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# **Implementation of National Food Security Mission: Farmers' Perceptions**

**Deepak Shah\***

## *Abstract*

The study attempts to assess the farmers' perceptions regarding the impact of NFSM-pulses on rainfed agriculture in Maharashtra since pulse crops are mainly cultivated under unirrigated condition in the State. The impact assessment is done with respect to awareness of the farmers regarding NFSM programme for pulses crops, assistance received and the type of assistance, usefulness of the assistance, area allocation under pulse crops before and after NFSM programme, production of pulses crops before and after NFSM programme, increase in area under pulses after NFSM programme, extent of increase in area under pulse crops, and their major suggestions for improving NFSM-Pulses programme. Although NFSM programme has been initiated in India a few years ago, the farmers were quite aware of the programme. The type of assistance received under NFSM-pulses programme included improved varieties of seeds like breeder/foundation/certified seeds, assistance on Integrated Nutrient Management (INM) - micronutrients/line/gypsum, etc., assistance on Integrated Pest Management (IPM) - micronutrients/line/gypsum IPM, provision of equipment like seed drills, pumpsets, sprinklers, conoweeder, Knapp-sack sprayers, participation of farmers in various training programmes, and reasonably assured market for the pulses produce. As a result, not only the area under pulse crops increased but there was substantial increase in production as well as productivity of pulses crops in the study area.

## **Introduction**

A number of earlier studies have shown a sluggish and erratic growth in pulses and coarse cereal production, though most of the studies are area specific (Moorti et. al. 1991; Bhatia, 1991, Shah, 1997). In the late 1970's and early 1980's, several studies raised concerns about a possible deceleration in the growth of foodgrain production, indicating a decline in the momentum of the green revolution and possible exhaustion of the potential of available technology (Alagh and Sharma, 1980; Desai and Namboodiri, 1983). Dantwala (1978) found that the HYV technology brought about significant improvement in the productivity of cereal crops, but its overall effect on foodgrain production, especially when evaluated in per capita terms, was not significant. A significant section also showed serious doubts about the productivity of modern inputs that are used in increasing quantities to sustain growth. The Government of India is now giving top priority for boosting the production of pulses in the country with the objective of meeting their domestic requirement and also to reduce their import bill.

Since pulse production in India has fluctuated widely with no long-term trend, this has led to steady decline in the per capita availability of pulses over the past 20 years or so. This is despite the fact that several policy initiatives, projects and programmes with respect to pulses were undertaken in the past viz. All India Coordinated Pulses Improvement Project (AICPIP),

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National Pulses Development Programme (NPDP), Technology Mission on Pulses (TMOP), Centrally Sponsored Integrated Scheme of Oilseeds, Pulses, Oil palm and Maize (ISOPOM), etc. Since these policies and programmes hardly led to any improvement in pulses production of India, the National Development Council (NDC) in its 53<sup>rd</sup> meeting held on 29<sup>th</sup> May, 2007 resolved to launch a Food Security Mission for rice, wheat and pulses, especially for raising the production levels by 10 million tonnes for rice, 8 million tonnes for wheat and 2 million tonnes for pulses by the end of the Eleventh Five Year Plan (2011-12). In view of achieving these targets and operationalising the resolution taken by NDC, the 'National Food Security Mission (NFSM)' was launched in 2007-08 as a Centrally Sponsored Scheme. The NFSM comprises of three components, which include (a) NFSM – Rice, (b) NFSM – Wheat, and (c) NFSM – Pulses.

At present, the major areas of concern in pulse cultivation are the low yield levels, marginal lands devoted to pulse cultivation, stagnation in production technology, severe abiotic (climate-related) and biotic (insect, pest) stresses, volatility of prices and lack of effective procurement. These problems are noticed in all the states of India and Maharashtra is not an exception to this phenomenon. Despite the fact that Maharashtra accounts for about 15 per cent share in area and production of pulse crops of India, the productivity levels of pulses have remained lower in this State as against the national average. One of the major reasons for the low productivity of pulses in Maharashtra could be assigned to the cultivation of these crops mainly under rainfed conditions. The present study, therefore, attempts to assess farmers' perceptions regarding the impact of NFSM-pulses on rainfed agriculture in Maharashtra since pulse crops are mainly cultivated under unirrigated condition in the State.

