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Constraints faced by farmers in diversification of summer paddy crop

[1]Monali T Patle, [2]Dr. RS Waghmare, [3]Dr. MK Rathod, [4]Dr. Harsha S Mendhe, [5]Dipali R Mahale and [6]SS Didpaye

[1]PG Scholar, Agricultural Extension Education Section, College of Agriculture, Nagpur, Maharashtra, India

[2]Associate Professor, Agricultural Extension Education Section, College of Agriculture, Nagpur, Maharashtra, India

[3]Associate Professor and Head Agricultural Extension Education Section, College of Agriculture, Nagpur, Maharashtra, India

[4]Assistant Professor, Agricultural Extension Education Section, College of Agriculture, Nagpur, Maharashtra, India

[5]PG Scholar, Agricultural Extension Education Section, College of Agriculture, Nagpur, Maharashtra, India

[6]PG Scholar, Agricultural Extension Education Section, College of Agriculture, Nagpur, Maharashtra, India

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Corresponding Author: Monali T Patle

Abstract

This study, titled 'Constraints in Diversification of Summer Paddy Crop', was conducted in Bhandara district, Maharashtra, using an exploratory research design. A sample of 120 farmers from Pauni and Bhandara tahsils was selected, and data was gathered through structured interviews. The results indicated that 71.66% of farmers recognized the need for crop diversification. However, 98.33% faced severe constraints, such as a lack of knowledge about alternative crops, inadequate irrigation, high seed costs, and labor scarcity. Crop diversification was found to offer benefits, including pest cycle disruption, efficient water use, and improved income. Nevertheless, these advantages were limited by challenges in accessing training, markets, and infrastructure.

Keywords: Summer paddy, constraints in diversification, Need for diversification of summer paddy crop

Introduction

The independent domestication of paddy in different parts of Asia has contributed to the rich diversity of rice varieties we see today. As a staple food, rice plays a crucial role in the diet of billions of people, providing essential energy and protein. There is a need of diversification of crop in which instead of summer paddy, sesamum, green gram, vegetable and water melon can be cultivated. The above crops require less number of irrigation as compared to paddy and green gram is leguminous and add nitrogen to the soil the cultivation of vegetable is remunerative as it give high price in summer. The practice of growing alternative crops is vital in sustainable agriculture, offering several advantages, particularly in relation to soil fertility and pest control. Alternative crops, when rotated with primary crops, help break pest and disease cycles, reducing the reliance on chemical pesticides. This natural method of pest control contributes to healthier crops and ecosystems. Additionally, many alternative crops, such as legumes, have the ability to fix nitrogen in the soil, which enriches the soil fertility and reduces the need for synthetic fertilizers. By enhancing soil structure and nutrient content, these crops improve the overall health and productivity of the land. Furthermore, the diversity introduced by alternative cropping reduces soil erosion, maintains soil organic matter, and promotes beneficial microorganisms. Agriculture sector diversification will offer individuals choices to make ends meet in addition to reducing agricultural risk. The majority of agricultural operations flourish throughout the Kharif and Rabi Seasons. Studies also revealed that crop diversification offers scope to increase income levels of the farmers and improve the productivity of scarce resources which ultimately increases the total production also. With a view to take advantage of opportunities arising out of crop diversification, it is important to assess the nature and extent of crop diversification, to assess the factors influencing crop diversification and also to assess the impact of crop diversification on agricultural production.

Methodology

The present study was carried out in Bhandara district of Vidarbha region in Maharashtra State. An exploratory research design was used for the study. From the seven tahsils of Bhandara district, two tahsils were selected purposively based on the area under paddy cultivation. Six villages from each selected tahsil were chosen, and from each village, 10 farmers were selected purposively, making a total sample size of 120 respondents. Data was collected through personal interviews and structured questionnaires, focusing on the constraints faced in diversification, and need for diversification of summer paddy crop.

Results and Discussion

Constraints in diversification

Table 1: Distribution to the respondents according to their constraints in diversification of summer paddy crop

Sr. No.	Types of constraints in diversification	Less constraint	Moderate constraint	Severe constraint
1	Lack of Knowledge on Alternative Crops	11 (09.16)	52 (43.33)	57 (47.50)
2	Non availability of HYV seed in time	42 (35.00)	40 (33.33)	38 (31.66)
3	High cost of HYV seed	26 (21.66)	38 (31.66)	56 (46.66)
4	Climate uncertainty	20 (16.66)	44 (36.66)	56 (46.66)
5	Scarcity of labour during peak periods	0 (00.00)	0 (00.00)	120 (100.00)
6	Low labour productivity	8 (06.66)	62 (51.66)	50 (41.66)
7	Unskilled labour	14 (11.66)	42 (35.00)	64 (53.33)
8	Epidemics of pest and diseases	0 (00.00)	80 (66.66)	40 (33.33)
9	Lack of knowledge about market prices	24 (20.00)	25 (20.83)	71 (59.16)
10	High rate of interest from the middle men	33 (27.50)	37 (30.83)	50 (41.66)
11	Soil suitability and preparation	16 (13.33)	35 (29.16)	69 (57.50)
12	High initial costs and financial risk	22 (18.33)	34 (28.33)	64 (53.33)
13	Fluctuation in the market prices	0 (00.00)	18 (15.00)	102 (85.00)

