P-ISSN: 2618-0723
E-ISSN: 2618-0731

NAAS Rating: 5.04
www.extensionjournal.com

International Journal of Agriculture Extension and Social Development

Volume 7; Issue 6; June 2024; Page No. 01-05

Received: 01-03-2024
Accepted: 10-04-2024

Indexed Journal
Peer Reviewed Journal

Navigating challenges in finger millet adoption and marketing

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DOI: https://doi.org/10.33545/26180723.2024.v7.i6a.660

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Abstract

The study was conducted in the year 2023-24 in the North Costal Region of Andhra Pradesh. The adoption of Finger Millet management practices by farmers is hindered by various constraints. The primary goals of the research included evaluating the future prospects and potential of millet, identifying farming challenges, and formulating effective strategies to address these issues through comprehensive analysis of data and existing literature. Key challenges include limited access to market information, inadequate knowledge about best practices, and insufficient institutional support. Farmers often struggle to obtain accurate and timely information regarding market demand, pricing trends, and potential buyers, impacting their decision-making processes. Additionally, a lack of awareness about effective cultivation techniques and pest management strategies further complicates the adoption of Finger Millet practices. The major (96.67%) constraint in production was Pest and Disease infestation and the major (96.67%) constraint in Marketing of Finger Millet was Discrepancy between MSP and actual purchase price. Addressing these constraints requires concerted efforts to improve market information dissemination, enhance farmer education and training, and strengthen institutional support systems. By overcoming these barriers, farmers can better adopt and implement Finger Millet management practices, thereby enhancing productivity and promoting sustainable agricultural practices in Finger Millet farming regions.

Keywords: Adoption, constraints, finger millet, marketing, production

Introduction

India is one amongst the leading producers of millets in the world (Singh *et al.*, 2024) [10]. The Central Government of India designated 2018 as the Year of Millets, highlighting the significance of these grains. Building upon this initiative, the Food and Agriculture Organization (FAO) plans to observe 2023 as the International Year of Millets, a proposal initially put forth by India. This global recognition underscores the growing importance of millets in addressing food security and nutrition challenges worldwide (Prasanth and Murugan, 2021) [7]. Millets are in one of the multifunctionality groups of dual-purpose crops within the agricultural sector (Babele *et al.*, 2022) [1]. The term "Millet" is used to refer to a variety of various small-grained cereal grasses (Hrideek and Nampoothiri, 2017) [4]. Millet is part of a category of secondary crops contributing a smaller proportion of the nation's food energy (Gyawali, 2021) [3]. Growing knowledge of the nutritional worth and potential health advantages of traditional and indigenous food systems has led to a resurgence of interest in them in recent years. Small-seeded grains known as millets have been farmed for thousands of years and are essential to both agriculture and human sustenance (Singh and Bano, 2024) [10]. Between all the grains and millets, Finger Millet has the uppermost nutrients and health benefits.

Finger millet, scientifically known as *Eleusine coracana.L*, is an ancient cereal that is nutritious which belongs to the grass family Poaceae, and is known for its small, finger-like grains (Gupta *et al.*, 2017) [2]. Finger Millet comes under the category of minor Millets, due to its ease of cultivation and versatility as a food; it is becoming more and more popular all over the World (Das, 2023) [11]. And also, it can be stored safely for several years without being infested by insects or other pests and is also known as the Poor man's crop. (Rathore *et al.*, 2019) [8]. Between all the grains and millets, Finger Millet has the uppermost concentrations of calcium (344 mg/ 100g), potassium (408 mg/ 100g), magnesium (137 mg/100 g), sodium (11 mg/ 100 g), and phenolic compounds (0.3–3%) (Shobana *et al.*, 2013 and Paschapur *et al.*, 2021) [9, 5]. Incorporating whole grain finger millet and its derivatives into your regular diet can serve as a protective measure against cardiovascular diseases, contributing to improved heart health (Pradhan, 2022) [6]. While finger millet producers benefit from increased production and profitability due to nutrient management, there are certain reasons that prevent farmers from using

recommended nutrient management measures. Therefore, it's essential to ascertain the obstacles farmers experience while implementing nutrient management techniques. Analysis of constraints is becoming one of the crucial elements of technology transfer in agriculture. Disseminating the technologies across the farming community is impossible without first analyzing the limits. Therefore, an effort was made to learn about the obstacles farmers faced when implementing nutrient management techniques in the growth of finger millet.

