904	876	921	922	1019	1187	624	1282
22	**Dhar**	601	580	586	464	252	528	395	530	590	636	789	803	855	960	943	894
23	**Jhabua**	463	476	434	289	204	349	364	493	439	454	435	500	514	486	489	460
24	**Khargone (Wn)**	423	421	398	400	255	432	417	492	367	343	459	463	395	452	368	358
25	**Barwani**	0	0	0	331	240	352	305	380	288	205	228	233	255	261	282	275
26	**Khandwa (En)**	608	555	657	616	479	721	720	754	680	698	746	741	837	799	627	665
27	**Burhanpur**	0	0	0	0	0	0	0	835	822	826	773	706	810	780	619	869
28	**Alirajpur**	0	0	0	0	0	0	0	0	0	0	0	0	485	501	498	360
29	**Ujjain**	841	976	1113	970	791	481	537	736	867	722	674	670	772	939	629	757
30	**Mandsaur**	722	758	919	786	419	598	349	490	543	497	477	480	553	666	541	666
31	**Neemuch**	0	0	0	988	778	854	475	860	891	1003	723	713	798	763	833	859
32	**Ratlam**	616	1030	800	702	565	401	461	701	663	554	569	569	832	762	465	634
33	**Dewas**	987	1058	875	1033	787	970	920	981	1034	1113	1072	1077	1106	1184	974	1080
34	**Shajapur**	984	955	998	1034	656	664	606	722	854	808	552	543	807	1082	535	768
35	**Morena**	978	937	1251	946	948	1181	902	1036	1018	1000	789	802	913	930	527	635
36	**Sheopur Kalan**	0	0	0	1010	945	940	520	1040	848	975	911	835	924	1044	921	1008
37	**Bhind**	953	904	1031	1088	579	1034	1057	1018	870	813	572	606	939	910	850	811
38	**Gwalior**	770	800	897	1073	969	995	945	871	918	1027	829	762	993	1115	1327	1150
39	**Shivpuri**	831	974	831	988	793	952	509	972	804	818	669	621	809	925	777	930
40	**Guna**	800	1435	878	864	792	909	389	836	769	870	517	511	1127	943	1005	1146
41	**Askhonagar**	0	0	0	0	0	0	0	706	736	804	554	550	898	993	674	939
42	**Datia**	937	818	874	1071	918	1106	1066	851	779	925	583	499	924	546	606	772
43	**Bhopal**	898	918	797	895	843	916	796	916	886	981	833	833	853	1002	586	1402
44	**Sehore**	978	939	990	921	661	951	848	924	935	930	749	741	912	1161	626	1080
45	**Raisen**	959	790	924	1026	771	949	870	857	893	935	751	741	968	1122	640	985
46	**Vidisha**	872	908	966	1052	823	997	694	789	897	893	647	600	944	1016	818	852
47	**Rajgarh**	882	948	839	307	614	752	661	1027	981	820	678	676	859	1107	695	1027
48	**Hoshangabad**	1112	1107	852	1022	1107	1392	1130	1180	1061	1121	1274	1293	1226	1287	1166	1298
49	**Harda**	0	0	0	953	915	1114	1068	1145	1446	1433	1123	1134	632	1027	1497	1668
50	**Betul**	532	378	451	520	419	527	434	572	555	595	570	561	1139	628	250	904
	Non Reported	225	216	216	228	651	649	649	663	651	643	647	657	645	651	671	665
	Total NFSM	758	767	776	815	637	785	604	767	754	754	627	607	801	858	582	781

IMPACT OF NATIONAL FOOD SECURITY MISSION (NFSM) ON INPUT USE, PRODUCTION, YIELD AND INCOME IN MADHYA PRADESH

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EXECUTIVE SUMMARY

In order to combat the challenge of deficit food availability in the country, the Government of India launched **N**ational **F**ood **S**ecurity **M**ission (NFSM) in 2007-08 at the beginning of 11th Five Year Plan. The NFSM Programme targeted to escalate production of paddy, wheat and pulses by 10, 8, and 2 million tonnes, respectively by the end of Eleventh Five Year Plan.

