

AERC Research Study No:155

Executive Summary

**Impact of National Food Security Mission
(NFSM) on Input Use, Production, Productivity
and Income in Tamil Nadu**

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Executive Summary

1.1 Background of the Study

Agricultural sector plays a very vital role in the different dimensions of social, political and economic development of our nation. It is enormously important for the Indian economy as the sector is contributing 13.9 of the GDP and about 55 percent of the total employment share (Census, 2011). 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 (Government of India, 2012-13). The experience of the last three decades indicates that the growth rate of foodgrain production decreased from 2.93 percent during the period 1986-97 to 0.93 percent during 1996-2008. The declining growth of foodgrains production was partly contributed by the decline in area but largely by the decline in yield rate. The yield growth rate of foodgrains decreased from 3.21 percent to 1.04 percent 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 percent during the period 1981-82 to 1996-97 to around 2 percent during 1997-98 to 2004-05. Nevertheless, there have been signs of improvement during the recent years (Dev and Sharma, 2010; Kumar 2013 and Government of India, 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 (Government of India, 2012-13, Kumar 2013).

The percentage share of the poor in India declined from 25.5 percent to 17.0 percent. It is noted that the low income countries have the higher prevalence of poverty than the developed and developing countries. A majority of the people, who are undernourished, are located in the Southern Asia followed by Sub-Saharan Africa and Eastern Asia. The countries' share has declined in Eastern Asia and South-Eastern Asia (FAO, 2014).

1. 2 Objectives of the Research Study

Given the above broad objectives, the study intends to achieve the following specific objectives listed below:

- To analyze the trends in area, production, productivity of rice, and pulses in

the NFSM and non-NFSM districts in Tamil Nadu;

- To analyze the socio-economic profile of NFSM beneficiaries vis-a-vis Non-NFSM beneficiary farmers of rice in the study area;
- To assess the impact of NFSM on input use, production and income among the beneficiary farmers in the study area;
- To identify factors influencing the adoption of major interventions (improved technologies) under NFSM scheme; and
- To identify the constraints hindering the performance of the programme

1.3 Research Methodology

The study is based on primary and secondary sources in Tamil Nadu. The secondary data obtained from Government of Tamil Nadu publications relating to area, production and productivity of rice and pulses was used. The list of the benefits obtained by the households for the whole of the 11th Plan (2007-08 to 2011-12) and two years of the 12th Plan (2012-13 and 2013-14) was prepared. The selection of households was done based on the crop development programme under which benefits pertain to only one year. Seeds, fertilizers, pesticides were distributed during 2013-14 year, but machinery and equipment was distributed from 2007-08 to 2012-13.

Primary data has been collected from two districts namely Thiruvarur and Sivagangai of Tamil Nadu. In each of the districts of Thiruvarur and Sivagangai, two representative blocks namely Mannarkudi, Valangaiman, Kalayairkovil and Sivagangai are taken respectively and within each block two villages are selected. In each district, 150 beneficiaries from the list of NFSM rice growing cultivators are drawn at random from household farmers with different land sizes on the basis of their proportion in the universe. In addition to the above sample, 50 non-beneficiaries from rice growers have been selected randomly from households with different land sizes. Thus, altogether, 300 beneficiaries from NFSM rice growing cultivators and 100 non-beneficiaries.

1.4 Organization of the Research Study

The present study is divided into six chapters. The first chapter is of introductory nature; it contains the background, objectives, data base and methodology of the study. The second chapter describes the growth trends of rice and

pulses production in Tamil Nadu. The third chapter analyses the socio-economic profile of NFSM and Non-NFSM beneficiary farmers of paddy in Thiruvavur and Sivaganagai districts of Tamil Nadu. The fourth chapter examines the impact of NFSM scheme on input use, production and income of the beneficiary farmers (paddy) in the study area of Tamil Nadu. The fifth chapter deals with the factors influencing the adoption of major interventions under NFSM scheme and analyses major constraints hindering the performance of the NFSM scheme and the last chapter provides concluding remarks and policy suggestions from the study.

Major Findings

2. Impact of NFSM on Foodgrains Production in Tamil Nadu: A Time Series Analysis

2.1 Growth of Paddy and Pulse Crops: Impact of NFSM in Tamil Nadu

When we compare different plan periods, we find that the 10th and the 11th FYP periods showed better performance than that of the 9th FYP periods. Even though the area under paddy crop declined over different plan periods in Tamil Nadu due to urbanisation, increasing uncultivable land, the growth performance of paddy production increased specially, after the 10th and the 11th FYP periods, because of effective utilisation of land holdings and quality seeds provided by the government for increasing production of paddy in Tamil Nadu. The agricultural officers in every district of Tamil Nadu effectively implemented the government schemes.

2.2. District-wise Growth of Paddy Crop and Impact of NFSM

In Tamil Nadu, the area under the Non-NFSM districts declined from 66.75 percent in 2007-08 to 64.89 percent in 2012-13. NFSM rice cultivation districts increased from 33.24 percent in 2007-08 to 35.10 percent in 2012-13. The production level of the Non-NFMS districts declined from 82.75 percent to 81.63 percent in the corresponding years. But for the NFSM districts, production increased from 17.24 percent to 18.36 percent. In the mid-period of 2011-12, production increased to 32.84 percent. The reason is that the NFSM districts had effectively implemented the scheme with the help of the government officials. It is noted that the area under the NFSM districts reflected one-third of area under cultivation. But in the non-NFSM districts, two-thirds of the area was under cultivation during the study period.