Discussion on constraints faced by paddy grower in diversification of summer paddy crop

1. **Lack of Knowledge on Alternative Crop Cultivation**: A significant portion of farmers (almost half) reported severe constraints due to their lack of knowledge regarding alternative crops. This indicates a pressing need for educational programs and resources to enhance farmers' understanding of crop diversification.
2. **Non-availability of HYV Seed:** While this constraint is less severe for some, a third of respondents still face issues with timely access to high-yield variety seeds, indicating a need for better supply chains and distribution mechanisms. HYV seeds are crucial for achieving higher productivity and better resistance to pests and diseases. If farmers do not have access to these improved seeds for alternative crops, they may experience lower yields, making the switch less economically viable compared to traditional crops like summer paddy, where HYV seeds are more readily available.
3. **High Cost of Seed:** A substantial number of farmers find the cost of seeds for alternative crops prohibitive. This highlights the necessity for financial assistance or subsidies to reduce the burden of initial investment. Seeds for alternative crops, especially High-Yielding Varieties (HYV) or hybrid seeds, often come at a higher price than conventional seeds. For small and marginal farmers, this increased cost adds significant financial pressure, making it difficult to afford the initial investment needed for diversification.
4. **Climate Uncertainty:** Farmers face significant constraints related to unpredictable weather patterns, which can affect crop viability. This stresses the importance of developing resilient agricultural practices and technologies. Alternative crops may not be as well-adapted to local weather conditions as traditional crops. In regions like Bhandara, where summer paddy is widely grown, farmers are familiar with the climate patterns required for successful cultivation. However, alternative crops may face challenges if the climate changes unpredictably, with fluctuations in rainfall, temperature extremes, or unseasonal weather events such as droughts or floods.
5. **Scarcity of Labor During Peak Periods:** Every respondent reported severe constraints here, indicating a critical labour shortage during crucial planting and harvesting times. Addressing this could involve strategies for labour management or introducing mechanization. Farmers in regions like Bhandara, who rely on family labour, may find it challenging to handle the labour-intensive tasks of alternative crops during peak periods. These crops may have different labour demands compared to staple crops like paddy, and without sufficient hired labour, farmers could face difficulties managing the workload.
6. **Low Labor Productivity:** More than half of the respondents cited moderate constraints due to low productivity among available labour. This could be mitigated through training and improved labour management practices. Alternative crops often have specific cultivation requirements that differ from traditional crops like paddy. These tasks may include more intensive activities such as manual weeding, selective harvesting, or additional care for plant health. When labour productivity is low, these tasks take longer, increasing the overall labour hours needed to complete them and driving up labour costs
7. **Unskilled Labor for Alternative Crop Cultivation:** A majority of farmers face challenges due to unskilled labour, emphasizing the need for training programs to enhance labour skills in alternative crop cultivation practices. Farmers cultivating alternative crops may need to spend more time supervising and instructing unskilled labourers, which can be a drain on their time and resources. Unlike paddy cultivation, where labourers may have years of experience, alternative crops may require additional training and close monitoring, further burdening the farmer.
8. **Epidemics of Pests and Diseases:** A significant number of farmers are impacted by pest and disease outbreaks, suggesting that integrated pest management strategies should be a focus of agricultural extension services. Alternative crops often attract different pest species compared to staple crops like paddy. This diversity can lead to the rapid spread of pests that farmers may not be familiar with.

9. **Lack of Knowledge About Market:** A large proportion of farmers lack market knowledge, making them hesitant to diversify. This highlights the need for market-oriented training and support to help farmers understand demand dynamics for alternative crops. Farmers may miss opportunities in special markets for specialty crops that could provide higher returns. Understanding consumer preferences can guide farmers to select crops that are in demand locally or regionally.
10. **High Interest Rates from Middlemen:** A notable number of farmers are impacted by high-interest rates, which may deter them from seeking financial assistance for diversification. Addressing this issue may involve creating more favourable lending conditions for farmers. Farmers may rely on loans from middlemen to finance inputs such as seeds, fertilizers, and pesticides. High-interest rates increase the overall cost of these loans, making it more expensive for farmers to cultivate alternative crops.
11. **Soil Suitability and Preparation:** More than half the respondents face constraints related to soil conditions, indicating the need for improved soil management practices and support for soil testing services.
12. **High Initial Costs and Financial Risk:** The high initial investment required for diversification is a severe constraint for many, underscoring the need for financial products tailored to farmers venturing into new crops. High initial costs associated with cultivating alternative crops can significantly impact farmers' decisions to diversify from traditional crops. One major factor is the expense of seeds and planting materials; high-quality seeds, particularly hybrid or genetically modified varieties, tend to be considerably more expensive than conventional seeds. Additionally, alternative crops may necessitate specialized fertilizers and pest management strategies, which further contribute to the initial investment. Farmers might also face the need to purchase or lease new equipment tailored to the specific requirements of alternative crops, including different planting or harvesting tools
13. **Fluctuation in Market Prices:** Most farmers reported severe constraints due to unstable market prices, which can danger financial returns from diversified crops. Implementing price stabilization measures could be beneficial. The market price of alternative crops can fluctuate based on the availability of the crop during specific seasons. When supply exceeds demand, prices may drop, and vice versa. For example, if too many farmers switch to growing the same alternative crop, the market could become saturated, leading to lower prices. It illustrates that farmers in the region face a multitude of constraints when considering crop diversification, with the majority reporting severe challenges. Addressing these constraints through targeted interventions in education, financial support, labour training, and market access could help facilitate successful diversification efforts, ultimately leading to more resilient agricultural practice.