The mission adopted twofold strategy to bridge the demand-supply gap. First strategy was to expand area, and the second was to bridge the productivity gap between potential and existing yield of food crops. Expansion of area approach was mainly confined to pulses and wheat only, and paddy was mainly targeted for productivity enhancement. The chief measures adopted to augment the productivity included: (1) acceleration of quality seed production; (2) emphasizing INM and IPM; (3) promotion of new production technologies; (4) supply of adequate and timely inputs; (5) popularizing improved farm implements; (6) restoring soil fertility; and (7) introduction of pilot projects like community generator and blue bull. A total amount of Rs 4500 crores have been spent under NFSM during the 11th FYP (GoI 2014).

The National Development Council (NDC) in its 53rd meeting held on 29th May, 2007 adopted a resolution to launch a Food Security Mission comprising paddy, wheat and pulses to increase the production of paddy by 10 million tons, wheat by 8 million tons and pulses by 2 million tons by the end of the Eleventh Plan (2011-12). Accordingly, a Centrally Sponsored Scheme, 'National Food Security Mission' (NFSM), was launched in October 2007 for five years (11th FYP) to increase production and productivity of wheat, paddy and pulses on sustainable basis so as to insure food security of the country. The aim is to bridge the yield gap in respect of these crops through dissemination of improved technologies and farm management practices. This mission has been for three components in 11th FYP i.e. (i) NFSM-Paddy; (ii) NFSM-Wheat; (iii) NFSM-Pulses.

The Mission is being continued during 12th Five Year Plan with new targets of additional production of food grains of 25 million tons of food grains comprising of 10 million tons paddy, 8 million tons of wheat, 4 million tons of pulses and 3 million tons of coarse cereals by the end of 12th Five Year Plan. The National Food

Security Mission (NFSM) during the 12th Five Year Plan will have five components (i) NFSM- Paddy; (ii) NFSM-Wheat; (iii) NFSM-Pulses; (iv) NFSM-Coarse cereals and (v) NFSM-Commercial Crops.

The NFSM is extended to 12th Five Year Plan due to its success in achieving the targeted goal of production enhancement. It is essential to evaluate and measure the extent to which the programme and approach has stood up to the expectations. The study would enlighten the policy makers to incorporate necessary corrective measures to make the programme more effective and successful during the 12th Five Year Plan. The study intends to achieve the following specific objectives:

1. To analyse the trends in area, production, productivity of food grains in the NFSM and non NFSM districts in Madhya Pradesh.
2. To analyse the socio-economic profile of NFSM vis-a-vis Non-NFSM beneficiary farmers of wheat.
3. To assess the impact of NFSM on input use, production and income among the beneficiary farmers.
4. To identify factors influencing participation under NFSM; and
5. To identify the constraints hindering the performance and suggest ways and means for improvement of the programme.

The study is based on the survey data collected from sample wheat growers in selected NFSM districts of the State as shown in Table 1. For selection of farmers, a multi-stage sampling design was used for selection of respondents (Fig. 1.1). At the first stage, two NFSM districts viz. Harda and Balaghat were selected for the study. For the selection of districts in the State, production of wheat in the NFSM districts for the year 2012-13 was arranged in descending order. Among the NFSM districts, the district having highest production (Harda) and district having lowest production (Balaghat) were finally selected for the survey of Wheat.

Two talukas were selected from each district at the second stage, drawing one taluk from the nearby district headquarters and the second at a distance of 15-20 kilometres from the district headquarter. Subsequently, at the third stage, 75 beneficiaries and 25 non beneficiaries were selected purposefully from each taluka totalling to a sample size of 400 households comprised of 300 beneficiary households and 100 non beneficiary households in Madhya Pradesh.