### **Data and Methodology**

Based on higher area allocation under pulses crops during 2008-09, the district of Amravati was selected as NFSM district in the state of Maharashtra. It was decided to select one Taluka from the selected Amravati district based on similar criteria as followed in the case of selection of district, and, therefore, based on higher area allocation under pulse crops, Daryapur Taluka from Amravati district was selected. The study is confined to the selection of only one village from the NFSM district of Amravati. The village of Ramagad from Amravati district was further selected randomly for the present investigation subject to the condition that it should be having sufficient area allocation under pulses crops. In this study, it was decided to select 50 sampled farmers from the NFSM district of Amravati. Therefore, a complete enumeration of the selected village was done with view to further categorization of farmers into marginal (less than 1 hectare), small (1 to 2 hectares), medium (2-4 hectares) and large (above 4 hectares). The probability proportion to sample size technique was used for further selection of farmers under each of the land holding size category from the selected sampled villages. The number of sampled farmers in the selected Ramagad village encompassed 15 in marginal category, 19 in small, 10 in medium and 6 in large category with a sum of 50 farmers drawn from the district of Amravati.

## Empirical Findings

In order to evaluate impact of NFSM-pulses, responses of the sampled households of NFSM district of Amravati have been assessed with respect to their awareness of NFSM for pulses, assistance received and the type of assistance, usefulness of the assistance, area allocation under pulse crops before and after NFSM programme, production of pulses crops before and after NFSM programme, etc.

### (a) *Farmers' Awareness of NFSM-Pulses*

The sampled farmers belonging to the NFSM district of Amravati were quite aware of the NFSM-pulses programme since 76 per cent of the total sampled farmers of this district aired their view in favour of their awareness of the programme and this proportion among various categories stood at 67 per cent in marginal category, 84 per cent in small, 70 per cent in medium and 83 per cent in large category with an average of 76 per cent for the average category of farmers of the NFSM district of Amravati (Table 1).

**Table 1: Farmers' Awareness of NFSM – Pulses: NFSM Amravati District**

Household Category	No. of Households Aware	Total No. of Households in the Size-group	% of Household Aware
Marginal	10	15	66.67
Small	16	19	84.21
Medium	7	10	70.00
Large	5	6	83.33
All	38	50	76.00

Although NFSM programme has been initiated in India a few years ago, the sampled farmers were quite aware of the programme and large and small categories of sampled farmers showed higher proportion as against marginal and medium category in terms of their awareness of the programme.

### (b) *Assistance Received under NFSM-Pulses*

At the time of survey, various categories of sampled households belonging to the NFSM district of Amravati were asked to indicate as to whether they received any assistance under NFSM-pulses programme, and the responses in this respect received from the sampled farmers are shown in Table 2.

**Table 2: Received any Assistance under NFSM – Pulses: NFSM Amravati District**

Household Category	No. of Households Received Assistance	Total No. of Households in the Size-group	% of Household Assisted
Marginal	10	15	66.67
Small	16	19	84.21
Medium	7	10	70.00
Large	5	6	83.33
All	38	50	76.00

The response with respect to assistance under NFSM-pulses programme was quite positive since 76 per cent of the total sampled farmers belonging to the NFSM district of

Amravati aired their view in favour of receiving assistance under the programme and this proportion among various categories stood at 67 per cent in marginal category, 84 per cent in small, 70 per cent in medium and 83 per cent in large category.

