

Impact of Odisha Millet Mission (OMM) on Level of Technology Adoption in Millet Cultivation in Odisha

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ABSTRACT: This study investigates the impact of Odisha Millet Mission (OMM) on level of technology adoption in different millets cultivation in Odisha based on primary data during the sampling year 2022. A comparative analysis of millet farmers' agronomic practices post-project versus pre-project period was conducted. An empirical study of millet producers from four tribal and rainfed districts of the state was conducted to analyse the impact of the Odisha Millet Mission (OMM) on the level of technology adoption in various millets production in Odisha. Our findings revealed that in the study area, monocropping practice rose for all varieties of millets after the project. With the exception of sorghum, mixed cropping methods decreased in every crop during the post-project phase. When it came to intercropping, foxtail millet and sorghum both saw a 100% rise in practice, whereas little millet saw a 100% decline. When agronomic practices in millet farming were compared between the post-project and pre-project periods, it was discovered that the broadcasting method was on the decline (100%) while improved agronomic practices, such as System of Millet Intensification (2000%), Line Transplanting (900%), and Line Sowing (200%) methods, were on the rise for finger millet in the pool that was focused on OMM. This shows that, following the state's 2017 the implementation of the Odisha Millet Mission (OMM), there was some influence of OMM on the degree of technology adoption in various millets in the sampled districts. For long-term advantages to agriculture and its sustainability, the authors' methods for a cultivation-based incentive should be included in the findings.

Keywords: Millets, Odisha Millet Mission (OMM), incentives, System of Millet Intensification (SMI), Monocropping, Sustainability.

INTRODUCTION

Millets are small annual cereals that are sown and grown as cereal crops on marginal soils in arid regions of temperate, subtropical, and tropical nations (Bachate *et al.*, 2022). Ragi (finger millet), jowar/janha (sorghum), bajra (pearl millet), and small millets like suan/gurji (little millet), kangu (foxtail millet), kodo, proso millet, and barnyard millet are among the millets that are grown and recorded in Odisha. Finger millet farming is less harmful to the soil, environment, and crops since it uses fewer inorganic components, according to Meena *et al.* (2017). Sathish Kumar *et al.* (2022) found that the area and production of minor millets have been decreasing due to the cultivation of cereals, pulses, and commercial cash crops. The 1960s and 1970s show a growing trend in millets' production and area under cultivation in Odisha. Since the 1980s, these trends have reversed. Small millets began to decline in the 1980s, followed by the three main

millets—bajra, jowar, and ragi—in the 1990s (Jena and Mishra 2020). Looking to the then situation, the Odisha Millet Mission was founded in 2017 by the Odisha government's Department of Agriculture & Farmers Empowerment with the goal of bringing millets back to farms and dinner tables while also boosting their production. Hence, there was a requirement of advanced technology supported by incentives for various millets cultivation to boost the production as well as to increase the acceptance of millet cultivation among farmers. So, to strategies the millet cultivation in the state, with the help of technology adoption, a comparative analysis of the different technology like agronomic practices & method of cultivation of millet farmers during post period compared to pre project period were studied. Here the pre period shows before implementation of Odisha Millet Mission (OMM) in 2017.

MATERIAL AND METHODS

Multistage sampling method was used for the study. In the first stage, four districts namely, Koraput, Kandhamal, Nuapada, and Gajapati were chosen from three physiographic zones using a convenient sampling method. These districts were chosen out of the seven operational districts of OMM implementation in the 2017 kharif. Two blocks were purposively chosen from each district for the second sampling round. Due of the significant concentration of farmers under OMM, one cluster was purposefully selected from each block in the third stage. Twelve millet farmers from each cluster were selected at random for the research at the last sampling step. Thus, the sample size was 96. Data were gathered from the chosen farmer respondents who were cultivating various millets utilising a well designed interview schedule and questionnaire. AM, SD, CV, %, and ratio were all included in the tabular analysis. Here, the goal of demonstrating the impact of the Odisha Millet Mission was achieved with the aid of tabular analysis.

RESULTS AND DISCUSSION

Different technology adoption in millet cultivation

(i) **Agronomic practices.** A comparison between the agronomic practices of millet farmers during the post-project period and the pre-project period indicates that broadcasting was becoming less important while other agronomic practices, such as the System of Millet Intensification (SMI), Line Transplanting (LT), and Line Sowing (LS) methods, were becoming more important. All these methods are linked to various incentives. In which, the farmers get highest incentives for adopting SMI methods. With the time, these advanced agronomic practices have helped the farmers to get higher yield compared to the traditional broadcasting method. It is clear from the following Table 1 that farmers have switched from the old broadcasting method of agriculture to other enhanced methods for all varieties of millets in practically the whole sampled district. Additionally, it was noted that the SMI, LT, and LS methods had significantly improved, especially for finger millet, which is the main millet in the regions that were studied. There was declining trend (100%) of broadcasting method and increasing trend of improved agronomic practices like SMI (2000%), LT (900%) and LS (200%) methods on finger millet which was focused on OMM in all sampled farmers.

Table 1: Agronomic practices followed for cultivating different types of millets.

