

Original Research Article

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## Impact Assessment of on Farm Demonstrations on Millets Varieties/Hybrids and Technologies in Rainfed Conditions of Madurai District

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### ABSTRACT

A study was conducted at Madurai district of Tamil Nadu. Eighteen On Farm Demonstrations, six each in sorghum, *Sorghum bicolor*, Pearl millet, *Pennisetum glaucum* and Maize, *Zea mays* on improved technologies and varieties/hybrids under GOI -DST SCHEME. Techno Economic Empowerment of Dry Land Farmwomen for Livelihood Security under millet based ecosystem. A total of 280 beneficiaries were selected from three blocks viz., Sedapatti, Kallupatti and Thirumangalam of Madurai district during 2014-2017. Impact was assessed by conducting survey with 280 beneficiaries before and after implementation of the project. The results revealed that the adoption of improved technologies have resulted in 30-50 per cent increased yield irrespective of various millets. Majority of farmwomen had expressed that the grains of TNAU-COH 6 M hybrid had fetched higher price due to its bold size and golden colour. Popularization of agricultural technologies through various extension methods like, on farm demonstrations, trainings, exhibitions, awareness campaigns had resulted substantial increase in adoption of improved millet varieties/ hybrids and improved technologies among farm women in the millets growing areas.

#### Keywords

On farm demonstration, Millets impact, Adoption, Farmwomen

#### Article Info

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### Introduction

Millets are traditionally cultivated over years, suffered a setback due to change in food habits of the people. High nutritional content and adaptability to adverse soil and climatic conditions have necessitated the promotion of millets in a large scale. Millets are

nutritionally superior compared to cereals and serve as good source of protein, micronutrients and macronutrients. Minor millets contain 12-16% protein and 2-5% lipids, millets are very good sources of micronutrients such as vitamins and minerals and millets have a better amino acid profile. Hence, millets are being utilized as a source

of nutraceutical components for nutritional enrichment of processed food products to augment their proposed health benefits. Millets provide multiple securities such as food security, fodder security; health and nutritional security and livelihood security.

Ninety per cent of total land holdings in Tamil Nadu belong to small and marginal farmers. Agriculture is the major livelihood provider to about 40 per cent of the population of Tamil Nadu especially to the less endowed rural people. Nearly, 90 per cent of underground water potential has been exploited agriculture production is mainly dependent on monsoon. Millets also provide multiple securities such as food security, fodder security, health and nutritional security and livelihood security.

To, increase the farmer's field productivity, a modern concept was formulated by agricultural scientists called "On Farm demonstration" with the objective to demonstrate newly released high yielding varieties, crop production and protection technologies and management practices at farmer's fields under different farming situations. While demonstrating the technologies in the farmer's fields, the scientists are required to study the various factors contributing higher crop yield, constraints in field production and thereby required to generate production data and feedback information.

Keeping these in view, on farm demonstration using improved high yielding varieties/hybrids with the thematic area to replace local seeds with high yielding improved variety/hybrid millet seeds were carried out to enhance the seed replacement rate, productivity, economic returns and also convincing the farmers for adoption of newly developed high yielding varieties /hybrids / millets.

## **Materials and Methods**

A total of 280 beneficiaries were selected from three blocks of Sedapatti, Kallupatti and Thirumangalam of Madurai district during 2014-2017 by using proportionate random sampling procedure. Prior to conduct of the OFT, meetings with farmers, surveys and diagnostic visits were under taken for selection of the farmers and villages. Besides training programmes were also imparted to the beneficiaries' on crop production, plant protection and value addition. A total of eighteen On Farm Demonstrations, six each in sorghum (CO26), Pearl millet (COC9) and Maize (COHM6) with improved technologies and varieties were conducted under GOI - DST SCHEME, Techno Economic Empowerment of Dry Land Farmwomen for Livelihood Security under Millet Based Eco System. Impact was assessed by conducting survey with 280 beneficiaries before and after the implementation of project and constrains faced by the millets growers also assessed by using interview schedule. Percentage analysis was used to interpret the results.