Among the NFSM districts, the percentage share of area in the total area of paddy crop was 8.61 percent and 8.48 percent in Nagapattinam and Thiruvavur.

Sivagangai's share in area was the lowest at 4.29 percent during 2007-08. Thiruvarur, Nagapattinam and Ramanathapuram had 10.65 percent, 9.52 percent and 7.80 percent of the area under paddy, respectively during 2012-13. Among the NFSM districts, Thiruvarur and Nagapattinam contributed 6.18 percent and 5.72 percent of production during 2007-08. The growth trend of area recorded 5.94 percent, 4.98 percent and 4.76 percent in Pudukottai, Nagapattinam and Thiruvarur, respectively during 2012-13.

During 2007-08, within the non-NFSM districts, Thanjavur and Villupuram districts occupied the highest share of area at 8.40 percent and 8.13 percent, respectively. Both the districts recorded 9.53 percent and 9.52 percent of paddy production, respectively. But in 2012-13, Thanjavur, Villupuram, Kanchipuram, Cuddalore and Thiruvannamalai districts witnessed the highest share of production at 10.61 percent, 9.79 percent, 8.51 percent, 8.37 percent and 8.06 percent, respectively. We find that the growth trend in production of the Non-NFSM districts reveals better production than the NFSM districts in Tamil Nadu.

2.3 Financial Allocation to the NFSM Schemes in Tamil Nadu

The financial allocation substantially increased by Rs. 1,366.64 lakh from Rs. 709.55 lakh in 2007-08 to Rs. 2, 144.19 lakh in 2011-12. The unspent amount of the government considerably declined from 619.07 lakh in 2006-07 to 31.15 in 2011-12. It further declined to Rs. 17.36 lakh in 2013-14. The total outlay for the NFSM in Tamil Nadu was Rs.12, 540.88 lakh during the 11th Five Year Plan period. But actual utilization of the fund for the NFSM scheme was Rs. 9,893.78 lakh; in terms of percentage share, the actual expenditure was 78.89 percent of the outlay and the remaining unspent money was Rs. 2,647.10 lakh (21.11 percent) during the 11th FYP period.

Thiruvarur district was allocated Rs.4, 015.53 lakh (32.02 percent) for the NFSM scheme. The highest percentage utilization of fund was 37.21 percent by the same district that is Rs. 3,681.58 lakh. Nagapattinam district was allocated Rs.3, 848.86 lakh, and that was 30.69 percent of the total allocation to Tamil Nadu under NFSM. Of that, the district utilized Rs. 2,874.08 lakh, which was 29.05 percent of the expenditure under NFSM. On the contrary, of the actual expenditure under NFSM, the Sivagangai district received the lowest allocation of fund (Rs. 946.90 lakh) and that was 7.55 percent of the outlay under the scheme and the expenditure was Rs. 791.95 lakh during the 11th FYP. 16.4 percent of the allocated amount was unutilized by the district.

Nagapattinam district was having the unspent money to the tune of Rs.974.78 lakh, (25.33 percent of the outlay). Followed by this Pudukottai's unspent money under the scheme was Rs.787.25 lakh during the 11th FYP. The percentage share of the unspent money for the NFSM in Tamil Nadu among the different districts varied from 8.58 percent (Thiruvarur) to 33.36 percent (Pudukottai). In Pudukottai district, nearly one-third of the outlay was unspent. This may have something to do with governance at the project management level and the attitude of the cultivators.

It is inferred that the total expenditure on the NFSM allocation declined over a period of seven years in the state of Tamil Nadu. The percentage change in the expenditure on the NFSM in Tamil Nadu increased from -82.77 percent in 2007-08 to 14.21 percent in 2009-10 and it further increased to 21.27 percent in 2010-11. When compared to previous year's allocation of expenditure to the agricultural sector, it was found that there was an increase in terms of expenditure. The correlation coefficient of the value of years and expenditure on the NFSM was found to be 0.17 percent.

3. Household Characteristics, Cropping Pattern and Production Structure

3.1 Socio-economic Profile of the Sample Households

The majority of both types of farmers belonged to Other Backward Class. About 90 percent and 94 percent of the NFSM and Non-NFSM farmers belonged to the OBC category respectively and SC and ST farmers constituted a small percentage. The average annual income of respective farmers is Rs. 70,458 and Rs. 40,250 respectively. Small and marginal farmers are in large proportion among both the farmers. Their percentage share is 36 percent and 43 percent, respectively. It is found that the two-thirds of landholdings are cultivated by the marginal and small farmers.

Among the large farmers of 42.8 percent and 35.1 percent by the Net Operated Area is occupied by for the NFSM and the Non-NFSM farmers, respectively. Medium size farmer has a share of 26.7 percent and 28.5 percent, respectively in both the categories. On the other hand, the lowest share of area is occupied by the marginal farmers. The average size of land holdings by the NFSM and Non-NFSM farmers is 6.36 acres and 5.01 acres respectively.

