



# CHALLENGES AND OPPORTUNITIES OF PADDY FARMING IN PALAKKAD

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## ABSTRACT

*Paddy cultivation in palakkad confronts declining cultivation area and production, coupled with productivity fluctuations. These trends pose significant threats to food security and farmer livelihoods. This research delves into the challenges encountered by paddy farmers in Palakkad and identifies opportunities within the sector. Focusing on Vallapuzha Panchayath ,it aims to provide insights for growth in this vital agricultural domain.*

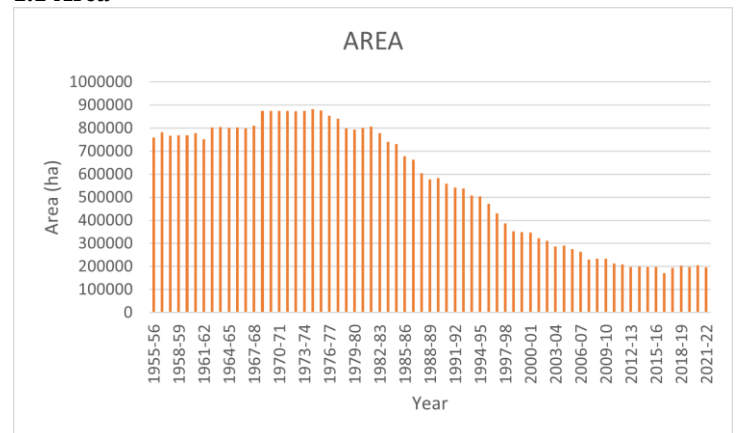
**INDEX TERMS** – *Agricultural laborers, Challenges, machinery, Opportunities, Palakkad*

## 1.INTRODUCTION

The area under paddy cultivation in kerala has been rapidly diminishing since the 1980s,(Fig 1). The production figures have also witnessed a decline(Fig 2), Season-wise data of rice reveals that the area under Virippu (autumn) and Mundakan (winter) has declined, while that of Punja (summer) crop has increased in 2021-22 over the previous year. The historical trajectory of rice productivity in the Kerala, offers a compelling narrative of agricultural evolution. Beginning in the mid-20th century, rice productivity in the area stood at a modest 1,144 kilograms per hectare in 1955-56. Over the ensuing decades, this figure experienced fluctuations, punctuated by gradual improvements, reaching a peak of 2,920 kilograms per hectare in 2018-19. This significant increase in productivity reflects advancements in agricultural practices, technology, and perhaps changing environmental conditions. However, in the subsequent years, there was a slight reduction, with productivity settling at 2,872 kilograms per hectare in 2021-22.

The cultivation of paddy in Palakkad, the leading producer in the state demonstrates a noteworthy consistency in its agricultural metrics over the past three years. The area dedicated to paddy farming has exhibited minimal fluctuations, with a subtle decline from 2018-19 to 2020-21.(fig 4) In parallel, the production of paddy has experienced variations, notably soaring from 2018-19 to 2020-21, after a dip in the intervening year(fig 5). There is fluctuations in productivity , which peaked in 2019-20(fig 6), and slightly decreased in the following years following the trend exhibited by the state.

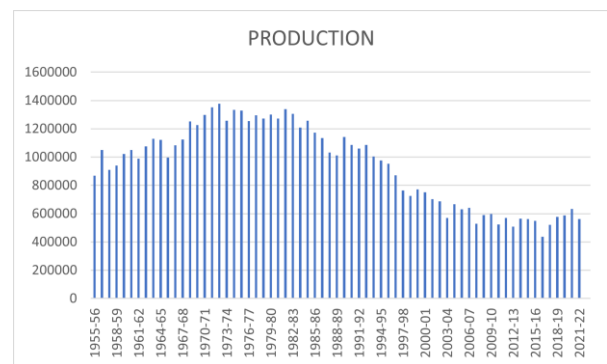
### 1.1 Area



**Figure 1-Area under paddy farming over the years in kerala**

There has been a prominent decline in paddy cultivation in Kerala since the 1980s, after 2006 the area is more or less stable with slight fluctuations from year to year.

