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## Impact assessment of national food security mission with respect to change in area, production and productivity of chickpea of different categories of chickpea growers in Madhya Pradesh

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### Abstract

Government of India had launched Centrally Sponsored Scheme, 'National Food Security Mission' in August 2007 with the objective to increase production and productivity of wheat, rice and pulses on a sustainable basis so as to ensure food security of the country. In order to promote pulse production in the country, National Food Security Mission -Pulses programme was started in 2007-08. The NFSM- Pulses scheme is also running in Madhya Pradesh. The study was conducted in selected district Narsinghpur of Madhya Pradesh during 2016-2017. Regarding the change in area, production and productivity of chickpea of different categories (small, medium and large farmers) of chickpea growers by the intervention of NFSM, they had significant difference with each other. The mean value of area of small farmer, before was 0.32 while after was 0.76, medium farmer before was 0.76 while after was 1.14, and large farmer before was 1.17 while after was 2.21. In case of change in production, the mean value of production of small farmer before was 5.12 while after was 14.42, medium farmer before was 14.22 while after was 28.23, and large farmer before was 24.55 while after was 48.20. In case of change in productivity, the mean value of productivity of small farmer before was 10.05 while after was 18.75, medium farmer before was 18.06 while after was 20.21, and large farmer before was 20.02 while after was 21.26. The study revealed that there is significant difference between change in area and production of chickpea of different categories of chickpea growers before and after the intervention of National Food Security Mission.

**Keywords:** National food security mission, chickpea growers, production, impact assessment

### Introduction

A variety of pulses is grown in India under a wide range of agro-climatic conditions. Presently, India is producing about 18.4 million ton of pulses from an area of about 24 million hectare with 786 kg/ha productivity and contributing about 21 per cent into global production. However, about 2 – 3 million ton of pulses are imported annually to meet the domestic consumption requirement. It is well known fact that pulses are inseparable ingredients of vegetarian diet and one of the cheapest sources of dietary protein for Indians. Pulses, also known as grain legumes, are a group of 12 crops that includes dry beans, dry peas, chickpeas, and lentils. They are highly rich in protein, fiber, and various vitamins, and amino acids. They are most popular in developing countries, but are increasingly recognized as an excellent part of a healthy diet throughout the world. Pulses constitute the major source of protein for majority of population in India who are predominantly vegetarian in dietary habits. Chickpea (*Cicer arietinum* L.) is an important grain legume in Asia, and as it is rich and cheap source of protein so it can help people to improve the nutritional quality of their diets. Chickpea has relatively minor importance in the world market but it is extremely important for local trade in numerous tropical and subtropical regions. It is grown and consumed in large quantities from South East Asia to India and in the Middle East and Mediterranean countries. Its ranking is second in area and third in production among the pulses worldwide.

The National Food Security Mission (NFSM) was launched in the year 2007 with the overall objective is to facilitate and accelerates the sustainable transformation of the Indian agriculture so that it can support poverty alleviation and income generation through collaborative development and application of agricultural innovations by the public organizations in partnership with farmers' groups, the private sectors and other stakeholders. The mission is being implemented in 312 districts of 17 states in India for food crops like rice, wheat and pulses. Total number of states comes under crops rice, wheat and pulses are 14, 9 and 14 respectively and districts 136, 141 and 141 respectively. Mission has a focused approach.

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Districts with large area under food crops and despite yield potential having less productivity than states been selected. Some of the distinctive features of the selected districts include poor rural infrastructure, poor human resource development, inadequate power availability, low institutional credit, no developed markets and poverty. The area targeted under the scheme is 20 mha of rice, 13 mha of wheat and 17 mha of pulses covering about 40 per cent of cropped area for focused attention. 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. The planning process adopted in the study districts is virtually centralized at the district level. There is hardly any “bottom-up” and “participatory approach” as envisaged under the approach of the Mission. About 31% of the districts were preparing Annual Action Plan at the district level while in the remaining 69% districts, the block level officials, and farmers’ organizations are associated in some way in the planning process. However, the institutional mechanism created under ATMA at the Block level is not being utilized to the fullest extent in preparing District / Block level Annual Action Plans. The NFSM Guidelines envisages conduct of base line survey in the implementing districts to determine the status of crop production, its potential and demand so as to use the data / information for preparation of annual action plan for strategic implementation of various interventions under each component crops. The study revealed that the Baseline Survey had been conducted in the majority of 55 [86%] of the sampled study districts while it was not carried out in only 9 [14%] districts.

### Objective

To assess the impact of National Food Security Mission with respect to change in area, production, and productivity of chickpea among different categories of chickpea growers

### Methodology

The Narsinghpur district of Madhya Pradesh comprises 206 villages but present investigation was carried out in five villages were selected for investigation. A comprehensive list of different categories [small (1.01 to 2 ha), medium (2.01 to 4 ha), large farmer (above 4ha)] of chickpea growers under NFSM was prepared from selected villages with the help of RAEs. From each category 40 chickpea growers were selected by using simple random sampling method and 24 chickpea growers were selected from each selected villages randomly, hence the total 120 chickpea grower were selected as a sample size for the research study. The data were collected through a well-structured and pre-tested interview schedule, which was prepared on the basis of objectives of the study. The collected data were tabulated and presented in the form of tables and Pie-chart. After tabulation, percentage, mean, rank order, t-test, and correlation was carried out.