*(c) Type of Assistance received under NFSM-Pulses*

Under NFSM-pulses, the farmers are provided various types of assistance and these mainly include: (a) breeder/foundation/certified seeds, (b) assistance on Integrated Nutrient Management (INM) – micronutrients/line/gypsum, etc., (c) assistance on Integrated Pest Management (IPM) - micronutrients/line/gypsum IPM, (d) equipment like seed drills, pumpsets, sprinklers, conoweeder, Knapp-sack sprayers, (e) demonstration of new ICRISAT technologies or Bluebull menace, (f) training under Farmers’ Training component, etc. The responses of the sampled households drawn from the NFSM district of Amravati were recorded in terms of types of assistance received by them and these responses for various categories of households are brought out in Table 3.

**Table 3: Distribution of Households by Type of Assistance: NFSM Amravati District**

Household Category	No. of Households Assisted							Total
	Seeds	Integrated Nutrient Management (INM)	Integrated Pest Management (IPM)	Equipment like Seed Drills, etc.	Demonstration	Training	Other	
Marginal	10	4	2	3	-	1	-	20
Small	14	5	2	6	-	2	-	29
Medium	6	3	-	2	-	-	-	11
Large	4	2	-	-	-	-	-	6
All	34	14	4	11	-	3	-	66
	<i>% Farmers Assisted to Total Farmers in Size Group</i>							
Marginal	50.00	20.00	10.00	15.00	-	5.00	-	100.00
Small	48.28	17.24	6.90	20.69	-	6.90	-	100.00
Medium	54.55	27.27	-	18.18	-	-	-	100.00
Large	66.67	33.33	-	-	-	-	-	100.00
All	51.52	21.21	6.06	16.67	-	4.55	-	100.00

Note: There is overlapping of households as same household has received no. of assistance and, therefore, the total is exceeding the actual sample size of households

About 52 per cent of the sampled households of NFSM district of Amravati were found to air their view in favour of receiving improved varieties of seeds of pulses crops under NFSM programme, 21 per cent received assistance on INM, 6 per cent received assistance on IPM, 17 per cent received various equipments, and about 5 per cent received training under the programme (Table 3). The proportion of sampled households showing receipt of improved varieties of seeds of pulse crops was 50 per cent in marginal category, 48 per cent in small, 55 per cent in medium and 67 per cent in large category.

*(d) Usefulness of NFSM-Pulses*

The responses of the sampled households drawn from the NFSM district of Amravati were also sought in terms of usefulness of NFSM-pulses programme and these responses for various categories of sampled households are presented in Table 4.

**Table 4: Usefulness of NFSM – Pulses: NFSM Amravati District**

Household Category	No. of Households Who Found Useful	Total No. of Households in the Size-group	% of Household
Marginal	10	15	66.67
Small	12	19	63.16
Medium	7	10	70.00
Large	4	6	66.67
All	33	50	66.00

Majority of the sampled households belonging to the NFSM district of Amravati found NFSM programme for pulses very useful since 66 per cent of the total sampled households belonging to the NFSM district of Amravati aired their view in favour of the programme. Among various categories, the proportion of households finding NFSM programme for pulses crops quite useful was 67 per cent in marginal category, 63 per cent in small, 70 per cent in medium and 67 per cent in large category.

*(e) Type of Usefulness of NFSM-Pulses*

The major reasons that weighed in favour of the NFSM programme for pulses crops were in terms of rise in yield levels of pulses crops, reduction in pest attacks, reduction in drudgery, and increase in knowledge about better varieties and practices. The responses of the sampled households belonging to the NFSM district of Amravati with respect to various reasons for usefulness of the programme were also sought and these responses for various categories of households are brought out in Table 5.

