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Perceptions on the Selection of Seed Varieties for Paddy Farming in Palakkad: A Qualitative Inquiry

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HIGHLIGHTS

- The present research has used a qualitative approach to identify the pattern of selection of seed varieties of paddy.
- It was found that the selection between traditional and hybrid paddy seed varieties has a crucial role in the enhancement of productivity.
- It was found that the choice between traditional and hybrid seeds is mainly based on climatic conditions, yield potential and input cost.

ARTICLE INFO

Keywords: Paddy cultivation, Seed varieties, Traditional seeds, Hybrid seeds.

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ABSTRACT

Paddy is an important item of food and a source of livelihood in Palakkad district of Kerala. However, it was observed that the productivity of paddy cultivation has been declining in Palakkad. Earlier research has identified some of the causes of the decline in the productivity of paddy. But the decision on the selection of seed varieties of paddy remains under-investigated in a qualitative manner. Considering this context, the present research attempted to analyse the selection-decision of seed varieties of paddy in Palakkad. To meet this goal, the present research has used a qualitative approach. The primary information was collected through in-depth interviews and focus group discussions with respondents in 2025. These responses were analysed by word-cloud analytics. Based on the analysis, it was found that farmers used the traditional seed varieties of paddy in the 'dry season' and hybrid varieties in the 'wet season'. The major factors that influenced their seed selection were climate conditions, satisfaction from farming, size of the holding, availability of irrigation facilities, input costs, yield capacity, market for paddy and nature of Government support. Based on these findings, the present research argues that novel paddy varieties of seeds should be developed to suit the region-specific climate and socio-economic conditions of paddy farmers in Palakkad.

INTRODUCTION

Kerala has a unique geographic and climatic situation, ranging from high rainfall zones to rain shadow regions as compared to other major states in India. Based on the climatic and food habits of the people, paddy has been the major food crop in Kerala. It occupies 7.1 per cent of the total cropped area. However, the production and productivity of the paddy have been declining in Kerala. For instance, the productivity of paddy amounts to 2790 kilograms/hectare in Kerala. Punjab has the highest yield (3952 kilogram/hectare) among major states in India. In Kerala, districts such as Palakkad, Alappuzha, Thrissur, and Kottayam together account for 81.2 per cent of the total rice production. They account for 41 per cent, 16 per cent, 14 per cent, and 9 per cent in the total rice production, respectively (Kerala Economic Review, 2024).

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There are various causes in the decline of productivity of paddy production such as sup-optimum size of paddy fields, inadequate access to credit to farmers, lack of scientific knowledge to farmers, poor technological capacity, competition from other crops, shifting of paddy field into real estate, lack of scientific knowledge on farming, lack of crop-specific government initiatives and wrong selection of paddy varieties for cultivation (Sabu & Roy, 2024; Kerala Economic Review, 2024).

Selection of paddy varieties for cultivation depends on various socio-economic, cultural, technological, economic and institutional factors. The attributes such as maturity period, yield potential, tolerance to stress, grain quality and size of the grain is crucial (Mehar et al., 2017). Generally, paddy-seed varieties may be divided into traditional and hybrid seeds. In addition to these biological classifications, cooking quality and stress tolerance of seed varieties are also pivotal. Moreover, the gender of the farmer and region-specific factors would also influence their decisions of choice (Addison et al., 2014; Mehar et al., 2017; Sharma et al., 2025). From these observations from the previous literature, it may be found that there are a variety of factors that influenced the decision on the selection of seeds and the productivity of paddy cultivation.

Based on the productivity decline and problems of paddy farmers, the Government of India (GoI) and the Government of Kerala (GoK) initiated various steps. Various schemes involve producing and distributing certified seeds. For instance, the 'Registered Seed Growers Programme (RSGP)' and 'Rice Development Scheme' were introduced to help farmers (Kerala Economic Review, 2024). But the impact of these initiatives and the seed selection pattern of paddy is seldom analysed.

Although there is ample earlier research in this area, they seldom examined the choice pattern and impact of the selection of varieties of paddy seeds in Kerala. In this context, the present research attempted to examine the selection of paddy seed varieties in Palakkad. In addition, it analysed the impact of the selection of traditional and hybrid seeds in a qualitative manner. This novel area and approach will fill the existing research gap. Furthermore, it has contributed to the existing literature by suggesting measures to improve the choice of paddy seed varieties to improve productivity.