For the selection of beneficiary households in each taluk, the beneficiary list was obtained from the Department of Agriculture/State Officials at the taluk level. While collecting the list, an attempt should be made to collect the households who have obtained benefits of various components irrespective of the year of benefit. The list contained the benefits obtained by the households for the whole of 11th Plan (2007-08 to 2011-12) and two years of 12th Plan (2012-13 and 2013-14). After obtained the beneficiary list, the households were selected in such a way that all the major components covered under the programme were got due representation. While selecting the households, a due care were taken for the crop development programme under which benefit pertained to only one year, e.g., seed, fertilizer, pesticides, etc., were distributed for the latest year while, machinery and equipment (that have much longer use) represented for the previous year including the period of 11th Plan. The selection of non-beneficiary households were done in the peripheral areas in such a way that a similar cropping pattern and baseline characteristics were represented by the non-beneficiary households as well. Giving representation to different size classes and various socio-economic characteristics were tried while selection of the beneficiary and non-beneficiary sample farmers.

In order to fulfill the first objective of analysing the trends in production, productivity of wheat in NFSM districts and Non-NFSM districts, secondary data on area, production and productivity of major food grains i.e. paddy, wheat and pulses for 9th, 10th and 11th FYPs were used. Average Annual Growth Rates (AAGR), correlation and graphical analysis were applied to draw conclusions.

For meeting the remaining objectives, primary household data were taken into consideration. The primary data relating to general information about the sample farmers, socio-economic profiles, cropping pattern, details on various inputs used in wheat cultivation, irrigation details, yield, returns, reasons for adoption/non-adoption of NFSM interventions, constrains faced for availing the benefits, suggestions for improvement, etc., were collected from the sample beneficiary and non-beneficiary farmers using a pre-tested interview schedule. The primary household data were collected mainly pertaining to the agricultural year 2013-14, which is the latest agricultural year. In order to fulfill the remaining objectives, descriptive analysis, gross margin analysis, logistic regression equation and correlation techniques were used to draw conclusions.

The major finding of the study are :

The implementation of NFSM in the state has been quite satisfactory as during the 11th FYP the area, production and productivity of paddy, wheat and pulses were found to be increased during 11th FYP as compared to 10th FYP. The growth in area, production and productivity in all NFSM districts was found to be negative during 9th FYP, while it was found positive during 10th and 11th FYP.

As far as the growth of area, production and productivity of paddy concerned it was found to be positive and increased by 3.02, 18.33 and 4.34 per cent per year respectively during 9th FYP with increase in area, production and productivity from 16.18 (1997-98) to 17.66 lakh ha (2001-02), 11.90 (1997-98) to 16.92 lakh t (2001-02) and 7.35 (1997-98) to 8.49 q/ha (2001-02) respectively. The growth of area was found to be decreased with a magnitude of 0.90 per cent per year during 10th FYP period while, the growth of production and productivity was found to be increased by 4.79 and 5.66 per cent per year respectively in Madhya Pradesh. The area, production and productivity of paddy was found to be increased with a growth of 0.33, 11.79 and 11.00 per cent per year respectively during 11th FYP period.

The growth in area, production and productivity of wheat was found to be decreased by -0.45, -1.60 and -1.55 per cent per year respectively during 9th FYP. During this plan area and production were found to be decreased from 45.02 (1997-98) to 37.04 lakh ha (2001-02) and 71.54 (1997-98) to 60.01 lakh tones (2001-02) respectively, while the productivity was increased from 16.55 (1997-98) to 16.91 q/ha (2001-02) with decreasing trend due to drastic decrease in the year 2000-01 (15.35 q/ha) as compared to year 1999-2000 (19.38 q/ha). The growth of area, production and productivity of wheat in Madhya Pradesh was found to be increased from 33.81 to 42.75 lakh ha, 49.23 to 78.48 lakh tones and 15.20 to 19.16 q/ha respectively with AAGR of 3.60% (Area), 8.46% (Production) and 3.27% (Productivity) per annum respectively during 10th Five Year Plan (2002-03 to 2006-07). The production was found to be increased due to increase in area and productivity of wheat in the state during this particular plan period. The growth of area, production and productivity of wheat was also found to be increased from 41.01 (2007-08) to 52.61 lakh ha (2011-12), 67.37 (2007-08) to 145.44 lakh tones (2011-12) and 17.14 (2007-08) to 27.70 q/ha (2011-12) with AAGR of 4.47, 15.48 and 8.60 per cent per year respectively during the 11th FYP period.