Conducting a cost and returns analysis holds significant economic importance as it enables farmers to make informed decisions at the farm level by accurately estimating product costs (Vennila *et al.*, 2022) [12]. This helps to know and understanding the cost of cultivation is crucial for farmers as it provides insights into the financial aspects of their agricultural practices. By comprehensively assessing expenses related to inputs like seeds, fertilizers, labor, and machinery, farmers can effectively budget, optimize resource allocation, and make informed decisions to maximize profitability and sustainability on their farms.

Methodology

The study was conducted based on Ex-post facto research design. Srikakulam, Vizianagaram and Visakhapatanam district of North Costal region of Andhra Pradesh was purposively selected for the study based on the criteria of highest area and production of finger millet in the state. In the Srikakula district, Polaki and Narasannapeta blocks, in Vizianagaram district Therlam and Gurla blocks and from visakhapatanam district Padmanabham and Anandapuram were selected. A total of 120 finger millet growers were selected from the three districts in which 40 from the each district and 20 from the each block. The literature review and conversations with extension agents, scientists, and Progressive farmers resulted in the preparation of a list of potential barriers to the adoption of Finger millet management techniques. A pilot study was done in the non-research area. Personal interviews were used to gather data from the respondents using a pre-tested and well-structured interview schedule. The constraints were applied using a two-point continuum with scores of 2 and 1, respectively, for "yes" and "no." The relevant descriptive statistical analysis methods were used to tabulate and analysis the acquired data. In this research, the limitations were ranked and explained based on the percentage analysis.

Results and Discussion

Table 1: Distribution of respondents according to their Production constraints in adoption of Finger millet management practices, Production constraints

Sl. no	Production constraints	Frequency (n=120)	Percentage	Ranking
1	Small size of land holding	54	45	VII
2	Lack of irrigation facilities	90	75	V
3	Low productivity	112	93.33	III
4	Credit unavailability	63	52.50	VI
5	Weed infestation	114	95	II
6	Unavailability of HYV	103	85.83	IV
7	Pest and disease infestation	116	96.67	I

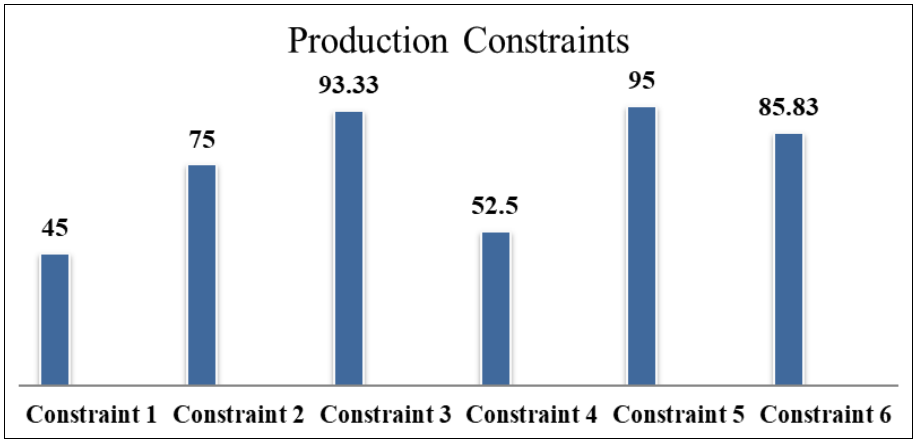

Fig 1: Production Constraints

Table 2: Distribution of respondents according to their Marketing constraints in adoption of Finger millet management practices. Marketing constraints

Sl. no	Marketing constraints	Frequency (n=120)	Percentage	Ranking
1	Lack of transportation facility	50	41.67	V
2	Lack of storage facilities	97	80.83	III
3	Inadequate market information	113	94.17	II
4	Discrepancy between MSP and actual purchase price	116	96.67	I
5	High cost of transportation	95	79.17	IV