METHODOLOGY

The present research attempts to accomplish the research goals through a qualitative survey in Palakkad. The present research has used probability stratified sampling method to identify the respondents. Firstly, the present research divided the sample district into Block Panchayats. Population was collected from the records of Krishi Bhavans, farmer organisations, Local Self-Governments (LSGs) and village offices. From each Block Panchayath, the total number of paddy farmers was collected. Successively, farmers were stratified with respect to their characteristics. These characteristics are: (i) experience of farmers; (ii) season of cultivation; (iii) size of holding of farmers; (iv) gender of farmers; (v) age group of farmers and (vi) educational qualification of farmers. Farmers were stratified with respect to their socio-economic and agricultural characteristics. Subsequently, farmers were selected randomly from each stratum (Hounyo & Lahiri, 2023). Subsequently, semi-structured schedule and notes for focus group discussions were prepared. The semi-structured schedule contained four sections. They were: (i) socio-economic characteristics of paddy farmers in Palakkad district; (ii) nature of section of paddy varieties of seeds; (iii) causes of selection pattern of paddy varieties of seeds and (iv) constraints in the selection pattern of paddy varieties of seeds. The themes were finalized with respect to the review of previous theoretical and empirical literature and the pilot survey. Each theme categorized into sub-themes for clarity. The standardisation of the research instrument was done through following steps: (i) a clear-definition of research objectives; (ii) definition of themes; (iii) clarity on each sub-theme; (iv) framing of items; (vi) development of items and (vii) ensured validity and consistency.

Based on the stratification, this study purposively selected 80 paddy farmers to collect primary information. The number of farmers was selected with respect to the stratification of framer groups. The categories are: (i) size of paddy fields of farmers; (ii) gender of the farmers and (iii) age group of the farmers. Respondents were finalized with respect to their convenience and appointment. Qualitative data was gathered through in-depth interviews and discussions. It allowed them to share and discuss their views openly. At the same time, interviews and discussions were followed a structured format to collect the information based on research goals (Sekhri, 2025). Each interview was lasted approximately 30 to 45 minutes in their regional language.

Subsequently, collected information were categorised and transcripts prepared. The audio recordings were transcribed into text, using a software called 'automated transcription software'. After initial verbatim transcription, transcripts were reviewed and cross checked with the recording for accuracy. Subsequently, transcripts were marked through different inks and pasted slips for each theme. Secondly, initial codes were prepared. Successively, codes were modified repeatedly and broader themes developed. Subsequently, sub-themes were developed for each main theme (Braun & Clarke, 2006; Silverman & Patterson, 2021; Sekhri et al., 2025).

Word cloud analytics was applied to systematically analyse the transcripts. The verbatim quotes collected from the primary survey were compiled and cleaned to remove redundancies and irrelevant words. The analysis was performed using the Python programming language (Word Cloud and matplotlib libraries), which enabled the generation of word clouds that visually display the most frequently used terms. In this visualization, the size of each word corresponds to its relative frequency in the text corpus, making it easier to identify dominant concepts and issues (Heimerl et al., 2014; Jaidka et al., 2020). Furthermore, keywords such as traditional, hybrid, cost, climate, government support and impact were weighted to highlight their significance in the context of farmers' perceptions. This method was provided a quick, rigorous, and replicable way of identifying dominant themes in the data (DePaolo & Wilkinson, 2014).

RESULTS

The findings of this research are exhibited in Figures 1-4. The causes for the selection of 'hybrid' and 'traditional' varieties of paddy are interwoven and exhibited in these four figures. It is evident that most of the farmers were cultivated the traditional

varieties of paddy seeds in Palakkad district in Kerala. At the same time, their preference were mainly due to the 'climate'. There are various factors that influenced the decision-making process regarding the selection of paddy seed varieties in Palakkad. They are: (i) satisfaction from paddy farming; (ii) societal practices of paddy cultivation; (iii) eco-friendly practices of paddy farming; (iv) yield capacity of hybrid and traditional seeds; (v) economies of scale; (vi) input cost; (vii) fertilizers and pesticides application on hybrid and traditional varieties of seeds; (viii) paddy farming and total farm income (ix) differences of productivity of traditional and hybrid seeds; (x) level of government support; (xi) profit prospects from paddy farming and (xii) debt level of paddy farmers. It may be inferred that 'climate' is one of the major factors that influenced the selection of paddy varieties of seeds for farming. If the climatic conditions were more favourable, they would have cultivated 'hybrid varieties' of seeds in Palakkad district in Kerala. Farmers expressed that they wish to cultivate 'hybrid varieties' of paddy both in 'dry' and 'wet' seasons. Howevevr the irrigation facilities were not always conducive to all farmers to cultivate hybrid varieties of paddy.