Table 1 shows the challenges farmers face in diversifying summer paddy crops in Bhandara district. A significant 98.33% of farmers report serious obstacles. Key issues include a lack of knowledge about other crops (47.5%), the high cost and late availability of high-yielding variety seeds (46.66%), and uncertain weather conditions (46.66%). Labor shortages (100%) and unskilled workers (53.33%) also make diversification difficult. Financial problems, like high interest rates from middlemen and changing market prices, add to these challenges. To help farmers, it's important to address these issues through training programs and better access to resources.

Table 2: Distribution of respondents according to their constraints in diversification

Sr. No.	Category	Respondents (n = 120)	
		Frequency	Percentage
1	Less constraints	00	00.00
2	Moderate constraints	02	01.66
3	Most Severe constraints	118	98.33
	Total	120	100.00
Mean = 77.81			

It is evident from the table 2 that majority 98.33 per cent of the respondents had severe constraints in constraints in diversification followed by moderate (01.66%) and less (00.00%) constraints respectively. The high number of respondents in the "most severe constraints" category for constraints in diversification variable likely reflects that farmers face significant challenges when trying to diversify their crops. The findings on labor scarcity (100% severe constraint) labor shortages during peak periods are a primary obstacle in crop diversification across Maharashtra.

Relational analysis

In order to find out the relationship between selected personal, socio-economic, situational, communicational and psychological characteristics of respondents with constraints in diversification of summer paddy growers. The results obtained from relational analysis of knowledge, attitude and adoption has been presented in Table 3.

Table 3: Correlation coefficient of selected characteristics of the respondents with their constraints in diversification

Sr. No.	Independent variable	Correlation coefficient
1	Age	0.1692 NS
2	Education	-0.5342**
3	Land holding	0.1879*
4	Annual income	-0.2234**
5	Area under summer paddy	0.062 NS
6	farming experience	-0.1922*
7	Cropping intensity	0.1993*
8	Irrigation facility	-0.3843**
9	Source of information	-0.1807*
10	Economic motivation	-0.1792*
11	Risk orientation	-0.1872*

**Significant at 0.01 level of probability
* Significant at 0.05 level of probability
N.S. – non significant

The correlation coefficient (r) was used in order to find out the relationship between the constraints in diversification and some selected independent variables *viz.*, farming experience, sources of information, economic motivation, risk orientation were negative but significantly correlated with the constraints in diversification of summer paddy at

0.05 level of probability are highly negative significant with constraints in diversification of summer paddy crop at 0.01 level of probability. Whereas, age, area under summer paddy is non-significantly associated with overall constraints in diversification.

Conclusion

Addressing the challenges faced by farmers in diversifying crops is crucial for the agricultural progress in Bhandara district. The study emphasizes that effective solutions are needed to promote diversification from summer paddy to alternative crops. One of the primary issues is the lack of knowledge about alternative crops. To overcome this, farmers need better access to information through training programs and awareness campaigns. These programs should focus on educating farmers about alternative crops like sesame, green gram, and vegetables, which are well-suited to the region and require less irrigation compared to paddy. Improving financial support is another important factor. Many farmers struggle with the high costs of seeds, labour, and other inputs. Providing subsidies, low-interest loans, and financial incentives can help farmers manage these costs more effectively, making it easier for them to invest in diversified crops. ensuring the timely availability of seeds and resources is also critical. Delays in accessing high-yielding variety (HYV) seeds or other essential resources make it difficult for farmers to switch crops. Better infrastructure, supply chain management, and local seed banks can help resolve these issues. Additionally, the study suggests focusing on crops that are less resource-intensive, such as sesame and green gram, which need less water and can provide better returns. These crops also contribute to sustainable farming practices, improving soil health and reducing the need for chemical inputs. strategic interventions that address knowledge gaps, financial challenges, and resource availability are essential for empowering farmers to diversify their crops. By doing so, farmers can improve their incomes, reduce their dependency on a single crop, and minimize risks related to market fluctuations and climate uncertainty. This shift towards diversified cropping systems will also promote long-term agricultural sustainability in the region.

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