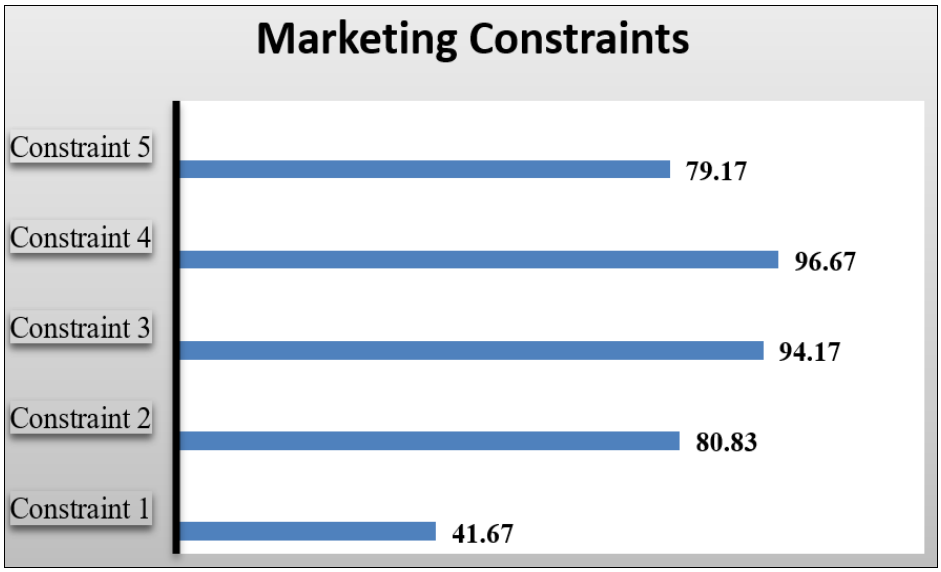

Fig 2: Marketing constraints

Constraints with respect to Production

Analysis of Table 1 and Figure 1 from the study indicates that pest and disease infestation emerged as the predominant challenge in the research findings in Finger Millet production, with a significant majority of respondents, constituting 96.67% of the total, identifying it as such. Stem borer was singled out as the major pest affecting Finger Millet crops, while blast emerged as the predominant disease. Additionally, weed infestation was cited by 95% of respondents, underlining its substantial impact on cultivation. Low productivity was reported as a leading issue, primarily attributed to the challenges posed by pest, disease, and weed infestation. Stem borer infestation was particularly concerning due to its adverse effects on crop yield, while blast disease was noted for its widespread occurrence and damaging effects on Finger Millet plants. Weed infestation further compounded the challenges faced by farmers, hindering crop growth and yield potential. The collective findings underscored the urgent need for effective pest, disease, and weed management strategies to enhance productivity and ensure the sustainability of Finger Millet farming in the region.

Constraints with respect to Marketing

Analysis of Table 2 and Figure 2 from the study indicates that the majority of respondents, totaling 96.67% from the three districts, highlighted a significant disparity between the Minimum Support Price (MSP) and the actual purchase price received by producers. The MSP, set by the Department of Agriculture and Farmers Welfare, stood at Rs. 3846 per quintal. However, farmers typically received prices ranging from Rs. 2900 to Rs. 3200 per quintal through intermediaries, largely due to their lack of awareness regarding the MSP. To address this issue, the government should take initiative by establishing procurement centers in village centers or at Rythu Bharosa Kendrams (RBK), thereby ensuring that farmers benefit directly from these measures. And the second major constraint is inadequate market information i.e. 94.17 per cent in the North Coastal Region of Andhra Pradesh, Finger Millet farmers face inadequate market information due to a lack of tailored research and rural infrastructure challenges. Limited access to reliable data on demand, pricing, and buyers hinders farmers' decision-making processes. Moreover, the niche nature of the Finger Millet market often results in neglect from government initiatives focused on mainstream crops. Addressing this challenge requires targeted efforts to enhance market research, improve rural infrastructure, and provide tailored market information services to empower Finger Millet farmers and enhance their livelihoods.

Table 3: Suggestions of the finger millet growers for adoption of recommended cultivation practices

Sl. No	Suggestions	Frequency (n=120)	Percentage	Rank
1	Inputs may be supplied at affordable prices	89	74.16	I
2	New methods of cultivation practices	82	68.33	II
3	Improved varieties of Finger Millet seeds should be readily assessable at the village level	72	60.00	III
4	Training for installation of processing units of Finger Millet may be given	60	50.00	IV

