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A success story on advancing agricultural sustainability: Community initiatives in Jatipur Village under the NICRA Project, Puri District

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Abstract

This success story highlights the transformative agricultural practices in Jatipur village, Puri District, Odisha, under the NICRA-TDC Model, emphasizing sustainability and resource optimization. The initiative integrates a Sequential Paddy cum Fish Farming System, enhancing soil fertility and nutrient recycling. Over the past three years, Jatipur's farmers have diversified their agricultural activities by cultivating CR Dhan rice varieties, hybrid Napier, sweetcorn, marigold, cowpea, and managing kitchen gardens. Key community-driven initiatives, such as mushroom farming and vermicomposting, have generated substantial local income and employment. This integrated approach fosters sustainable agriculture, organic practices, and increased local prosperity, contributing to the broader goal of advancing agricultural sustainability in the region.

Keywords: Agricultural sustainability, NICRA-TDC model, sequential paddy cum fish farming, resource recycling, Jatipur Village, mushroom farming, vermicomposting, organic farming, income generation, community initiatives

1. Introductions

Agriculture plays a vital role in the socio-economic fabric of rural India, and its sustainability is critical to ensuring long-term food security and environmental well-being. Jatipur village, situated in the Puri district of Odisha, exemplifies a community-driven transformation in agricultural practices under the NICRA-TDC (National Innovations in Climate Resilient Agriculture - Technology Demonstration Component) model. This project, aimed at optimizing resource use and fostering sustainable farming techniques, has led to substantial improvements in the village's agricultural output and local livelihoods. Through a combination of innovative farming systems, such as Sequential Paddy cum Fish Farming, and community-based initiatives like mushroom farming and vermicomposting, Jatipur has set a benchmark in advancing agricultural sustainability.

2. Materials and methods

2.1 Study area

Jatipur village, located in the Puri district, covers an area of 77 hectares with 72 households primarily dependent on agriculture and dairy farming. The community has embraced sustainable agricultural practices under the guidance of Krishi Vigyan Kendra (KVK) scientists. The NICRA-TDC Model implemented in Jatipur focuses on integrating climate-resilient technologies, improving resource management, and enhancing soil fertility through innovative farming practices.

2.2 Sequential paddy cum fish farming system

The Sequential Paddy cum Fish Farming system is a key component of the NICRA-TDC Model in Jatipur. This system combines paddy cultivation with fish farming, optimizing water use and nutrient recycling. The integration of aquaculture with paddy cultivation enhances soil fertility, reduces water usage, and improves the resilience of the agricultural system against climate variability.

2.3 Community mushroom farming

Community-based mushroom farming is a significant income-generating activity in Jatipur.

Mushroom cultivation, particularly paddy straw mushrooms (PSM), is carried out cooperatively, where 17 households share the responsibility of cultivating 325 mushroom beds every month. The mushrooms are cultivated at a cost of Rs.60 per bed, and the community collectively generates income from their sale. Annually, the community harvests 23.4 quintals of mushrooms, which not only boosts local income but also provides employment for the villagers.

2.4 Vermicomposting with paddy straw waste

Paddy straw waste, which was previously discarded, is now utilized in the community for vermicomposting. This process involves using spent mushroom substrate and cow dung to create natural manure. The community has established vermicompost tanks, where the waste is converted into high-quality organic fertilizer, further enhancing soil fertility for agricultural use.

3. Results

The introduction of the NICRA-TDC Model in Jatipur has resulted in several positive outcomes for the village:

- **Crop diversification and increased yield:** The cultivation of CR Dhan rice varieties, hybrid Napier, sweetcorn, marigold, and cowpea has diversified the village's agricultural output. These crops are well-suited to the local climate and contribute to improved soil health and sustainable production.
- **Mushroom farming and income generation:** The community's mushroom farming initiative has resulted in an annual production of 23.4 quintals of paddy straw mushrooms, with an average income of Rs.1,24,800 per year. This initiative has also created 96 man-days of employment each year.
- **Vermicomposting for organic farming:** The vermicomposting project has transformed paddy straw waste into valuable organic manure. The six vermicompost tanks produce 54 quintals of vermicompost annually, generating an additional income of Rs.54,000. This compost is used in kitchen gardening and the cultivation of banana and marigold in dyke areas.

4. Discussion

The integration of climate-resilient agricultural technologies under the NICRA-TDC Model in Jatipur village has proven to be a successful model for sustainable farming. The Sequential Paddy cum Fish Farming system has not only optimized water use but also enhanced soil fertility through nutrient cycling. This approach has mitigated the impact of climate variability by making agriculture more resilient and productive.

The community-driven initiatives, such as mushroom farming and vermicomposting, have provided economic benefits and improved livelihoods. Mushroom farming has empowered local farmers by providing a cooperative platform for income generation. Additionally, the shift towards organic farming, through the use of vermicompost, has reduced dependency on chemical fertilizers and improved soil health.

Furthermore, these practices have helped build a sense of community among the villagers, who are now more involved in collective decision-making and resource-sharing. The income generated from these sustainable practices has also contributed to the economic upliftment of

the community, offering new opportunities for local entrepreneurship.



Fig 1: Harvesting mushroom



Fig 2: Vermicomposting from spent mushroom substrate

5. Conclusion

Jatipur village's adoption of the NICRA-TDC Model has significantly advanced agricultural sustainability through innovative and community-driven initiatives. The integration of Sequential Paddy cum Fish Farming, mushroom cultivation, and vermicomposting has not only improved soil fertility and water efficiency but also created new income avenues and employment opportunities for the villagers. This success story underscores the potential of climate-resilient agricultural models in transforming rural livelihoods, promoting organic farming, and enhancing community engagement in sustainable agricultural practices.

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