Therefore, they switched their options and cultivate traditional varieties in 'dry' season and hybrid varieties of seeds in 'wet' season. Farmers also emphasized that government support is necessary to manage the challenges like flood and water scarcity.

Secondly, 'environmental protection' is a concern raised by farmers cultivating traditional seeds of paddy. Farmers presumed that 'traditional seeds' requires low level of fertilizers and pesticides as compared to farming of 'hybrid seeds' in the district. Furthermore, 'satisfaction from paddy farming' is a crucial factor in determining the selection of seeds for paddy farming. Some farmers expressed that they got satisfaction from the cultivation of 'traditional' varieties of seeds. Few farmers expressed that they got satisfaction from the cultivation of 'hybrid' seeds of paddy. 'Farm income' is a crucial factor in determining the selection of seed varieties of paddy of farmers.

Majority of the farmers prefer to cultivate the hybrid varieties of seeds if they are not constrained to climate conditions.

They believed that hybrid varieties can enhance the productivity of paddy and thereby total farm income. Productivity and input costs are interwoven and it will affect the profit from paddy farming.

Figure 1. Selection of paddy seed varieties of paddy farmers in dry season in Palakkad
Source: Compiled by authors from qualitative data

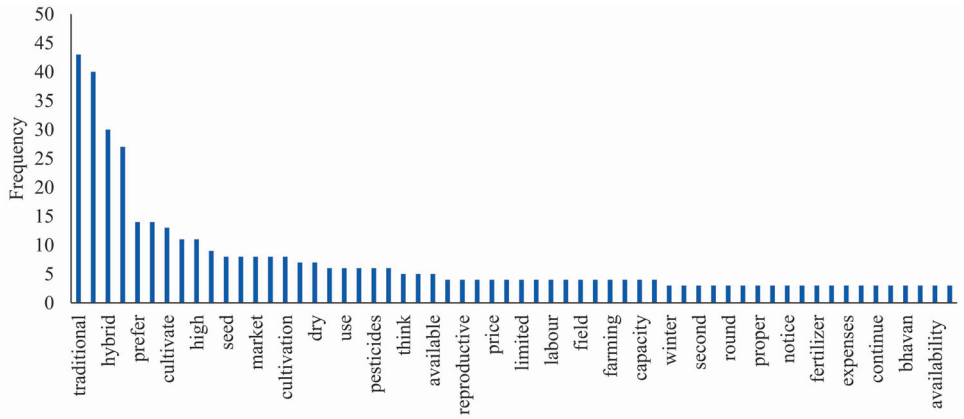

Figure 2. Frequency of selection of seed varieties of paddy farmers in dry season
Source: Compiled by authors from qualitative data

Figure 3. Selection decision of seed varieties of paddy in the wet-season in Palakkad
Source: Compiled by authors from qualitative data

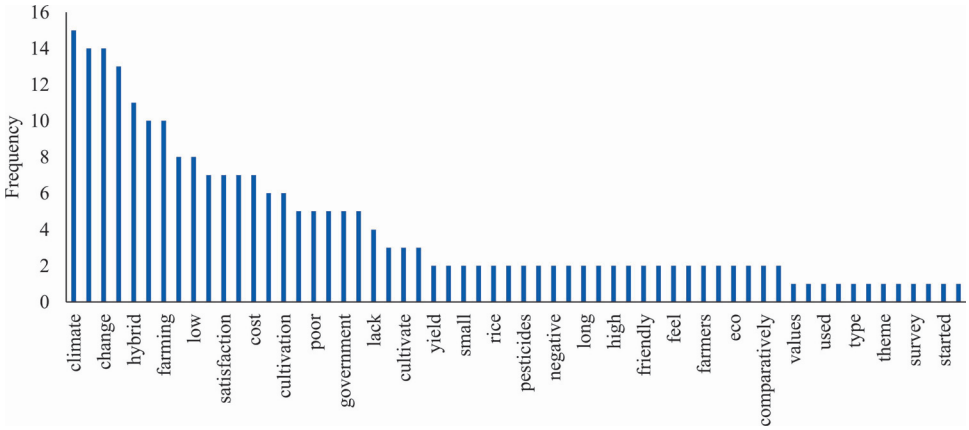

Figure 4. Decision on seed varieties of paddy in wet season in Palakkad
Source: Compiled by authors from qualitative data

'Economies of scale' was helpful in the large-scale farmers to reduce their cost of operations. At the same time, small scale farmers revealed that their input costs are high and cost of operations.

