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The resonance of Odisha's millet mission in transforming Ragi farming in Koraput district

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Abstract

Odisha Millet Mission (OMM), a flagship initiative started in 2017 by the department of Agriculture and Farmers' Empowerment in the state of Odisha, aims to promote millet cultivation. Millets, being a super staple food positively impacting nutrition and well-being of tribal communities so, it's crucial to find out the impact of Odisha Millet Mission on socio-economic life of Ragi growers. The study was conducted in the year 2020-2021 in Koraput district of Odisha. The methodology involves the selection of recipients and non-recipients from each village selected from two blocks, primary data was collected with pre-structured interview schedule and secondary data was collected from online sources, libraries, journals etc. Data analysis shows that recipient farmers outperformed non-recipients. The study identified that mission led to increased knowledge, adoption, productivity, higher annual income, and enhanced social participation among recipients and also contributed to the well-being of farmers, positively influencing various aspects of their agricultural practices and socio-economic conditions. Its success is further validated by the Indian government's endorsement and the request for its replication in other states. As a whole, this study offers insightful information to researchers, practitioners, and policymakers who are pursuing sustainable rural lives and food security.

Keywords: Impact, Odisha Millet Mission (OMM), malnutrition, millets, Ragi, tribal farmers

Introduction

Millets are untapped and neglected groups of cereals which has Nutri-cereal potential. Although packed with nutrients and different nutraceutical substances, they are often seen as food for the less fortunate. (Chauhan *et al.*, 2018) ^[4]. According to both nutritional and dietary patterns, millets have been cultivated for thousands of years making them oldest food crop known to human (Ambati and Sucharitha, 2019) ^[11]. Their excellent nutritional content and ability to withstand severe temperatures are well recognised (Sah *et al.*, 2021) ^[14]. India is the world's largest millet growing country with 83 percent of Asia's and 26.6 percent of the world's millet cropping area. Millets are a staple of tribal cuisine in the Indian states of Odisha, Madhya Pradesh, Jharkhand, Rajasthan, Karnataka, and Uttarakhand (Sood *et al.*, 2019) ^[16]. Millets belongs from family Poaceae. The Nutri-Cereals included, foxtail millet, finger millet, Kodo millet, proso millet, little millet, and barnyard millet (minor millets), pearl millet and sorghum, (major millets) (Dash and Rehman, 2023) ^[5].

Millets, known as "Harbingers of the Evergreen Revolution," are intelligent crops with remarkable benefits. They are highly nutritious, drought-resistant, eco-friendly, and economically valuable. Millets can contribute to global challenges like food security, climate change, and rural livelihoods. (Sangappa *et al.*, 2023) ^[15].

Ragi (finger millet), rich in dietary fiber (18%), phenolic compounds (0.3–3%), and calcium (0.38%), offers abundant health benefits. Its nutritional significance is well-established due to these valuable components. Numerous anti-diabetics (Mishra *et al.*, 2019) ^[11], anti-tumorigenic, anti-atherosclerogenic, antioxidant, and antibacterial qualities are among the many additional well-known health benefits. (Devi *et al.*, 2014) ^[6]. Millets are considered as "Nature's Nutraceuticals". It is a common crop in drought-prone locations and thrives well in poor soil because of its drought-escaping characteristics (Ray *et al.*, 2021) ^[13].

The Initiative for Nutritional Security through Intensive Millet Promotion (INSIMP), launched by the Indian government, aims to promote millet cultivation for sustainable resource use and improved nutrition. Over the past decade, proactive measures have boosted awareness and consumption of millets, making them increasingly significant. (Rawat *et al.*, 2021) ^[12]. In Odisha millets are considered as traditional food, fifteen out of thirty districts in the state cultivate millets. In 2017 the Department of Agriculture & Farmers Empowerment, Govt. of Odisha, launched the Odisha Millet Mission (OMM) as a special programme to promote millets in tribal areas of the state in consideration of the situation which has been carrying out operations in the production, processing, marketing and consumer verticals (Jena and Mishra, 2022) ^[10]. Due to the

fact that millet needs to be resurrected and is the answer to both growing crop failures and nutritional deficiencies, Odisha is a leading producer of millet in the nation.

In an effort to reduce malnutrition, millets were also a part of the public distribution system (PDS) and other government nutrition initiatives. (Ghosh and Ramana, 2022)^[8]. Initially the programme was launched in 7 districts of Odisha covering 30 blocks and later on it was scaled up to 14 districts covering 72 blocks. It was implemented with community-based organization with support of local NGOs at block level.

