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REVITALIZING MILLETS IN INDIAN AGRICULTURE: PATHWAYS TO FOOD SECURITY AND SUSTAINABILITY

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ABSTRACT

Millets, traditionally a staple crop in India, have recently gained global attention for their resilience to climate change and significant nutritional benefits. This resurgence is highlighted by the United Nations' declaration of 2023 as the "International Year of Millets." However, the Green Revolution led to a decline in millet production as rice and wheat became more prevalent, exacerbating issues like malnutrition, lifestyle diseases, and environmental degradation. This study investigates the factors contributing to low millet consumption in India, the efforts by NGOs and government bodies to promote millet cultivation, and proposes policy recommendations for revitalizing millet production. Through qualitative and quantitative methods, including interviews with millet farmers and policymakers, the study evaluates initiatives like the Public Distribution System (PDS) and state-led programs such as Karnataka's Raitha Siri and Odisha's Millet Mission. The findings reveal challenges related to cultural preferences, market infrastructure, and awareness, but also highlight the potential for increasing millet adoption through expanded government support, market development, and public health campaigns. The paper underscores the need for coordinated efforts from the government, NGOs, and the private sector to mainstream millets in Indian agriculture for enhanced food security and sustainability.

KEYWORDS: Food Security, Sustainable Agriculture, Climate Resilience, Nutrition, Policy Interventions.

1. INTRODUCTION

Millets, once a staple crop in India, have garnered renewed attention globally due to their resilience to climate change and nutritional benefits (Bezbaruah R & Singh A, 2024). The United Nations' declaration of 2023 as the "International Year of Millets" has further highlighted their significance. India, with its semi-arid and arid regions, is particularly well-suited for millet cultivation, which can thrive on marginal soils without intensive water requirements (Yadav OP et al., 2024).

However, the Green Revolution of the 1960s led to a shift away from millet cultivation, favoring water-intensive crops like rice and wheat (Eliazer Nelson et al., 2019). This transformation resulted in self-sufficiency but also led to a decline in millet production, exacerbating malnutrition, lifestyle diseases, and environmental degradation (Singh & Meena, 2021).

Given their drought-resistant qualities, nutritional value, and environmental benefits, mainstreaming millets in Indian agriculture is crucial for food security and sustainability. This paper examines the factors contributing to low millet consumption, the role of NGOs and the government in promoting millet cultivation, and policy suggestions to revitalize these crops.

2. MATERIALS AND METHODS

This study employs a multi-method approach, integrating qualitative and quantitative analysis to assess the challenges and potential of millet cultivation in India. The research draws upon existing secondary data, including government reports, agricultural statistics, and academic literature from reputable sources such as the Ministry of Agriculture & Farmers Welfare (2022) and the Indian Institute of Millets Research (2022).

The data on millet production trends and policy initiatives were obtained from the Directorate of Economics and Statistics, Government of Telangana (2022) and the National Food Security Mission (2023) reports. In-depth interviews were conducted with millet farmers, agricultural policymakers, and Non-Government Organizations (NGOs) representatives actively involved in millet advocacy across India.

The study focuses on areas where millet cultivation is prevalent, such as Karnataka and Telangana, evaluating the impact of government policies like Raitha Siri and the Odisha Millet Mission on millet production and consumption patterns. Additionally, the research analyzes the Public Distribution System (PDS) and its role in distributing subsidized food grains, comparing regions where millet has been introduced into the PDS versus areas where it remains underutilized.

3. RESULTS AND DISCUSSION

3.1. Challenges: Reasons for Low Consumption of Millets Compared to Rice

The low consumption of millets in India can be attributed to several factors, which are discussed below.

Cultural Preferences and Dietary Habits

Rice holds significant cultural and culinary importance in India, particularly in southern and eastern regions, where it is a staple ingredient in traditional dishes (Morrison& Kathleen. 2016). This preference was further strengthened by the Green Revolution in the 1960s, which promoted rice and wheat cultivation through subsidies and high-yielding varieties (Pingali, P.L., 2012,)

Policy Bias and Subsidies

The Indian Government Public Distribution System (PDS) plays a critical role in shaping food consumption patterns by providing rice and wheat at heavily subsidized rates, making them accessible to large sections of the population. While some recent initiatives have included millets under PDS, the distribution remains limited (Raju et al, 2018). Moreover, the lack of financial incentives for millet cultivation and inadequate support for millet farmers further exacerbates the issue (Patra et al., 2023).

Awareness and Perception Issues

A significant barrier to millet adoption is the lack of awareness about their nutritional benefits. For instance, pearl millet is rich in fiber, calcium, and iron, and has a low glycemic index, making it ideal for managing lifestyle diseases like diabetes and heart disease (Malleshi, N. G., et al., 2021). Nevertheless, the perception of millets as a "poor man's food" persists, particularly in urban areas (Srivastava B & Reddy P, 2023).