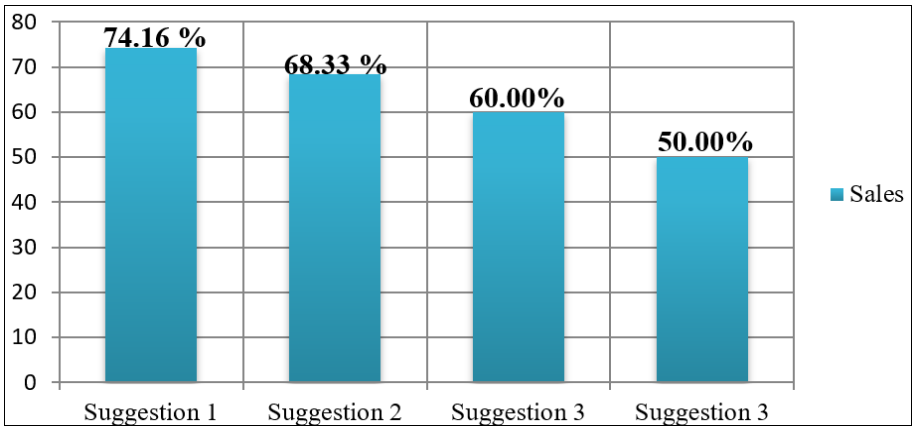

Fig 3: Suggestions given by the Finger Millet growers for adoption of recommended cultivation practices.

It is concluded from Table 3 and fig 3 that Majority (74.16%) of the respondents suggested that the inputs may be supplied at affordable prices followed by New methods of cultivation practices (68.33%), Improved varieties of Finger Millet seeds should be readily assessable at the village level (60.00%) while, 50.00 per cent of the respondents suggested that training for installation of processing units of Finger Millet may be given.

Table 4: Suggestions of the finger millet growers for marketing of Finger Millet

Sl. No	Suggestion	Frequency (n=120)	Percentage	Rank
1	Providing good marketing facilities	91	75.83	I
2	Providing good storage facilities	87	72.5	II
3	Bringing awareness about the new marketing prices	85	70.83	III

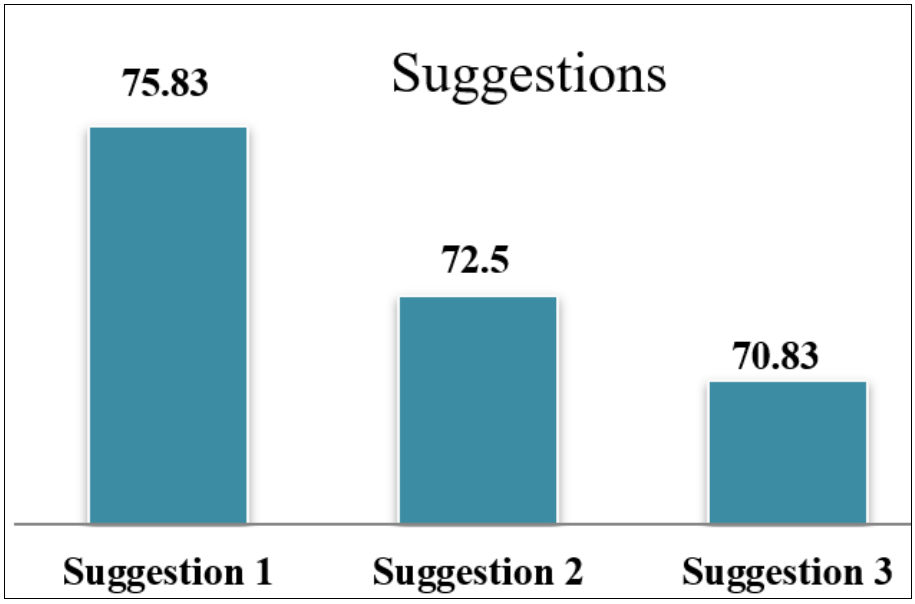

Fig 4: Suggestions given by the finger millet growers for marketing of Finger Millet.

According to Table 4, most respondents (75.83%) recommended improving marketing facilities, followed by enhancing storage facilities (72.5%), and raising awareness about updated market prices (70.83%). These were the key suggestions voiced by farmers regarding Finger Millet marketing strategies.

Conclusion

The study indicates that finger millet growers encounter significant constraints, notably the lack of awareness regarding the Minimum Support Price (MSP) provided by the government and challenges related to pest and disease infestation during production. To address these issues effectively, the state department of agriculture must undertake proactive measures. Firstly, creating awareness among farmers about the MSP set by the government is crucial, ensuring they receive fair compensation for their produce. Additionally, educating farmers about production technologies recommended by Krishi Vigyan Kendras (KVKs) and State Agriculture Universities can empower them to adopt efficient farming practices. This educational outreach could encompass methods for pest and disease management, enhancing crop resilience and yield. Furthermore, establishing channels for continuous communication and information dissemination can help bridge the gap between farmers and relevant agricultural

authorities. Ultimately, by addressing these constraints and promoting informed decision-making and adoption of modern agricultural practices, the state can support the sustainable growth and prosperity of finger millet growers.

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