## **Results and Discussion**

### **Impact of varieties /hybrids and technologies popularized through On Farm Demonstration**

Impact assessment was made in Table 1. It could be observed from the table 1 that the adoption of improved technologies have resulted in 30-50 per cent increased yield in irrespective of various millets. There by the income increased to the tune of 45%. Further, the extent of adoption of TNAU varieties had increased substantially to 13 and 50 per cent in the maize, sorghum and pearl millet respectively. Seventy five per cent of the farm women adopted micronutrient mixture to millets only after attending several trainings and demonstrations etc. Majority of farmwomen had expressed that the grains of

TNAU-COH 6 M hybrid were attractive due to its bold size and golden color. Hence, it fetched higher price. Fifty two per cent of the farm women preferred APK1 and K Tall sorghum than local variety due to higher yield and short stature The COC9 pearl millet preferred by 56 per cent of the respondent due to less incidence of pests.

Eighteen On Farm Demonstrations on improved millets technologies and varieties/hybrids were conducted and compared with conventional method of cultivations during the project period on various millets crops viz., sorghum, pearl millet and maize. Yield performance of various millets OFD resulted in 30-53 per cent increase in yield. This might be due to the adoption improved varieties/

hybrids and recommended improved technologies viz., application of bio fertilizer, micronutrients, integrated pest management and spraying of maize maxima (Table 2).

Choudhary *et al.*, (2009b) reported that the refinement in the local farmers' practices was the main reason for higher adoption. Further, they indicated that the generation of location specific farm technology was another option for sustaining crop productivity which is open for the research scientists whereas, the successful development, dissemination and adoption of improved technologies to small-holders depend on more than careful planning of research and the use of appropriate methodologies in extension as stated by Biggs and Smith (1998) (Table 3).

**Table.1** Impact of varieties /hybrids and improved technologies OFD

Technologies recommended	Maize N=280		Sorghum N=280		Pearl millet N=280	
	Before Project implementat ion %	After Project implementat ion %/%	Before Project implementat ion %	After Project implementat ion %	Before Project implementat ion %	After Project implementat ion %
Adipattam	20	20	48	48	35	36
Purattasipattam	80	80	52	52	50	50
a)Field preparation	40	88	26	52	15	52
b) FYM application	80	85	15	52	14	59
a)TNAU varieties /hybrids	2.0	25	10	55	15	65
Seed rate	100	100	100	100	100	100
Seed treatment with biofertilizers	26	52	12	48	13	45
Pre –monsoon sowing	10	35	13	40	30	60
Spacing	10	70	30	60	40	80
a)Fertilizer application	12	40	12	52	26	56
b)Application of	2.0	75	8.0	79	12	88

micronutrient mixture						
Weed management hand weeding	56	75	32	67	25	35
a)Spraying of herbicide	---	----	---	---	---	---
Applicationof Maize Maxima	--	45				
Important pest and its control	45	65	27	55	25	48
Intercropping with pulses	15	88	12	79	38	82
Fodder preservation technologies	2.0	10	2.0	12	2.0	17

**Table.2** Yield performance of millets

Millets	Varieties/ hybrids with all recommended technologies	No. of trails conducted	Yield Kg/ha		Per cent increase
			Improved TNAU varieties in demonstration	Conventional varieties/ Farmer's practices	
Maize,(Zea mays	COH6M	6	4590	3500	31.14
Sorghum <i>Sorghum bicolor</i>	CO26	6	2000	1300	33.84
	APKI		1900		31.57
Pearl millet <i>Pennisetum glaucum</i>	COC9	6	2400	1600	50.00

**Table.3** Constraints faced by the millets growers

Particulars	No=280	Per cent
Non availability of improved seeds in time.	260	92.85
Fluctuation in market price	240	85.71
Non availability of labor during peak season	230	82.14
Erratic monsoon	200	71.42
Lack of marketing linkages of Value Added Products	200	71.42
Non insect pest problem (birds, peacock, pig etc)	170	60.71

It could be concluded that popularization of agricultural technologies through various extension methods like, on farm demonstrations, trainings, exhibitions, awareness campaigns had resulted substantial increase in adoption of improved millet varieties and technologies among farm women in the millets growing areas. The adoption of TNAU improved varieties/hybrids/technologies in millets cultivation had resulted in 30-53 per cent increased yield irrespective of millets.

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