3.2 Characteristics of Operational Holdings

The average net-operated area is 6.37 acres and 4.91 acres respectively for NFSM and Non-NFSM farmers. It is found that the NFSM beneficiaries are

having 22.6 percent more area than the Non-NFSM farmers. The NOA (per household) is 6.37 acres and 4.91 acres, respectively for the both categories. The average owned land is 5.97 acres and 4.12 acres respectively for the both categories.

The total cropping intensity is 163 percent and 192 percent for the NFSM and the Non-NFSM farmers, respectively. The Non-NFSM farmers have attained more cropping intensity than the NFSM farmers. But the average irrigation intensity is 102 percent and 101 percent for both categories respectively. The irrigation intensity of NFSM farmers is more indicating that the land cultivated there is more than the land cultivated by Non-NFSM farmers.

3.3 Sources of Irrigation and Structure of Tenancy

The river and tube well irrigation system is adopted predominantly. It had accounted for 72 percent and 88 percent. It is found that the majority of the farmers used the canal and the tube well sources as the major sources of irrigation. On the contrary, the rain fed irrigation sources accounted for a meagre proportion. It is indicated that the majority of farmers in Sivagangai district were dependent upon the rain fed area, followed by tank irrigation sources. The percentage of total irrigated area for NFSM farmers is more by 22.2 percent than the Non-NFSM farmers. The NFSM farmers use more irrigated area than the Non-NFSM farmers. The rain fed area for NFSM farmers is less than that of Non-NFSM farmers. It is found that the NFSM farmers produce more output due to regular irrigation sources.

The fixed rent (in cash) for NFSM beneficiaries was the highest (41 percent) for the leased-in land holders. Within the Non-NFSM farmers, crop sharing occupied the highest share of 50.6 percent followed by fixed rent (in cash) to the tune of 47 percent in the study area. The NFSM farmers spent 2.25 percent more on fixed rent (in cash) than the Non-NFSM farmers. The NFSM farmers spent 10 percent more on fixed rent (in kind) than the Non-NFSM farmers.

3.4 Cropping Pattern, Costs and Returns

Total gross cropped area is 3,345 acres and 1,141 acres for NFSM and Non-NFSM farmers during 2012-13. It declined to 3,116 acres and 943.8 acres during 2013-14. During kharif season, paddy occupied the highest share; it accounted for 50.6 percent and 42.7 percent respectively for both categories. The NFSM farmers have more area under cultivation than the Non-NFSM farmers because of the involvement of more farmers.

Paddy occupied the largest area during the kharif season and it declined during the rabi and the summer seasons because of water shortage and there was decline in the production level during those seasons. Alternatively, they cultivated groundnuts, pulses, black gram predominately. On the other hand, sugarcane, cotton, gingili and ragi were cultivated to a small extent by both types of farmers. Groundnut, pulses and vegetables occupied the share of 5.9 percent, 4.22 percent and 2.1 percent respectively during the rabi season among the NFSM beneficiaries. But for the Non-NFSM farmers, it accounted for 3.1 percent, 3.5 percent and 1.4 percent respectively, during the summer season.

The value of output for the NFSM farmers was Rs. 1,80,536, as against Rs. 1,48,381 for Non-NFSM farmers. The NFSM beneficiaries produced more output than that the Non-NFSM farmers. On the contrary, the value of output (per acre) is calculated to be Rs. 28,342 and Rs. 30,220. It is noted that the NFSM farmers got more value for their output than the Non-NFSM farmers.

The NFSM beneficiaries received more return of Rs. 1,23,637 than Non-NFSM farmers received (Rs. 68,130). The NFSM beneficiaries received more output value and net return than the Non-NFSM farmers. The NFSM farmers received subsidy from the NFSM scheme and adopted the modern technology in cultivation. Therefore, they have produced more output. The gross return for the NFSM farmers increased by 2.44 percent from Rs. 27,953 during the kharif season to Rs.28,636 during the summer season. But for the Non-NFSM farmers, it increased from Rs. 25,942 to Rs. 27,883. It accounted for 7.48 percent.

The cost of cultivation was estimated at Rs. 18,937 per acre and Rs. 19,618 per acre during the kharif season. The NFSM farmers spent 3.60 percent lesser amount than the Non-NFSM farmers. The cost for the NFSM farmers declined from Rs.18,937 during the kharif season to Rs. 18,208 during the summer season. It declined to 3.85 percent over the study period. But for the NFSM farmers, it declined from Rs. 19,618 to Rs. 17,096 per acre. The cost declined by 12.85 percent. The net return was estimated to be Rs. 11,645 and Rs. 9,009 per acre during the kharif season. During the rabi season, it increased to Rs. 12,337 and Rs.9,690 per acre, respectively. The NFSM beneficiaries got more return of 21.46 percent than the Non-NFSM farmers. They received more return from the paddy cultivation because of less cost of cultivation and more output value than that of the Non-NFSM farmers.