**Table 5: Distribution by Type of Uses– Pulses: NFSM Amravati District**

Household Category	No. of Households by Type of Use					Total
	Higher Yield	Reduced Pest Attacks	Reduced Drudgery	Increased Knowledge about Better Varieties and Practices	Any Other	
Marginal	10	7	5	7	-	29
Small	12	9	6	10	-	37
Medium	7	2	4	6	-	19
Large	4	3	1	4	-	12
All	33	21	16	27	-	97
	% Households to Total Households in Size Group					
Marginal	34.48	24.14	17.24	24.14	-	100.00
Small	32.43	24.32	16.22	27.03	-	100.00
Medium	36.84	10.53	21.05	31.58	-	100.00
Large	33.33	25.00	8.33	33.33	-	100.00
All	34.02	21.65	16.49	27.84	-	100.00

In general, in the NFSM district of Amravati, about 34 per cent of the sampled households favoured the NFSM programme for pulses due to rise in yield levels of pulses crops, 22 per cent due to reduction in pest attacks, 16 per cent due to reduction in drudgery, and 28 per cent owing to their increased knowledge about better varieties and practices.

*(f) Area under Pulse Crops before and after NFSM*

The estimates relating to the average area allocation under various pulses crops during 2006-07 and 2007-08, and the area allocation under pulses crops for the reference year 2008-09

for various categories of sampled households drawn from the NFSM district of Amravati are brought out in Table 6.

**Table 6: Area under Pulse Crops Before and After NFSM: NFSM Amravati District**

(As Calculated from Schedule: Area in Acres)

Household Category	Mung		Tur		Gram	
	Average of 2006-07 and 2007-08	200809	Average of 2006-07 and 2007-08	200809	Average of 2006-07 and 2007-08	200809
Marginal	18.35	21.05	1.88	1.00	21.98	20.05
Small	40.74	36.86	4.85	5.95	40.60	37.86
Medium	46.25	39.75	5.88	4.50	44.25	41.00
Large	42.10	58.00	6.00	2.00	37.25	62.00
All	147.44	155.66	18.60	13.45	144.08	160.91

**Table 6 (a): Area under Pulse Crops Before and After NFSM: NFSM Amravati District**

(As Calculated from Schedule: Area in Acres)

Household Category	Total Pulses		
	Average of 2006-07 and 2007-08	2008-09	% Increase
Marginal	42.21	42.1	-0.26
Small	86.19	80.67	-6.40
Medium	96.38	85.25	-11.55
Large	85.35	122	42.94
All	310.12	330.02	6.42

The sampled households of NFSM district of Amravati showed a rise in area allocation under various pulses crops in 2008-09 as against average area allocation under pulses crops during 2006-07 and 2007-08 with the exception of tur crop, which showed a decline in area allocation in 2008-09 as against during 2006-07 and 2008-09 (Table 6). As a result, the total area under pulses crops increased to 330.02 acres, which was estimated at 310.12 acres during 2006-07 and 2008-09, showing 6.42 per cent rise in area under pulse crops in 2008-09 over that of 2006-07 and 2007-08 average estimates. This clearly shows a positive impact of NFSM programme for pulses crops as the area allocation under pulses crops after the initiation of programme has increased on the sampled farms.

*(g) Production of Pulse Crops before and after NFSM*

The estimates relating to the average production of various pulses crops during 2006-07 and 2007-08, and the production of pulses crops for the reference year 2008-09 for various categories of sampled households belonging to the NFSM district of Amravati are presented in Table 7.

**Table 7: Production of Pulse Crops Before and After NFSM: NFSM Amravati District**

(As Calculated from Schedule: Production in Quintals)

Household Category	Mung		Tur		Gram	
	Average of 2006-07 and 2007-08	200809	Average of 2006-07 and 2007-08	200809	Average of 2006-07 and 2007-08	200809
Marginal	36.00	49.00	7.50	5.00	84.50	96.00
Small	84.50	89.00	19.75	28.50	155.00	174.00
Medium	95.50	95.00	21.50	22.00	173.00	204.00
Large	86.50	132.00	24.00	10.00	149.00	317.00
All	302.50	365.00	72.75	65.50	561.50	791.00