The production of pulses in the state was also increased from 30.81 (1997-98) to 32.22 lakh t (2001-02), 22.40 (2002-03) to 27.21 lakh t (2006-07) and 26.73 (2007-08) to 37.17 lakh t (2011-12) with annual growth of 4.26, 0.41 and 8.91 per cent per year during 9th, 10th and 11th FYP respectively. The productivity of pulses was also found to be increased from 7.67 (1997-98) to 7.85 q/ha (2001-02), 6.04 (2002-03) to 6.27 q/ha (2006-07) and 6.07 (2007-08) to 7.81 q/ha (2011-12) with annual growth of 1.77, -2.93 and 7.57 per cent per year during 9th, 10th and 11th FYP respectively in Madhya Pradesh. The negative trend in productivity (-2.93%/year) was observed during 10th FYP which turned into positive to a magnitude of 7.75 per cent per year during 11th FYP period. It can be concluded from above result that due to effective implementation of NFSM in Madhya Pradesh the area, production and productivity of wheat, paddy and pulses increased many folds during the 11th FYP as compared to 9th and 10th FYPs period due to the sincere efforts made by the scientists and officials of the Agriculture universities and state department of Agriculture. The state could be able to prevailed prestigious '**Krishi Karman**' Award from consecutive three times i.e. in the year 2011-12, 2012-13 and 2013-14 from the president of India.

In spite of higher growth in NIA (6.11%), GIA (6.34%), percentage net irrigated area to NSA (6.72%), cropping intensity (1.33%) and fertilizer consumption (11.11%) during 10th FYP, the growth in the above described parameters was also found to be increased by 4.44, 4.75, 3.89, 1.65, and 8.99 per cent respectively during 11th FYP period in the State. This might be due to excellent efforts made by the Govt. in implementation of NFSM.

The percent achievement of financial targets for NFSM during the 11th FYP in Madhya Pradesh at overall level amongst the different interventions was found to be maximum in water management (364.68%) followed by distribution on subsidy (303.46%), demonstration (83.60%), farmers training (76.29%), Production subsidy (69.25%), plant protection chemical (65.77%), IPM (65.73%), local initiatives (35.78%), farm machines (57.73%), micro nutrients (53.31%), project management team (44.43%), soil amendments (27.77%) and training of extension workers (25.17%). In total 142.30 per cent achievement has been observed against the total financial target (84753.44 Lakh) for NFSM during 11th FYP period in Madhya Pradesh.

The correlation between percentage change in total NFSM expenditure & percentage change in area, and percentage change in total NFSM expenditure & percentage change in production in Madhya Pradesh has also been analyzed, which shows moderate degree of positive correlation (0.27) between percentage change in total NFSM expenditure and percentage change in area of paddy, wheat and pulses. The correlation between percentage change in total NFSM expenditure and percentage change in production for paddy, wheat and pulses was found -0.85, which is negatively correlated with high degree of correlation in Madhya Pradesh. As percentage change in total NFSM expenditure is not tuned with percentage change of net irrigated area, percentage change in fertilizer consumption, percentage change in area and production of paddy, wheat and pulses therefore sincere efforts are needed to increase net irrigated area, fertilizer consumption, area and production of paddy, wheat and pulses with respect to NFSM expenditure.