3.5 Asset Holdings

Total asset holding per household is estimated at Rs. 13,58,917 and Rs. 13,21,401 for NFSM and Non-NFSM farmers, respectively. It is found that the NFSM farmers have 2.76 percent more asset value of than the Non-NFSM farmers in the study area. The NFSM farmers are having more asset value of 2.8 percent than the Non-NFSM farmers. Within the NFSM farmers, tractor is occupying the highest share of 25 percent, followed by drip irrigation at 20 percent. Electric pumpsets accounted for 19 percent, followed by thresher at 2.88 percent. Within the Non-NFSM farmers, drip irrigation accounted for 30.28 percent. Tractor occupies a share of 28.76 percent, followed by trolley occupying 16.67 percent.

Within the Non-NFSM farmers, the percentage share of drip irrigation sets in total assets value is calculated to be 30.3 percent. The value of tractors occupied a share of 28.76 percent followed by trolley occupying 16.7 percent and electric pump sets with the share of 11.6 percent. It is found that both types of farmers make the highest investment in the tractor, drip irrigation, pump set and trolley.

3.6 Sources and Purpose of Credit

About 77 percent and 80 percent of the NFSM and Non-NFSM farmers received loan from the primary agricultural co-operative societies. The commercial banks issued 20 percent and 17 percent of loans, respectively. It is found that the cooperative societies and commercial banks play a very vital role in the rural credit accessibility. It is found that co-operative institutions and commercial banks give the highest loan amount to the farmers.

The NFSM and the Non-NFSM farmers did not settle the loan amount which was very huge to the commercial banks. It accounted for Rs. 1, 50,080 and Rs.1, 42,500, respectively. A majority of both categories of farmers are having outstanding liabilities of Rs. 41,293 and Rs. 32,083. It was found that they having highly outstanding loans from the commercial banks and the cooperative societies. They could not clear the loans due to the unprofitable nature of agriculture and there were no other sources for settling the debt. Sometimes, those farmers who had the ability to settle the debt, delayed repayment, with the hope that the government would waive the loan for some reason or other (e.g. drought).

4. NFSM Interventions and their Impact on Farming

4.1 Awareness of the NFSM Scheme

It is found that 71 percent of the farmers have known about the scheme and 28 percent are not aware of it. A majority of the NFSM farmers have reported that they know only the benefits of NFSM scheme such as provision of seeds, facilities or micro nutrients offered free of cost; the remaining benefits of NFSM are not known to all the sample farmers. Therefore, it is inferred that the benefits of the scheme have not reached all.

The Agricultural Department, Government of Tamil Nadu has played a vital role in spreading awareness about of the scheme. About 61.33 percent of the NFSM beneficiaries are aware about the scheme through news papers and TV/ Radio. Especially, TV/ Radio station is broadcasting the NFSM scheme in the concerned districts of Thiruvarur and Sivagangai.

Tamil Nadu Agricultural University's role is important in spreading awareness about the scheme. About 59 percent of the NFSM farmers are informed about the scheme benefits. It is observed a majority of the beneficiaries received information from agricultural department. This department has actively participated in spreading benefits of the NFSM scheme to the farmers.

4.2 Costs and Subsidy Particulars of Availed NFSM Benefits

About 89 percent of NFSM beneficiaries have availed of the HYV seeds. The average benefit as per household is Rs.1, 250. About 11 percent of NFSM beneficiaries used the hybrid seeds and the average cost is computed to be Rs. 2, 733. Sprayers account for the highest utilization by the farmers. About 48 percent of NFSM beneficiaries utilized the sprayers for their own use. The average cost benefit is Rs. 2,211.

About 46 percent have used it and the average cost is Rs.485. Incentive for micro nutrients is another benefit. About 33 percent of NFSM beneficiaries have availed the benefit and the cost benefit is Rs. 719. About 30 and 29 percent of beneficiaries have enjoyed benefits of INM and IPM schemes respectively and the average benefit is estimated to be Rs.475 and 500, respectively.

About 8 percent availed the benefits of pumpsets under the NFSM scheme. The average cost is Rs. 22,920. Power weeder was utilized by 5 percent of beneficiaries and 4.3 percent availed the benefits of rotavators. The average cost is Rs. 27,321 and 97,680, respectively.

In Tamil Nadu, especially, the sample farmers have reported that they are getting subsidies for only 6 items namely seeds, sprayers, micro nutrients, IPM, INM and cono weeder. The remaining 13 materials are not available to all. Timely availability of material is very essential. Farm materials like seeds, sprayers, micro nutrients, INM, IPM and cono weeder are not available to all NFSM farmers. The Government officials could not distribute the same to all those farmers. There is shortage of farm materials and that is the main problem. Equipments like pump sets, rotavators, power weeder or tiller are not distributed to all the NFSM beneficiaries. The distribution of NFSM farm material is a major challenging task. Only a few farm equipments are distributed to the farmers by the government.

The average total cost per household is Rs.1, 59,685 during 2007-08 to 2013-14. The average subsidy distributed to the NFSM beneficiaries is Rs.63,572. It is found that about 60 percent of the cost is spent by the farmers and remaining 40 percent is distributed by way of subsidy. It is observed that the government distributed the subsidy for the development of paddy crop.

The percentage share of subsidy to the total cost is 39.81 percent. Power weeders and sprayers account for a subsidy of 51 percent respectively. About 31 percent of the subsidy is availed of for using the rotavators purchase. Pump sets occupy the third largest share (44 percent) in the total subsidy of NFSM scheme.