Materials and Methods

The purposeful implementation of the study "The Resonance of Odisha's Millet Mission in Transforming Ragi Farming in Koraput District of Odisha" was localized to the tribal area of Koraput district of Odisha. The study was carried out in the year 2020-21 in two blocks of Koraput district i.e., Borigumma and Semiliguda which was selected purposively because of highest number of areas of implementation under Odisha Millet Mission (OMM). Three randomly villages were chosen from each block: Kumbhariput, Charagaon, and Cherangul from the Semiliguda block, and Kumuli, Dulaguda, and Aunli from the Borigumma block. Total 30 recipient and 30 non-recipient farmers from every block were taken into consideration, with 10 recipient and 10 non-recipient farmers from each village. A sample of 120 farmers, comprising 60 recipients and 60 non-recipients, provided information. Information from each recipient and non-recipient farmer was gathered using a pretested and organised interview schedule. Ex-post-facto research design was used for the study. Impact of Odisha Millet Mission have been examined in terms of changes in knowledge, adoption, productivity, yearly income, and social participation-all of which are expressed as percentage changes-using a variety of statistical methods, including frequency, percentage, mean, standard deviation, and the "Z Test".

Results and Discussion

Change in Knowledge

Table 1: Distribution of recipients and non-recipients, based on their knowledge level.

Sl. No.	Knowledge	Recipient farmers (n=60)	Non-recipient farmers (n=60)
		Percentage (Frequency)	Percentage (Frequency)
1.	Low	00.00 (0)	18.33 (11)
2.	Medium	31.66 (19)	75.00 (45)
3.	High	68.33 (41)	06.66 (04)
	Total	100.00 (60)	100.00 (60)

According to Table 1, none of the recipient farmer was found to have a poor degree of knowledge about approved ragi growing practices, some (31.66%) of the recipients having a medium level and majority (68.33%) of the recipients having a high level of knowledge. Regarding non-recipient farmers, one third (75.00%) of them possessed a

moderate degree of understanding regarding suggested ragi production techniques, with the remaining 18.33 percent and 06.66 percent having low and high levels of knowledge, respectively. The findings demonstrated that recipient farmers had knowledge levels significantly higher than those of non-recipient farmers which may be due to the fact that recipient farmers are having more sources of information under OMM. The findings of the study are in line with the findings of Chaddha *et al.*, (2021)^[3] in which he stated that the knowledge index of recipient is more than non-recipients in approx. all four aspect of scientific livestock farming practices.

Change in Adoption

Table 2: The allocation of farmers into recipient and non-recipient groups based on their adoption level.

Sl. No.	Adoption	Recipient farmers (n=60)	Non-recipient farmers (n=60)
		Percentage (Frequency)	Percentage (Frequency)
1.	Low	00.00 (0)	13.33 (08)
2.	Medium	31.66 (19)	56.66 (34)
3.	High	68.33 (41)	30.00 (18)
	Total	100.00 (60)	100.00 (60)

Data in table 2 showed that majority (68.34%) of recipient farmers had high adoption levels, while, 31.66 percent had medium adoption levels, and none had low adoption levels. In the case of non-recipient farmers, majority (56.66%) of them had medium adoption levels, some (13.33%) of them had low level of adoption, and 30.00 percent had high level of adoption. Table 2 stated that majority of recipient farmers were found in high level of adoption, whereas majority of non-recipient farmers found in medium level of adoption.

Change in Productivity

Table 3: Distribution of recipients and non-recipient farmers based on finger millet productivity

Sl. No.	Productivity	Recipient farmers (n=60)	Non-recipient farmers (n=60)
		Percentage (Frequency)	Percentage (Frequency)
1.	Low	00.00 (0)	05.00 (03)
2.	Medium	31.66 (19)	91.66 (55)
3.	High	68.33 (41)	03.33 (02)
	Total	100.00 (60)	100.00 (60)

According to Table 3, the majority (68.33%) of recipient farmers had high productivity of finger millet crop, i.e. over 10 qtl/ha, while 31.66 percent had medium productivity, i.e. between 5.01-10 qtl/ha and none of the recipient farmers had low production level. In the case of non-recipients, 91.66 percent of farmers had a median production level, subsequently 05.00 percent had low level of production of less than 5 qtl/ha while, 03.33 percent having a high degree of productivity. As a result, the majority of recipient farmers have a high level of production, while all non-recipient farmers have a medium level of output.

Change in Annual Income

Table 4: Distribution of farmers based on annual income, both recipients and non-recipients

Sl. No.	Annual income	Recipient farmers (n=60)	Non-recipient farmers (n=60)
		Percentage (Frequency)	Percentage (Frequency)
1.	Low	90.66 (54)	96.67 (58)
2.	Medium	03.33 (02)	03.33 (02)
3.	High	06.66 (04)	00.00 (0)
	Total	100.00 (60)	100.00 (60)

As indicated in Table 4, the annual income of most of the recipient farmers (90.66%) were low i.e., INR. 50,000/- annually, followed by 03.33 percent had medium level of annual income ranging from INR. 50,001– 1,00,000/- while only 06.66 percent possessed high level of annual income exceeding INR. 1,00,000/-. In the case of non- recipient farmers, most of the farmers (96.67%) had lower annual income prior to INR 50,000/- followed by 03.33 percent having medium annual income i.e., INR. 50,001/- to INR. 1,00,000/- and none of non-recipient farmers had more than INR. 1,00,000/annual income. From this result, it is observed that the maximum number of recipient farmers earned up to INR. 50,000/- for one year, while those farmers who had not sustaining benefits were earning less than recipient farmers because recipient farmers had benefited under OMM.