### Result and Discussion

In case of impact assessment of NFSM in change in area of chickpea, the study indicated that the mean value of change in area of small farmers after intervention of NFSM was 0.76 and the mean value of changes in area of medium and large farmers after intervention of NFSM were 1.14 and 2.21 respectively, higher than small farmers. When these data were subjected to t-test, the calculated value of ‘t’ was found to be greater than the table value (2.58) at 1% of level of significance and there was significant difference between

before and after intervention of NFSM with respect to change in area. Thus, study concluded that the entire three categories of farmers significantly different to each other in the change in area of chickpea. This study was supported by Singh and Grover (2015) [4]

The study revealed that impact assessment of NFSM in change in production of chickpea, the study indicated that the mean value of change in production of small farmers after intervention of NFSM was 14.42 and the mean value of changes in production of medium and large farmers after intervention of NFSM were 28.23 and 48.20 respectively, higher than small farmers. When these data were subjected to t-test the calculated value of ‘t’ was found to be greater than the table value (2.58) at 1% of level of significance and there was significant difference between before and after intervention of NFSM with respect to change in production. Thus, study concluded that the entire three categories of chickpea growers significantly different to each other in the change in production of chickpea. This study was supported by Singh and Grover (2015) [4]

In case of impact assessment of NFSM on change in productivity of chickpea, the study indicated that the mean value of change in productivity of small farmers after intervention of NFSM was 18.75 and the mean value of changes in productivity of medium and large farmers after intervention of NFSM were 20.21 and 21.26 respectively, higher than small farmers. When these data were subjected to t-test the calculated value of ‘t’ was found to be greater than the table value (2.58) at 1% of level of significance and there was significant difference before and after intervention of NFSM with respect to change Thus, study concluded that the entire three categories of farmers significantly different to each other in the change in productivity of chickpea. This study supported by Agricultural Finance Cooperation, Consultancy Services- AFC India (2012).

**Table 1:** Distribution of chickpea growers according to their area, production and productivity of chickpea before and after the intervention of NFSM

S. No.	Categories	Frequency	Mean		t-value
			Before	After	
Change in area	Small farmers	40	0.32	0.76	7.83**
	Medium farmers	40	0.76	1.14	14.56**
	Large farmers	40	1.17	2.21	10.61**
Change in production	Small farmers	40	05.12	14.42	9.31**
	Medium farmers	40	14.22	28.23	14.75**
	Large farmers	40	24.55	48.20	11.76**
Change in productivity	Small farmers	40	10.05	18.75	7.81**
	Medium farmers	40	18.06	20.21	4.04**
	Large farmers	40	20.02	21.26	3.46**

\*\*significance at 0.01 probability level

The relationship between change in chickpea production and age, education, size of family, area under chickpea, number of training received, number of visit of extension workers, farm power, material possession, annual income, extension participation, attitude of farmers towards NFSM, knowledge of improved production technology, adoption of improved chickpea production technology were found to be significant and relationship between change in chickpea production and mass media exposure were found to be non-significant.

**Table 2:** Relationship between independent variables with change in chickpea production.

Variables	Correlation coefficient
Age	.257**
Level of education	.382**
Family size	.343**
Area under chickpea	.237**
Number of training received	.342**
Number of visit of extension workers	.243**
Farm power	.568**
Material possession	.691**
Annual income	.666**
Extension participation	.259**
Mass media exposure	0.089NS
Attitude of farmers toward NFSM	.280**
Knowledge of improved production technology	.345**
Adoption of improved production technology	.268**

### Conclusion

The National Food Security Mission has increased the production and productivity of chickpea, it may be due to improved chickpea production technology, and in area, it may be due to training and facilities provided by National Food Security Mission. In case of change in area, production and productivity of chickpea of different categories (small, medium and large farmers) of chickpea growers by the intervention of NFSM they had significant difference with each other. The t-test calculated was found to be significant, this indicate that there was considerable difference between before and after intervention of NFSM. Thus, the NFSM played significant role in change in area, production and productivity of chickpea of different categories of chickpea growers. The supported study of Singh and Grover (2015) <sup>[4]</sup> revealed that the area and production of pulses increased on all the farm size categories with maximum increase in area on small farms. The study emphasized to develop efficient marketing mechanism for pulses to widen their production base and Narain *et al.* (2014) <sup>[2]</sup> found that the adoption scenario indicates that low gram productivity was the result of either poor knowledge or non-adoption or the combination of both. The productivity level also depends upon several independent variables associated with farmers adoption related to recommended gram technology.

In case of correlation coefficient value indicated that the relationship of independent variable with change in chickpea production. The data indicated that the characteristics of chickpea grower namely age, level of education, family size, area under chickpea, number of training received, number of visit of extension worker, farm power, material possession, annual income, extension participation, attitude of farmer toward the programme, knowledge of improved chickpea production technology, adoption of improved chickpea production technology had significant relationship with change in chickpea production at 0.05 level of probability. The result also depict that the characteristics namely mass media exposure had non- significant relationship with change in chickpea production. The study supported by Manjunatha A V and Kumar P (2015) <sup>[3]</sup> revealed that Logistic regression results shows that number of family members fully working in farming, education level of farmers, total operated land and access to credit have positive coefficients and significantly associated with the participation decision in the NFSM programme.

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