Some of the costly farm materials are being distributed only to the larger farmers but not for marginal and small farmers under the scheme. The main reason behind this is borrowing capacity of the marginal and small farmers to buy costly farm equipments is rather low. Some of the materials like seeds, micro nutrients, pest and nutrient management, cono weeder are available easily; and the subsidy amount is also very low. It is distributed to all the beneficiaries randomly. It is found in the study, under the NFSM scheme, the farm materials are distributed based on availability and not for according to need at the appropriate time.

4.3 Annual Usage of Farm Equipments and their Benefits

Pumpsets are used by the NFSM beneficiaries for 17 days in a year and area coverage is 6.84 acres. The individual benefit is worth of Rs. 4,902. Rotavators are used for 15 days and each farmer benefits to the extent of Rs. 9,300. About 14 days in a year are used for power tillers by the benefited farmers and their value is Rs. 12,778.57. The sprayer is used for 14 days and the benefit is Rs. 6,773.

In reality, a majority of the farm equipments are not available to all the NFSM beneficiaries. There are shortages of farm equipments in the agricultural department. Some equipment like pump sets, power tillers, rotavators are being distributed to beneficiaries according to the background of land holding, community influence and political support. Some equipment like cono weeder and sprayers are distributed to all due to easy availability and lower cost. It is noted that the majority of NFSM beneficiaries have not availed all farm material. It is found from the study that the farm equipments offered under the NFSM scheme have not been distributed to all the needy marginal and small farmers according to their real conditions. Therefore, the real farmer for whom the scheme is designed is out of focus.

About 41 percent of the NFSM farmers reported that the weeds were controlled due to the usage of cono weeder. 39 percent of the beneficiaries reported that cono weeder replaced labour. Rotavator is another instrument used by the NFSM farmers. About 78 percent of the NFSM farmers have reported that it reduced the cost of cultivation.

About 86.4 percent reported that they can use water efficiently by to using pump sets. It is found that a majority of the farmers have effectively controlled water wastages in the area. About 50 percent of beneficiaries reported that cost of cultivation has continuously declined by using power tillers. 43 percent of farmers reported that it reduced post-harvest losses also. A majority of NFSM farmers have informed that the lower cost of cultivation and reduction in post-harvest losses are due to the use of power tillers.

Sprayer is one of the farm equipments distributed to NFSM farmers at subsidized price. About 37.3 percent of the NFSM farmers viewed that the good plant growth is due to the use of sprayers in the farm. About 28.4 percent reported that the weed could be controlled through this equipment. A majority of the NFSM farmers noted that the sprayer is used in the farm.

About 61 percent of the NFSM farmers reported that the improving production is due to the use of the cono weeder in the study area. About 33.6 percent noted that the fall in labour cost is due to its utilization in the farm field. About 28 percent of farmers felt that there was increase in price of the output because of better quality.

61 percent of the farmers viewed that there was fall in labour cost because of the use of rotavators in the field. It is found that the rotavators reduce the labour cost. It implies that the limited supply of labour has forced them to use

machinery, as a labour saving device. Impact of rotavators is in terms reduction of labour cost and increase in the profit of the NFSM farmers.

About 45 percent of farmers reported that the increase in production is due to utilization of pump sets. NFSM farmers have benefited much due to use of pump sets in the study area. About 61 percent reported that the fall in labour cost is due to the use of power tillers. A power tiller is very useful at the time of harvesting when there is scarcity of agricultural workers and high labour cost.

Owing to the use of modern farm equipment, they are getting benefits in terms of increase in production and output and fall in labour cost. The impact of NFSM scheme on farmer's life is observed in increase in production, output price and fall in labour cost. A majority of the NFSM farmers have reported that the increase in production and output price and fall in labour cost are the results of using cono weeder, rotavators, pump sets and power tillers through NFSM scheme in the study area.

4.4 Cost and Return of Paddy Crop in Kharif Season (2012-13)

The cost of cultivation per acre is Rs. 18,937 and Rs. 19,618 for NFSM beneficiaries and Non-NFSM farmers, respectively. When we compare to the two groups of farmers, NFSM beneficiaries have incurred less cost than the Non-NFSM farmers. It is observed that the subsidy is distributed to the NFSM beneficiaries in the study area; therefore the cost of cultivation is reduced.

The cost of hired labour accounts for the highest share in the total cost. The percentage share in the total cost is more or less the same imputed for both groups (Rs. 6,902) and Rs.6,920. Family labour occupies the next highest share. Its value is Rs. 4,017 and Rs. 4,027 for the NFSM and Non-NFSM farmers respectively. The cost of hired and family labour occupies the highest share of 56.5 percent and 55.8 percent for NFSM and Non-NFSM farmers respectively in the study area. The cost of labour is nearly half of the total cost of cultivation because of the limited supply of labour for cultivation.

The gross income received by NFSM beneficiaries and Non-NFSM farmers are Rs. 30,582 and Rs. 28,627. Among both the categories of farmers, NFSM beneficiaries received more gross income by 6.40 percent (Rs.1955) than that of Non-NFSM farmers. It indicates that the NFSM farmers have got more income due to more production (21.38 quintal per acre) and lower cost of cultivation.