The socioeconomics characteristics of sample HHs reveals that 68 per cent of NFSM and 65 per cent of Non-NFSM HHs were engaged in farming and majority of them matriculated and above degrees holder and belongs to OBC category. The annual income (agriculture) and annual income (all sources) per HH was found to be more in case of NFSM as compared to Non-NFSM. The percentage of holding under NFSM HHs were found to be maximum in small category, while in case of Non-NFSM HHs it was more in medium category and percentage of area in both the cases was found maximum in large category. The average total owned land was found to be 6.2 and 7.6 acres in case of NFSM and Non-NFSM HHs, while net operated area was found to be 6.6 (NFSM) and 7.7 acres (Non-NFSM). Only leasing in land (0.4 and 0.1 acre/HHs) was found to be in practice through fixed rent in cash basis among NFSM and Non NFSM HHs respectively. The cropping and irrigation intensity were found to be higher in case of NFSM as compared to Non-NFSM HHs. The tube wells followed by canal + tube well and well were found to be major sources of irrigation in case of NFSM and Non-NFSM HHs. The total irrigated and rainfed area was found to be 6.2 and 0.4 acre in case of NFSM and 7.6 and 0.1 acre in case of Non-NFSM HHs, respectively.

As far as cropping pattern of sample NFSM and Non-NFSM HHs is concerned, it is dominated by wheat followed by paddy, soybean, gram, moong and other pulses. The average value of output and net return per HHs from agriculture was found to be Rs. 335174 & Rs. 208296 for NFSM HHs and Rs. 344667 & Rs. 193170 for

Non-NFSM HHs. The average value of output and net return in terms of Rs./acre were obtained as Rs. 50784 & Rs. 31560 and Rs. 44762 & Rs. 25087 in case of NFSM and Non-NFSM HHs, respectively. The average cost of cultivation was found to be Rs. 19224 (126878 Rs./HH) and 19675 (Rs. 151498/HH) in case of NFSM and Non-NFSM HHs, respectively.

As regards to average cost of cultivation of different crops grown by the HHs, the yield (19.2 q/acre.) and net return (Rs. 17796/acre) were found maximum in case of wheat, while minimum yield (3.4 q/acre) was obtained in case of gram by NFSM HHs. The average cost of cultivation was found maximum in case of wheat (Rs. 11880 and 11722/acre) and minimum in case of lentil (Rs. 3069 and 2000/acre) under NFSM and Non-NFSM HHs respectively. The average total asset per HHs was found to be Rs. 185065 and Rs. 206912 in case of NFSM and Non-NFSM HHs respectively. As far as assets holding situation is concerned, Non-NFSM HHs were found to be in better situation as compared to NFSM HHs. The main sources to obtain credit by HHs were found to be Commercial Banks followed by Primary Agriculture Cooperative Society (PACS). Agriculture was found to be the main and only purpose of credit from the above sources. The amount of credit borrowed by a HH for this purpose was found to be Rs. 43596 and Rs. 59070 in case of NFSM and Non-NFSM HHs, respectively in the area under study.

As far as the awareness about the NFSM is concerned all the NFSM HHs were found to be well aware about the NFSM. The major source of awareness among them was found to be Agriculture Department followed by T.V., news paper and farmers friends. The HHs got cent percent subsidy for production of certified seeds, seed minikits of HYV/hybrid paddy and plant protection chemicals. The maximum number of HHs were benefited by knap sack sprayer and got benefits with high subsidy as compare to pipelines, sprinklers, pump sets, cono weeder, rotavators and seed drill. The maximum benefits per HHs was availed through rotavators followed by seeddrills, sprinklers, pump sets and pipeline. The equipment from which per HHs was benefited during the year for maximum number of days was found to be sprinkler, while the maximum area covered per HHs by rotavator. However, more than 80 per cent of selected NFSM HHs availed more than one benefits. The imputed value in terms of Rs. /HH for using these equipments was found to be maximum in case of seed drill (Rs.6955) followed by rotavator

(Rs.6792), sprinkler (Rs.3180), pumpset (Rs.3124), pipeline (Rs.2734), sprayer (Rs.616) and cono weeder (Rs. 500).