Change in Social Participation

Table 5: Distribution of recipients and non-recipients, based on their level of social participation.

Sl. No.	Social participation	Recipient farmers (n=60)	Non-recipient farmers (n=60)
		Percentage (Frequency)	Percentage (Frequency)
1.	Low	43.33 (26)	71.66 (43)
2.	Medium	56.66 (34)	28.33 (17)
3.	High	00.00 (0)	00.00 (0)
	Total	100.00 (60)	100.00 (60)

Table 5 demonstrates that no recipient farmer had a high degree of social involvement, whereas the majority (56.66%) of recipient farmers had a medium level of social participation and 43.33 percent had a low level. Regarding those who were not receivers, the bulk of farmers (71.66%) participated in society at a low level, and the remaining 28.33 percent participated in society at a medium level. As a result, most recipient farmers participated in society at a moderate level, whereas most non-receiver farmers participated in society at a low level. This could be due to the fact that farmers benefited under Odisha Millet Mission are socially more active.

Impression of Odisha Millet Mission on the Recipient Farmers over Non-recipient Farmers

Table 6: Impact of Odisha Millet Mission on the recipient farmers over non-recipient farmers

Sl. No.	Impact dimension	Mean score		Percent change
		Recipient farmers	Non-recipient farmers	
1.	Knowledge	77.20	57.35	34.87
2.	Adoption	68.07	49.15	38.49
3.	Productivity	29.82	22.03	35.36
4.	Annual income	29267.58	21339.53	37.15
5.	Social participation	34	24.87	36.71
	Mean impact			36.51

A brief review of Table no. 6 revealed that the recipient famers' mean score of knowledge (77.20), adoption (68.07), productivity (29.82), annual income (Rs.29267.58/-) and social participation (34) were higher than the non-recipient famers' mean score of knowledge (57.35), adoption (49.15), productivity (22.03), annual income (Rs.21339.53/-) and social participation (24.87). Additionally, it was found that compared to non-recipient farmers, recipient farmers' knowledge, adoption, productivity, yearly income, and social participation increased by 34.87, 38.49, 35.36, 37.15 and 36.71 percent, respectively, as a result of the Odisha millet mission. Thus, it could be stated that Odisha Millet Mission had created positive impact on recipient farmers. When the impact Odisha Millet Mission as whole was considered, it is evident from Table 6 that, there was total 36.51 percent impact of Odisha Millet Mission on the recipient famers when compared with non-recipient farmers. It could thus be stated that the Odisha Millet Mission had a definite impact over recipient farmers in terms of change in productivity, adoption, annual income, knowledge, and social participation to the extent of 31.34 percent above and beyond the overall average. Similar findings were reported by Jadhav (2017) ^[9] who observed that, 34.22 percent impact on recipient famers about Crop Pest Surveillance and Advisory Project, Ghagare (2018) ^[7] observed that definite impact of seed production programme organized under RKVY project on the trainee farmers to the extent of 36.24 percent and Chabhan (2020) ^[2] observed that 31.34 percent impact of Odisha Millet Mission on recipient farmers over non-recipient farmers.

Assessing the Relevance of the Mean Differences

Table 7: Evaluating the relevance of the differences between recipient and non-recipient farmers

Sl. No.	Impact dimension	Mean score		'Z' value
		Recipient farmers	Non- recipient farmers	
1.	Knowledge	77.20	57.35	9.53**
2.	Adoption	68.07	49.15	7.13**
3.	Productivity	29.82	22.03	10.23**
4.	Annual income	29267.58	21339.53	3.75**
5.	Social participation	34	24.87	4.83**
	Mean impact			36.51

** Significant at 0.01 level of probability

Table 7 shows that 'Z' values of knowledge (09.53), adoption (07.13), production (10.23), annual income (3.75), and social involvement (4.83) were statistically significant at the probability level 0.01. As a result, it is possible to conclude that recipient farmers differ significantly from non-recipient farmers in terms of knowledge, adoption, productivity, annual income, and social participation. As a result of the Odisha Millet Mission, there was a clear difference in knowledge, adoption, productivity, annual income, and social participation among recipient farmers against non-recipient farmers. By the end, it is reasonable to say that the Odisha Millet Mission had a substantial positive impact on the farmers who benefited from it.

Conclusion

The research concludes that the Odisha Millet Mission makes a significant contribution to the field of agricultural development. By rigorously assessing the impact of the mission on recipient farmers, it provides empirical evidence of positive outcomes. The overall difference was determined to be 36.51 percent. The "Z" value for knowledge, adoption, production, yearly income, and social participation was shown to be favourably and highly significant at the 0.01 level of probability. The substantial increase in productivity, adoption, knowledge, annual income, and social participation among recipients underscores the mission's effectiveness. Moreover, the endorsement by the Indian Government and the call for replication in other states validate its success. The paper emphasizes the need for continued implementation, expansion, and technology adoption to uplift tribal and backward farmers. Overall, this research contributes valuable insights for policymakers, practitioners, and researchers working toward sustainable food security and rural livelihoods.

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