Urbanization and Convenience

With the rise of urbanization and busy lifestyles, the preference for quick and easy-to-cook grains like rice has grown. Millets, which require longer cooking times and unfamiliar preparation methods, are less appealing in modern kitchens (Priya Shah et al., 2023). Additionally, rice is perceived as more versatile in absorbing flavors from various gravies and curries (Das Lipi, 2015).

Agricultural and Market Infrastructure

Rice is grown across irrigated regions of India, supported by well-established supply chains, storage infrastructure, and marketing systems. In contrast, millets, often grown in arid and semi-arid regions, suffer from an underdeveloped market system, leading to inconsistent availability and higher costs in retail markets (_Harish et al., 2024).

By understanding these challenges, policymakers and stakeholders can develop targeted strategies to promote millet consumption and address the underlying factors contributing to their low adoption.

3.2. Solutions: What the Government and NGOs Must Do to Promote Millets

To enhance millet consumption in India, policy interventions are crucial. The government can play a pivotal role in promoting millets through various initiatives.

Policy Interventions by the Government

The government can promote millet consumption through policy interventions, such as expanding millet distribution through the PDS and scaling up initiatives like the National Food Security Mission (NFSM), (Srivastava B & Reddy P, 2023). Other effective measures include providing financial incentives for millet farmers, subsidizing millet production, and supporting millet research and development.

Expanding Millet Distribution through Public Distribution System (PDS)

The government should ensure that millets, especially Pearl millet and Jowar, are widely distributed through the PDS. This would make millets more accessible and affordable for economically weaker sections, thereby promoting their consumption. Initiatives like the NFSM, which includes millets under food security programs, need to be scaled up.

Financial Support for Millet Farmers

Financial incentives should be provided to farmers cultivating millets, encouraging them to shift from water-intensive crops like rice. Programs like Karnataka's Raitha Siri, which offers financial incentives to millet farmers, should be implemented on a national scale. Crop insurance, subsidies for seeds, and price support mechanisms should also be enhanced.

Incorporating Millets in Nutrition Programs

The inclusion of millets in government-run nutrition programs like the Midday Meal Scheme (MDM) and Integrated Child Development Services (ICDS) will not only improve the nutritional intake of children but also promote millet consumption from an early age. Odisha's initiative to include millets in school meals serves as an exemplary model. Additionally, Telangana's Millet Mission, launched in 2018, aims to integrate millets into various government nutrition schemes. Telangana has

begun incorporating millets like jowar and finger millet into local schools' MDM programs and ICDS centers, particularly in millet-growing districts such as Mahabubnagar, Warangal, and Nizamabad. Millet-based meals like ragi mudda (finger millet balls) and jowar rotis have been included in the daily menus of schools and Anganwadi centers.

Awareness Campaigns by NGOs

NGOs can play a vital role in promoting millet consumption through awareness campaigns, educating consumers about the nutritional benefits, environmental advantages, and cultural significance of millets.

Nutrition and Health Awareness

NGOs can raise awareness about the health benefits of millets through community-driven campaigns and workshops. Organizations like the Deccan Development Society (DDS) have been successful in promoting millets by educating rural communities about their nutritional value. These campaigns should be expanded to urban areas to reach a broader audience.

Culinary Workshops and Recipe Development

Many consumers, especially in urban areas, are unfamiliar with how to cook millets. NGOs can conduct cooking workshops and develop millet-based recipes to introduce people to various ways of incorporating these grains into their daily meals. Efforts by the Millet Network of India (MINI) to conduct cooking demonstrations for home cooks are a good example of such initiatives.

Market Development and Value Addition

Developing efficient supply chains for millet cultivation, processing, storage, and distribution is essential to ensure millet availability across markets. Investments in cold storage facilities, rural markets, and transportation networks are needed to facilitate the sale and distribution of millets. The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) has led successful initiatives to develop supply chains for millets.

Supporting Millet Processing and Value Addition

The government and NGOs must support millet-based industries and small-scale entrepreneurs who focus on processing and value addition. Millet products such as flour, ready-to-eat snacks, and cereals should be marketed as healthier alternatives to rice and wheat (Priya Shah et al., 2023). The IIMR has been collaborating with start-ups to develop millet-based products to appeal to modern consumers.

4. CONCLUSION

Promoting millets in India requires coordinated efforts from the government, NGOs, and the private sector. Government policies must address supply chain, financial, and market infrastructure challenges, while NGOs should focus on creating awareness, culinary education, and on-the-ground implementation. Through collaborative action, millets like pearl millet can be mainstreamed into the Indian diet, improving public health, supporting sustainable agriculture, and enhancing climate resilience.

The future of millet cultivation lies in further innovation in agricultural practices, with a focus on developing high-yielding, climate-resilient millet varieties. Research into post-harvest processing technologies, especially for value-added products like fortified flours and ready-to-eat millet-based snacks, will help mainstream millets in urban diets. Additionally, scaling up financial incentives and policy reforms on a national level, including expanding millet inclusion in public distribution systems and school meals, will play a crucial role in enhancing millet consumption. Future studies can explore the economic impact of transitioning to millet cultivation in drought-prone regions and the potential for millet exports to international markets.

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