Sr. No.	Millet Varieties	Districts	Pre-Project (No. of farmers)				Post-Project (No. of farmers)			
			SMI	LT	LS	Broadcasting	SMI	LT	LS	Broadcasting
1.	Finger millet	Koraput	0	3	4	16	5	13	6	0
		Kandhamal	0	1	0	3	3	16	5	0
		Nuapada	1	2	1	18	5	16	3	0
		Gajapati	0	0	0	23	8	15	1	0
		Pool	1	6	5	60	21	60	15	0
2.	Little millet	Koraput	0	1	0	2	0	3	0	1
		Kandhamal	0	0	0	1	0	3	1	1
		Nuapada	0	1	1	0	0	2	0	0
		Gajapati	0	0	1	2	0	1	0	1
		Pool	0	2	2	5	0	9	1	3
3.	Foxtail millet	Koraput	0	0	0	0	0	0	0	0
		Kandhamal	0	0	0	1	0	0	1	0
		Nuapada	0	0	1	0	0	0	2	0
		Gajapati	0	0	0	0	0	0	0	0
		Pool	0	0	1	1	0	0	3	0
4.	Sorghum	Koraput	0	0	0	1	0	0	1	1
		Kandhamal	0	0	0	0	0	0	1	0
		Nuapada	0	0	0	0	0	0	0	0
		Gajapati	0	0	0	0	0	0	0	0
		Pool	0	0	0	1	0	0	2	1
5.	Kodo millet	Koraput	0	0	0	0	0	0	0	0
		Kandhamal	0	0	0	1	0	0	0	2
		Nuapada	0	0	2	4	0	0	5	2
		Gajapati	0	0	0	0	0	0	0	0
		pool	0	0	2	5	0	0	5	4

SMI = System of Millet Intensification (SMI), LT = Line Transplanting and LS = Line Sowing

Odisha Millet Mission (OMM) works through various agencies and at various levels. In the OMM implemented areas, it was revealed during conversations with the CEOs and Community Resource Persons (CRPs) of various Farmer Producer Organisations that CRPs and Facilitating Agencies (FA) were continuously handholding millet farmers for the

scientific method of cultivation instead of the conventional broadcasting method. In addition, the government offered farmers incentives to switch to more contemporary farming practices. This has prompted farmers to use SMI cultivation more effectively when growing finger millet. There was a greater transition from traditional broadcasting to the

LT technique of growing in little millet. Some people continued to practise broadcasting in little millet. The foxtail millet farmers completely switched to the LS method of farming from broadcasting. Agronomic practices for kodo millet have changed, with fewer farmers using LS approaches. However, some farmers in the sampled respondents continued to use the broadcasting method. No farmer has used the SMI approach to grow any other millet crops besides finger millet. Similar findings were obtained by NCDS Study Team with M/S Green India, 2022.

(ii) Method of cultivation. The objective of the OMM initiative is to increase millets' productivity by encouraging farmers to adopt better agronomic practices. Implementing a crop intensification system based on suitability, encouraging line transplanting, line sowing, and intercropping of millets, improving manure, composting, and in-situ techniques for better crop nutrition, managing pests and diseases in accordance with NPM, and other organic/agro-ecological practices as needed to meet local needs are

all examples of this. The way millets are grown takes on importance in this regard. The millet cultivation methods includes intercropping, mixed cropping, and monocropping, as shown in Fig. 1. In Fig. 1, the millet farmers' use of various cultivation methods for various millets was compared before and after the OMM implementation project. Fig. 1 shows that monocropping practices were generally observed to have improved for all types of millets during the post-project period, with the percentages for finger millet, little millet & kodo, and foxtail millet & sorghum in the study area being 102.22, 150.00, and 100.00 percent, respectively. With the exception of sorghum, which saw no change, mixed cropping techniques decreased in each crop during the post-project period. When it came to intercropping, foxtail millet and sorghum both saw a 100% rise in practice, whereas little millet saw a 100% decline. This study matches with the impact analysis done by Lawal *et al.* (2009) on impact of agricultural extension practices on the Nigerian poultry farmers 'standard of living: a perceptual analysis.

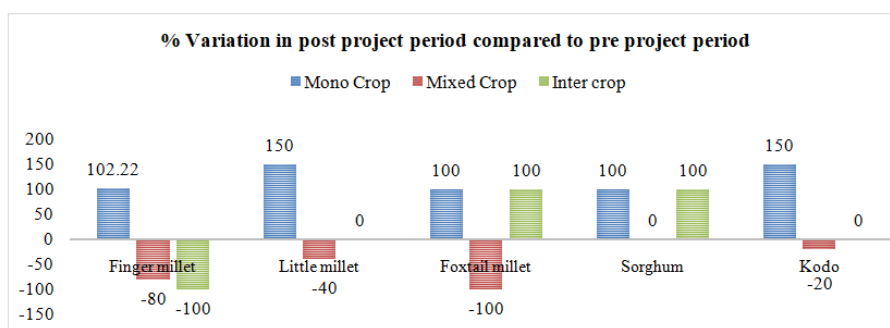


Fig. 1. % Variation in post project period compared to pre project period in Method of cultivation.

CONCLUSIONS

It was deduced from the study that the farmers in the study area are growing a variety of millets on their land, including finger millet, small millet, foxtail millet, and others. Following the implementation of OMM, in method of cultivation, it was frequently observed in the study region that, with the exception of sorghum, mixed cropping reduced for all types of millets and monocropping increased for all types of millets. When agronomic practices in millet farming were compared between the post-project and pre-project periods, it was discovered that, for all millet crops, the broadcasting method was on the decline and the improved agronomic practices, such as the SMI, LT, and LS methods, were on the rise. All these agronomic practices and methods of cultivation has helped the farmers to get increased yield from millet cultivation and also helped them to get promised incentives.

FUTURE SCOPE

The future of millet farming should be changed from the way of traditional methods to the technology based methods for wider adaptability and sustainability of agriculture. The findings will guide future initiatives and policies aimed at promoting millet cultivation and help fill the research gap that presently exists in Odisha's millet economy. It is also suggested that a

method of cultivation-based incentive should be provided for long term benefits to agriculture and its sustainability. In addition to that a study on the impact of OMM on technology adoption in specific millets should be done.

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Conflict of Interest. None.

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