DISCUSSION

The present research enquired the perceptions on the major selection criteria of farmers on varieties of paddy seeds for farming in Palakkad. A qualitative research approach was followed for the collection and analysis of data. Analysis revealed that there are mixed factors that which determined the selection of seed varieties of paddy. 'Climate' is one of the major factors that which determined the selection of varieties of paddy. Generally, farmers selected 'hybrid seeds' of paddy in 'wet' season while traditional varieties applied in 'summer' season. Furthermore, farmers decided to cultivate both traditional and hybrid varieties of seeds during the 'winter' season that which exhibited a mixed pattern. Apart from 'climate', there are various factors that which determined the selection of varieties of seeds. They are: (i) size of the paddy field; (ii) profit for paddy; (iii) satisfaction of farming in a region; (iv) fertilizer and pesticides availability and its cost; (v) yield potential of seeds; (vi) seed and labour and (vii) government support for farming.

These findings seem to be directly and indirectly mentioned in the earlier literature on the various dimensions of paddy farming. For instance, earlier literature indicated that 'supportive climatic' are necessary to execute any paddy farming plan. Perceptions on 'climate change' was a crucial factor in determining the paddy farming. Adoption of 'climate smart agriculture' seem to be one of the critical factors to improve the climate resilience of farmers (Pradhan et al., 2025). Furthermore, cultivation of 'hybrid seeds' require optimum application of fertilisers, pesticides and water as compared to 'traditional' varieties of seeds. Previous findings indicate that traditional varieties have more salinity and flood tolerance capacities as compared to hybrid varieties of seeds. Climate and irrigation facilities are seemed to be closely linked to paddy farming (Sowmya & Padannakkad, 2016; Koppa & Amarnath, 2021; Shafeeqa et al., 2022; Ashokkumar et al., 2023; Vivekanandhan et al., 2024)

Secondly, the present research found that 'size of the landholdings' is one of the most prominent factors that which influenced the selection of paddy seeds. Large scale farms along with adequate irrigation facilities prefer to cultivate hybrid varieties of seeds irrespective of seasons. On the contrary, 'small-scale farms 'prefer to cultivate traditional varieties of paddy especially in 'dry'

season. This finding seems to be indirectly validated by the earlier literature on decision of choice in farming (Bannor et al., 2020; Krishnankutty et al., 2021; Prasad et al., 2022).

Thirdly, the present research inferred that 'profit' is a crucial factor in determining the decision of the selection of paddy seeds. Profit is mainly determined by the market demand. Market demand is often related to cooking quality, grain quality and biochemical qualities. Previous literature indicated that 'boldness of the grain' one of the major factors in determining the demand of rice varieties (Mehar et al., 2017; Suma et al., 2018). Apart from these factors, there are some micro-factors such as yield and resistance capacity of seeds also influenced the decision-making process. Previous literature was mentioned that yield-capacity of seeds is an important trait for the preference of cultivation (Mehar, 2017; Sharma et al., 2025).

Finally, present research revealed that some farmers are attached to traditional varieties of paddy seeds with respect to cultural factor like satisfaction from farming. Earlier literature suggested that protection of traditional varieties is essential. It hints that traditional varieties of seeds are tools for generic revisions, seed development and ecological conservation (Thomas, 2011; Ahaljith, 2019; Bannor et al., 2020; Prasad et al., 2022).

CONCLUSION

The research attempted to identify the criterion for the selection of paddy varieties of seeds in Palakkad district of Kerala. Findings indicate that majority of the farmers prefer traditional varieties of paddy in 'dry' season. At the same time, farmers prefer hybrid varieties of paddy seeds in 'wet' season. Apart from climatic and irrigation facilities, factors that which influenced the selection of paddy seeds were size of the landholdings, financing options, market demand, knowledge and attitude of the farmers, yield capacity, pest and disease resistance of seed, cultural heredity and level of government support. Based on these findings, this research suggests that Krishibahanvans can initiate 'paddy-specific' awareness programmes on choices of seeds. Furthermore, support to optimise irrigation facilities for farmers will be helpful to enhance their ambit of choices. Development of novel paddy-varieties of seeds to suit the region-specific climate and socio-economic conditions of paddy farmers is also essential.

DECLARATIONS

Ethics approval and informed consent: Informed consent was sought from the respondents regarding the study during the course of the data collection.

Conflict of interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

The authors declare that during the preparation of this work, they thoroughly reviewed, revised, and edited the content as needed. The authors take full responsibility for the final content of this publication.

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