The sprayer helped in control of weeds (60.2%), good plant growth (23.7%), timely operations (11.8%) and labour shortage (4.3%) as reported by maximum number of NFSM HHs, while pump sets were found beneficial in reduction of cost of cultivation, saving water and timely operations. The major benefits as reported by maximum per cent of HHs through seed drill were reduction in cost of cultivation, timely operation, good plant growth, and it solved problem of labour shortage. The maximum number of NFSM HHs (80 per cent) expressed that pipe line was found useful in case of labour shortage, reduces the cost of cultivation and also saved water. Rotavator was found to be useful in good plant growth and control of weeds. All the NFSM HHs reported that cono weeder is useful in case of labour shortage.

The maximum increase in productivity (40%) was found due to good quality seed and reduction in material and labour cost. The sprinkler was found to reduce water use and labour cost. The improvement in soil health was observed by HHs due to introduction of sprinkler and pipe line etc. in their field. The total cost of cultivation (Rs. per acre) of wheat was found to be higher in case of NFSM than the Non-NFSM HHs. The per acre productivity, gross income and net income were found to be apparently higher in case of NFSM as compared to Non-NFSM HHs. The cost of production per quintal was also found to be less in case of NFSM HHs as compared to Non-NFSM HHs. The cooperative market society was found to be most popular marketing channel in the area under study through which more than 90 per cent HHs sold more than 95 per cent of marketed surplus in the market.

This chapter deals with participation decision and suggestions for improvement of NFSM in area under study. The logistic regression equation was employed to analyze the factors influencing participation in NFSM by the beneficiaries. The independent variable such as age in years (x_1), education in number of years in school (x_2), operational holdings (acres) (x_3), family size or no. of family members dependent on farming (x_4), SC/ST (x_5), OBC (x_6), income from farming (x_7), credit availed (per acre) (x_8) and farm asset value (Rs.) (x_9), have been considered to analyse the participation in NFSM (Y). The Likelihhod ratio test statistic was found to be 395 in the fitted logistic regression equation, which reveals that 395 out of 400 respondents likely to participate in NFSM in the area under

study with the independent variables taken into consideration. Among different independent variable, age (-0.032) was found to be negative and highly significant to the participation, while caste i.e. SC/ST (1.249), numbers of family members dependent on farming (0.166), income from farming (0.000), credit availed (0.000) were also found to be positive and significant as far as participation in NFSM is concerned. Whereas caste OBC (0.435) farm asset value (0.000) were positive but non-significant to the participation in NFSM. Operational land holdings (-0.055) was found to be negative and non significant. It shows that respondents related to SC/ST having young age, more education, more number of family member dependent on farming, more income from farming, more credit availed from different institutions and small holdings are likely to participate more in the NFSM.

The maximum number of beneficiaries reported that they did not face any constraints in availing the NFSM benefits, however few beneficiaries reported that the long time gap between the purchase and receiving the subsidy amount (20.3%), more documentation (19%), subsidy paid after purchase while initial payment remains the highest problem (18.7%), complicated procedure for the subsidy (16.7%), lack of institutional financing facility (16%), lack of capacity building (13%), information about NFSM not reaches comprehensively to the households (11.7%), eligibility or criteria for availing the subsidy is not provided to the households (11.3%), lack of technical advice (11%), poor quality of materials/machinery are supplied (9.7%) and biased towards large land owners (9%) were the constraints in availing the NFSM benefites.

The major suggestion as expressed by maximum percentage of beneficiary HHs was the financial facility should be available for margin money (86%) followed by timely supply of input (73%), farmers visit/field days should be arranged for each intervention wherever it has been taken to demonstrated among the farmers for its wide publicity (72%), input delivery system should be strengthened to make the availability round the year and year to come (56%), quality material should be provided under the programme (26%) and time lag between purchase of item and release of subsidy amount should be reduced (23%).