The net income received is Rs. 11,645 and Rs. 9,009 for both the categories of farmers. NFSM beneficiaries have received more income by 22.64 percent (Rs.2, 636) than that of Non-NFSM farmers in the study area. It is noted that the NFSM farmers have got more yield per acre (21.38 quintal/acre) than that of Non-NFMS farmers (19.56 quintal/acre).

The cost per quintal for NFSM beneficiaries and Non-NFSM farmers is Rs. 892 and Rs. 1,003 respectively. NFSM beneficiaries incurred 12.41 percent lower cost (per quintal) than Non-NFSM farmers. It is observed that the cost for NFSM farmers is lower than Non-NFSM farmers and it affects gross and net income of farmers.

4.5 Cost and Return of Paddy in Rabi and Summer Season (2012-13)

The cost of cultivation is Rs. 18,441 per acre and Rs. 18,512 per acre for the NFSM beneficiaries and Non-NFSM farmers respectively. The percentage share of hired labour in the total cost is accounts for 34.63 percent (Rs. 6,385) and 33.17 percent (6,139) for the two groups of farmers. NFSM beneficiaries have spent more on hired labour than that of Non-NFSM farmers. The percentage share of the cost of family labour in the total cost is the highest share. It accounts for Rs.3,917 (21.53 percent) and Rs. 3,942 (21.29 percent) for the both categories of farmers. The cost of hired and family labour accounts for half of the total cost of cultivation.

The gross income of NFSM beneficiaries and Non-NFSM farmers is Rs. 30,779 and Rs. 28, 202 per acre. It is observed that the NFSM farmers got more income by 8.37 percent (Rs. 2,576) than Non-NFSM farmers in the study area. It is indicated that the NFSM farmers produce more output (21.24 quintal) than that of Non-NFSM farmers (19.46 quintal). It is observed that the cost of cultivation for NFSM farmers is less than that of Non-NFSM farmers. Therefore, it leads to more gross income to the NFSM beneficiaries in the study area. The net income of both types of farmers is estimated at Rs.12,337 and Rs. 9,690. NFSM beneficiaries get more income by 21.45 percent (Rs. 2,646) than Non-NFSM farmers. It is observed that the NFSM beneficiaries received subsidy and farm equipment for cultivating paddy in the study area. Therefore, they earn more income by proper utilisation of farm equipment, seeds, micro nutrients and cono weeder in the study area.

From a comparative study of kharif and rabi/summer season during 2012-13, we find that the NFSM beneficiaries received subsidy to cultivate the paddy crop in the study area. Therefore, they earned more income with lower cost of

cultivation from this scheme than that of Non-NFSM farmers. This scheme has created confidence among the farmers in the study area for generating more income. A comparative study of tables 4.7 and 4.8 reveals that NFSM beneficiaries who cultivate paddy earn more net income than the non-NFSM farmers during kharif as well as rabi/ summer seasons. The former earn 29 percent and 27 percent more net income than the latter during the kharif and rabi/summer seasons, respectively. The cost per quintal of paddy is lower by 12.4 percent and 9.6 percent for the NFSM beneficiaries and non-NFSM farmers during kharif and rabi/ summer seasons, respectively.

4.6 Marketed Surplus and Marketing Channels

About 48 percent and 42 percent of the NFSM and Non-NFSM farmers sell their agricultural produce of paddy in the regulated markets. The remaining 16 percent and 21 percent of farmers sell their produce in the co-operative society in a village. About 95 percent of the NFSM farmers sell their quantity produced in the co-operative society and 94 percent of beneficiaries sell their quantity produces in the regulated markets. Among Non-NFSM farmers, 94 percent sell their marketable surplus in the wholesale market and 92.4 percent of farmers sell their quantity in the regulated markets.

5. Participation Decision, Constraints and Suggestions for Improvement of NFSM Scheme

5.1 Factors Influencing Participation of Farmers in NFSM Scheme

In the case of NFSM scheme in Tamil Nadu, nearly 25 percent of the districts (8 districts) have implemented the scheme and it is successfully going on. To analyze and understand the role of NFSM scheme in determining factors which influence participation, the study has used logistic regression model. The logistic regression model pertains to examining the impact of farmer's participation in NFSM schemes in Tamil Nadu. One of the main objectives of the study is to find out the factors influencing the beneficiaries in NFSM schemes in Tamil Nadu with regard to their livelihood.

As expected β_3 , β_4 and β_6 have negative sign, and β_1 , β_2 , β_5 , β_7 , β_8 and β_9 have positive sign. Therefore the above set regression results clearly show that when ratio of irrigated to the total operational area increases, it will lead to increase in credit availed (per acres) and farm asset value (in rupees) and also other factors such as age, education, caste are also positively influencing the NFSM beneficiaries. But except education (illiterate), caste and farm asset value

(in rupees) all other factors are not statistically significant. It means that education, caste and farm assets are not major factors determining the beneficiaries in NFSM scheme, whereas income from farming, family size or number of family members dependent on farming, operational holding and education (higher secondary) negatively influence the beneficiaries of NFSM scheme. But except family size, all other factors are not statistically significant.