**Table 7 (a): Production of Pulse Crops Before and After NFSM: NFSM Amravati District**  
(As Calculated from Schedule: Production in Quintals)

Household Category	Total Pulses		
	Average of 2006-07 and 2007-08	2008-09	% Increase
Marginal	128.00	150.00	17.19
Small	259.25	291.50	12.44
Medium	290.00	321.00	10.69
Large	259.50	459.00	76.88
All	936.75	1221.50	30.40

The production of total pulses crops with all the sampled households belonging to NFSM district of Amravati put together increased to 1221.50 quintals in 2008-09, which was estimated at 936.75 quintals during 2006-07 and 2008-09, showing 30.40 per cent rise in production of total pulse crops in 2008-09 over that of average production of pulses crops during 2006-07 and 2007-08 (Table 15). Since rise in production of pulses crops on the farms of sampled farmers of NFSM district of Amravati stood at much faster than area expansion in 2008-09 over that of the average of 2006-07 and 2007-08, this is a clear cut indication of rise in productivity level of pulse crops cultivated on the sampled farm in 2008-09 over that of the average of 2006-07 and 2007-08, showing positive impact of NFSM programme on productivity levels of pulses crops grown in the state of Maharashtra.

*(h) Increase in Area under Pulse Crops after NFSM*

The responses of the sampled farmers drawn from the NFSM district of Amravati were recorded with respect to rise in area under pulses after the initiation of NFSM programme and these responses for various categories are brought out in Table 8.

**Table 8: Increase in Area under Pulses after NFSM: Farmers' Perception (Amravati District)**

Household Category	No. of Farmers Who Reported Increase	Total No. of Farmers in the Size-group	% of Farmers
Marginal	8	15	53.33
Small	9	19	47.37
Medium	4	10	40.00
Large	4	6	66.67
All	25	50	50.00

About 50 per cent of the total sampled households of NFSM district of Amravati aired positive response in terms of rise in area under pulses crops after initiation of NFSM programme for pulses, and among various categories this proportion stood at 53 per cent in marginal category, 47 per cent in small, 40 per cent in medium and 67 per cent in large category.

*(i) Extent of Increase in Area under Pulse Crops after NFSM*

The estimates relating to extent of rise in area allocation under pulses for various categories of sampled farmers of NFSM district of Amravati are presented in Table 9.



**Table 9: Distribution by Extent of Increase: Farmers' Perception (Amravati District)**

Household Category	No. of Households by Type of Use				Total
	1% - 2%	2% - 5%	5% - 10%	> 10%	
Marginal	-	-	-	8	8
Small	-	-	1	8	9
Medium	-	-	1	3	4
Large	-	1	-	3	4
All	-	1	2	22	25
	% of Households to Total Households in Size Group				
Marginal	-	-	-	100.00	100.00
Small	-	-	11.11	88.89	100.00
Medium	-	-	25.00	75.00	100.00
Large	-	25.00	-	75.00	100.00
All	-	4.00	8.00	88.00	100.00

Only 25 out of 50 sampled households of NFSM district of Amravati aired their view in terms of rise in area under pulses crops after initiation of NFSM programme for pulses crops and about 88 per cent of them showed more than 10 per cent rise in area under pulses crops on their farms, 8 per cent showed 5-10 per cent rise in this respect, and 4 per cent showed 2-5 per cent rise in area under pulses crops on their farms after initiation of NFSM programme for pulses crops.

#### ***Suggestions for Improving NFSM – Pulses***

The responses of the sampled farmers drawn from the NFSM district of Amravati were also sought with respect to their own suggestion extended in favour of improving NFSM programme for pulses crops, especially with a view to make this programme more useful and meaningful, and these suggestions obtained from various categories of sampled farmers are presented in Table 10.