The maximum percentage of non-beneficiary HHs reported that the farmers who have taken benefit from any intervention will not be eligible to get benefit from another intervention (74%), increase targets under different interventions and the number of beneficiaries (67%), the programme should be designed in such a way so

that every farmer should have equal opportunity to be benefited from it, so that more number of farmers will be able to get benefit from at least one intervention (48%) and most of the non-beneficiaries farmers expressed that they were not preferred by govt. officials while providing benefits through different interventions under the programme, hence, preference should be given to them (31%).

There were two major reasons reported for non-participation by the non-beneficiaries i.e. lack of willingness (91%) followed by lack of knowledge (85%) and the majority of them also reported that regular monitoring and concurrent evaluation (93%) along with wider publicity through gram sabha, primary and secondary school teachers (87%) are needed for the inclusion of non- beneficiary for availing benefits under NFSM.

The following policy implication from the above findings:

1. It is held that nearly 40 percent of potential yield of paddy, wheat and pulses remains untapped, thus underlining the need to increase the percent production level of food grains there is a need to closely look into the factors that led to the progress.
2. It is observed during the investigation that seed committee are not in functioning in the area. Hence, seed committees are constituted in each district and made effective in dealing with supply of seed to the farmers well in time since any shortage of seed will adversely impact the production of crops.
3. It is also observed during the investigation the conventional method of transfer of funds is still in operation in the district. Hence, efforts need to be made to use electronic banking for quick transfer of fund.
4. Collaboration/Synergy among Line Departments and convergence of scheme concept which is lacking in the programme as present needs to be considered seriously.
5. Efforts are required to be made also to involve farmers KVK, different agricultural stations of SAUs, Non-Government Organizations (NGOs), Growers' Associations, Self Help Groups, State Institutions and other similar entities in the implementation of mission's programmes. Since, such entities more particularly the KVKs and different Stations of SAUs/Colleges sector

being of grass level institutions with excellent report with the farmers particularly marginal and small farmers, their involvements will be very useful.

6. The farmer to farmer interaction is very effective way of transfer technology, more and more farmers' facilitators (Kisan Mitra) the mission's programme. The concerned should be rewarded with payment of suitable honorarium.
7. Field visit/field days should be arranged for each intervention wherever it has been taken to demonstrate it among the farmers for its wider publicity, adaptation and deeper penetration.
8. An intensive publicity campaign is required to be undertaken as presently a large majority of the beneficiary farmers was relying on the State Agriculture Department for information. Use of standard marketing strategy with wide use of electronic and print media will bring increased awareness among all the categories of farmers. Hence, improve the coverage and the delivery of the service.
9. The capacity building at all level- farmers, field level workers, technical officers and developing orientation skills of all the stake holder in the context of changing world in agriculture need to be intensified. More and more training programs for all the stakeholders should be organized.
10. There is a need to Involve PRIs and other voluntary etc. in the section progress to make the same more wide and transparent. This will help in improving the delivery system.
11. There are many success stories in the implementation of the programme of the mission. Some of such stories may be documented and used for propagation/publicity of the programme.
12. The post harvest losses in wheat throw away the productivity gain that has been laboriously achieved through decades of research and development. Introduction of more efficient technologies for handling, drying, storage and milling wheat at the village level is essential to reduce post-production losses. Hence, intervention about post harvest handling of production should be introduced in the mission.

13. Efficient marketing technology also increases the quantum of marketed surplus in the market. Hence, marketing technology related to crops should be introduced in the mission.

14. Benefit of mission should be designed in such a way to that each farmer will be benefited at least once from one intervention. The farmer who had already benefited farm any intervention will not be eligible for getting benefit from another intervention. In this way more number of farmers should get benefited.

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