So the above result clearly explains that except education (illiterate), family size, caste (SC/ST) and credit availed (per acre), all other factors are not statistically significant and also education (higher secondary), operational holdings (acres), family size or number of family members dependent on farming, and income from farming negatively influence the beneficiaries in NFSM scheme in Tamil Nadu on farmer's livelihood.

5.2 Constraints faced in Availing the NFSM Benefits

About 77 percent of beneficiaries informed that the eligibility criteria for availing the subsidy are provided to the households and they are correctly followed by the government officials in the study area. In the eligibility conditions for availing of the benefits, the Government of Tamil Nadu has adopted significant criteria. The official asked land documents for availing such benefits.

About 64 percent of farmers informed that the information about the NFSM scheme reached correctly to the households. The Government of Tamil Nadu informed about the scheme through newspapers, TV/ Radio. Still, a sizable section of the farmers are not aware of the scheme even though the scheme is a decade old.

About 32 percent of the beneficiaries answered that they know about the procedure for the subsidies to avail those benefits. Of these, majority of the beneficiaries were of the opinion that the procedure for availing such benefits was rather difficult. Each farmer is asked to produce the land records with attestation from Village Administrative Officer. Sometimes, the VAO has to be bribed for signing the land document. Otherwise, the selected farmers will not get the benefits easily.

Every farmer is submitting his land records to the Government of Tamil Nadu. They asked verification from VAO for authentication of land records in a village. VAO takes a lot of time for issuing certificate of land records. It is observed that the majority of the farmers are faced with difficulties for availing those documents from VAO. Therefore, the Government of Tamil Nadu has sim-

plified the method of procedure for selection of beneficiaries. Otherwise, farmers will be put to unnecessary hardship.

The beneficiaries have not received the subsidy in time. There is time gap in availing the subsidy issued to the farmers; often, they get it after the cultivation of the crop. That is major problem in the study area. Therefore, seeds and other inputs have to be distributed to the beneficiaries in time; otherwise, efficiency of their production process gets wasted. About 63.3 percent of the farmers have informed that the subsidy distribution after the purchase of inputs is the major problem. So, Government has to distribute farm material in time.

Generally, subsidy is not distributed in time. This is a impediment in the NFSM scheme in Tamil Nadu. About 81 percent of beneficiaries are of the opinion that it takes a long-time for availing such benefits in the study area. Therefore, subsidy is to be distributed in time for plantation. Otherwise, farmers will suffer as they have to spend their own money for purchasing seeds and other inputs during that time.

About 50 percent of farmers informed that the large farmers are enjoying more subsidy than the marginal and small farmers in the study area. The government officials mainly support the large farmers and distribute more subsidies to them. This affects the small and marginal farmers. Another constraint is the quality of seeds. About 57 percent of farmers reported that the quality of seed is poor in the study area. A majority of beneficiaries reported that they are supplied poor quality seed. This is another major problem faced by the farmers in the study area. Thus, distribution of quality seeds is a main issue in the scheme.

In conclusion, we may say that the poor quality of seeds is a major problem. Secondly, subsidy is not distributed in time and a long time is taken for distribution of seeds and inputs. Third, procedure for giving subsidy is not easy and it takes much time. Certificate from VAO is very essential for subsidy distribution. Fourth, delay in payment of subsidy is another problem in the study area. A majority of them reported that they were not receiving the subsidy even after completion of farm process.

5.3 Suggestions for Improvement of the NFSM Scheme

About 22 percent of the NFSM beneficiaries suggested that there is need for simplifying the procedure for availing the benefit of the NFSM scheme in the study area. A majority of the farmers are asked to submit the land (chitta

documents) documents and certificate from VAO for availing the benefits. The present system is time-consuming. 20 percent of farmers have informed that the subsidy is to be increased. A majority of the farmers do not receive all the subsidies. Only a few farm subsidies are distributed to the farmers. It is observed that the cost of cultivation has increased over period of time. Therefore, farmers have met with huge losses. To solve this problem, subsidy is to be increased.

Only about 16 percent of farmers reported that quality material is distributed in time. That means, quality inputs like seeds, micro nutrients, IPM and INM are not distributed by the Government of Tamil Nadu. The farmers reported that quality inputs are very essential for increasing the production of paddy. Any scheme of the government is mainly dependent upon the effective participation of the farmers. About 14.3 percent of farmers reported that government support was needed for the success of the scheme. Some farmers reported that the subsidy is to be increased and quality material to be distributed in time to the farmers. Some said that the NFSM benefits are to be extended to all the farmers in a village. Simplifying the scheme is one of the suggestions given by the farmers.

Some of the suggestions for improvement of the NFSM scheme among Non-Beneficiaries are shown in Table 5.4. About 25.8 percent of the Non-Beneficiaries reported that the benefits should be given to the poor farmers (marginal and small farmers) in the study area. It is found that the majority of the benefits are enjoyed by the large landholders in the study area. They have links with government officials and they get information about the scheme and subsidy immediately after it is announced and work to receive the benefits.

About 25.4 percent replied that they are not aware of the scheme. Therefore, they suggested that advertisement might be given about the NFSM scheme. It is found that advertisement is given through mass media and newspapers in the state as the scheme is very essential for benefits of the farmers.