Although various categories of sampled farmers drawn from the NFSM district of Amravati had aired several suggestions to improve the existing NFSM programme for pulses crops with a view to make the programme more useful to them, there was considerable overlapping in these suggestions across various categories of sampled farmers. In order to improve NFSM programme for pulses and make it more useful, the suggestions of the sampled farmers mainly revolved around extension of irrigation facilities, provision of improved varieties of seeds on subsidised rates, an element of subsidy with respect to other inputs like fertilizer, pesticides, implements and machinery, pest control measures, plant protection measures, etc, assured and remunerative market prices for various pulse crops, organizing meetings with the farmers to make them aware about the programme, timely availability of seeds, fertilizers, and other inputs, provision of automatic pump sets on subsidised rates for spraying in the cultivation of tur crop, provision of farm pond, sprinkler sets, etc.

**Table 10: Suggestions for Improving NFSM – Pulses: Farmers' Perception (Amravati District)**

Sr. No.	Household Category	Suggestions
	<b>Marginal</b>	
1		Provision of subsidy on fertilizer
2		Reasonable rate of fertilizer
3		Extension of irrigation facilities
4		Adequate provision of improved varieties of seeds
5		Extension of irrigation facilities and subsidy of seeds, fertilizer, pesticide, implements, etc.
6		Organization of camps for the dissemination of knowledge about NFSM pulses program
7		Make available high yielding varieties of seeds; fertilizers on subsidized rate and on time
	<b>Small</b>	
1		Reasonable prices of seeds and fertilizers and their timely availability
3		Extension of irrigation facilities
5		Provision of automatic pump set on subsidized price for tur for spraying
6		Extension of subsidy on agri implements, improved seeds; plant protection measures
7		Extension of subsidy on seeds, sprinkler pump set and Pesticide; Provision of farm pond on farm
10		Making aware of NFSM programme to the people by arranging meetings with farmers;
12		Provide High yield variety seeds, fertilizers on subsidy; give minimum support price
	<b>Medium</b>	
1		Market prices be kept constant; Fertilizers prices should be less; Provide seeds on subsidy
2		Provide Irrigation facilities under the programme
4		Provide plant Protection measures and Improved Implements on Subsidy
5		Provide seeds on subsidized rates
6		Provide seeds & fertilizers and provide Irrigation facilities
7		Provide seeds & fertilizers on subsidized rates; Provide irrigation facilities; Give remunerative price
8		Provide high yielding varieties of seeds & fertilizers: Give surety of minimum support price
	<b>Large</b>	
1		Seeds and fertilizers should be provided on subsidized rates at door steps
2		Seed prices should be less; Required active assistant who can spread information about the Govt. policies.
3		Seeds should be provide on subsidized rates; Market price should be constant
4		Provide seeds, fertilizers and pest control measures on subsidy
5		Provide seeds, fertilizers and pest control measures on subsidy; provide Irrigation facilities; Increase market prices for pulses

## Conclusions and Policy Implications

The study showed effective implementation of the NFSM programme for pulses crops in Maharashtra since majority of the farmers showed not only the rise in area under pulse crops but also substantial increase in production as well as productivity of pulses crops in the study area. The major reasons for rise in area, production and productivity of pulses crops in the study area could be various facilities extended to the farmers under the programme viz. improved varieties of seeds like breeder/foundation/certified seeds, assistance on Integrated Nutrient Management (INM) – micronutrients/line/gypsum, etc., assistance on Integrated Pest Management (IPM) - micronutrients/line/gypsum IPM, provision of equipment like seed drills, pumpsets, sprinklers, conoweeder, Knapp-sack sprayers, participation of farmers in various training programmes, reasonably assured market for the pulses produce, etc. The initiation of NFSM-pulses would certainly pay rich dividend since the major thrust of this programme is on increasing seed replacement and the replacement of older varieties by newer ones. One of the major features of this is that it offers much more than what earlier programmes offered, especially with respect to

capacity building, monitoring and planning. The execution of the programme remains within the district planning framework.

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