About 21 percent replied that they are informed about the importance of NFSM scheme's in the study area. It is found that one-fourth of the non-beneficiary farmers did not have awareness about the importance of the scheme. Therefore, Government Officials should inform about the importance of NFSM scheme to all the farmers.

5.4 Reasons for Non-Participation in the NFSM Scheme

The reasons for non-participation in the NFSM Scheme for Non-benefi-

ciaries in the study area are given in Table 5.5. About 35 percent of non-beneficiaries informed about the lack of information about the NFSM scheme, as the reason for non-participation in NFSM scheme. It is also found that a majority of the non-beneficiaries are either illiterate or possess minimum level of education. Therefore, they are in partial ignorance about the scheme.

About 19 percent of non-beneficiaries reported that the political and community influence is the main reason for non-participation in the NFSM scheme. Political support and community influence play a major role in the determination for availing the benefits and funds to the NFSM farmers. They expressed the opinion that local leaders and panchayat presidents decide who should benefit from the NFSM scheme in the study area.

About 18 percent of farmers reported that the government official did not inform about scheme and that was the reason for their non-participation in the scheme. Government officials informed landlords and farmers with political clout.

5.5 Suggestions for the inclusion of Non- Beneficiaries for availing Benefits under NFSM Scheme

About 32 percent of the non-beneficiaries reported that the government officials did inform about the NFSM scheme for inclusion of all farmers. It is found that government official's support is needed for inclusion in the scheme.

About 30 percent of non-beneficiaries informed that the government needs to extend the scheme to all the farmers in the study area. It is found that only select few farmers are benefited regularly and not all the farmers.

About 22 percent reported that the awareness camp is needed for inclusion of all farmers in the NFSM scheme. It is found that the awareness camp is necessary for the development of farmers at the village level. Therefore, awareness campaign at the village level in the study area is very essential one.

6.1 Policy Implications

Though the scheme as a whole has succeeded, the study has come out with many implications. The NFSM and Non-NFSM farmers have suffered a lot to avail the benefits of any such scheme. Over a period of time, a number of schemes have been launched by the Union and State Governments in India. However, there is not much improvement in the farmers' level of living. Against such backdrop, the following are some of the specific policy suggestions.

- The state government needs to simplify the selection process for the NFSM scheme. Otherwise, farmers have to face much hardship and many miss the scheme.
- The state government must take all the necessary steps to ensure the distribution of the quality inputs like seed and farm materials with subsidy in time without any delay so that the farmers can make use of them before cultivation.
- The state government needs to ensure the adequate financial support to the farmers for the purchase of farm material within the prescribed time.
- The government should make arrangements to provide farming and harvesting machines for hire during the seasons.
- The due subsidies must be given to all those selected beneficiaries in a village.
- Subsidy for seed and farm inputs needs to be increased for the benefits of the farmers given the escalation of the cost of cultivation.
- The procedures of the NFSM scheme needs to be simplified and the scheme must be expanded to cover all the farmers in a village.
- In addition to the advertisement through mass media and newspapers about the scheme, government officials should inform about the NFSM scheme. Their support is the most critical one for the inclusion of the farmers in the scheme.
- The awareness camp is needed for the development of farmers in a village.
- Preference will be given to traditional and modern seed varieties. Subsidy to be continued to those who have already availed such benefits.
- Subsidy to be increased to the seed, fertilizers, pesticides and other farm material.
- MSP should be revised periodically based on the experts view and not by political decisions which is always driven by the contingencies of deficit cutting.

- Hundred percent subsidies are to be given for the purchase of quality seed by all the deserving farmers.
- NFSM subsidy material like seed, input and farm material to be given to all the selected beneficiaries in a village.
- The Government should ensure the quality of farm equipments given under the scheme.
- Urgent efforts need to be made to improve the quality of farm equipments/ implements to all the beneficiaries.
- Government should eliminate intra-district inequality in the distribution of farm equipments.
- Agricultural Officer should make regular visits to the selected villages.
- Certified seed to be issued for increasing rice production in the state.

The findings suggest that after the implementation of the NFSM scheme, there has been significant improvement in the farmer's life in the study area. NFSM beneficiaries are in a better position with improved performance in terms of input use, production, productivity in comparison with that of the Non-NFSM farmers. Further, many of the selected villages in the study area are yet to satisfy the existing coverage norms. The farmers in the study area are not well equipped with adequate farm materials like cono weeder, multiple planters, power weeder, pump sets, sprayers and power tillers as they have not been provided with them

under the scheme. They have been given only a limited support like the provision of seeds and inputs. Besides, there is widespread intra-district disparity in terms of subsidy and benefits distributed.

The shortages are not only in farm equipments, but also in seeds, other inputs and farm implements in the study area; but they have not been given for the areas with shortages of such inputs. Sometimes, the Agricultural Officers do not visit the farm field in the village. There is need for monitoring. Even the available farm equipments under the NFSM scheme are not distributed equally to all the beneficiaries; only select materials are provided. The quality of farm material and equipments given to the beneficiaries is yet another concern. However, if the state government is more proactive to strengthen and expand this scheme in Tamil Nadu, it will certainly help the farmers as well as the economy as whole in increasing the input use, production, productivity and income.