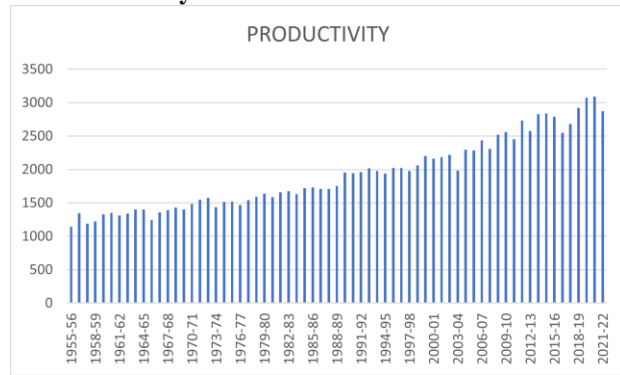
### 1.2 Production



**Figure 2-Production in metric tonnes over the years in kerala**

The production has been decreasing since the 1980s. There has been an increase in production from 2017-18, but the year 2021-22 marked a decline."

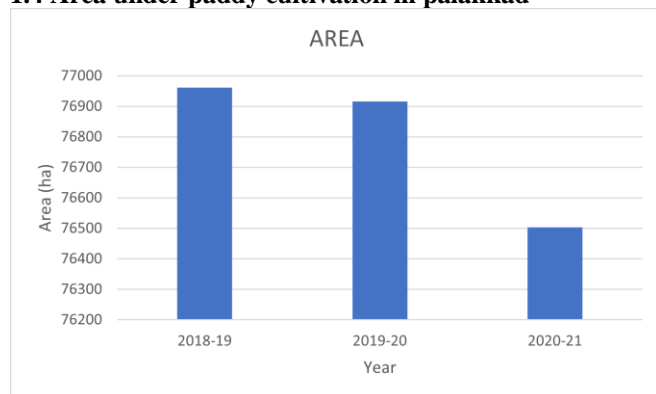
### 1.3 Productivity



**Figure 3- Productivity in kg/ha over the years in kerala**

There has been increasing productivity in the case of rice, which peaked in 2020-21, but the year 2021-22 underwent a decline compared to previous years

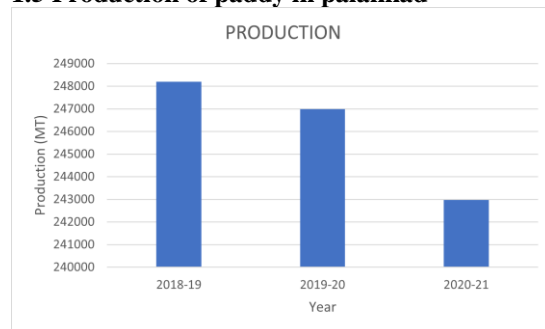
### 1.4 Area under paddy cultivation in palakkad



**Figure 4- Area under paddy cultivation in palakkad from 2018-21**

The area under paddy farming in palakkad is declining year by year

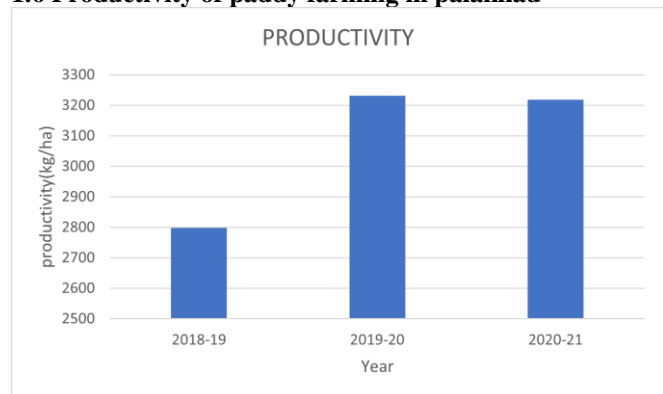
### 1.5 Production of paddy in palakkad



**Figure 5- Production from paddy farming in palakkad (2018-21)**

The production is decreasing year by year.

### 1.6 Productivity of paddy farming in palakkad



**Figure 6- Productivity from paddy farming in palakkad( 2018-21)**

The productivity has been fluctuating over the last three years.[1]

## 2.STATEMENT OF THE PROBLEM

The paddy cultivation landscape in Kerala, particularly within the Palakkad region, has undergone significant transformations over the past few decades. A primary concern in this evolving agricultural scenario is the persistent and alarming decline in the area dedicated to paddy cultivation, a trend that has endured since the 1980s. This ongoing reduction in cultivated land poses a formidable threat to the sustainability of paddy farming in the region, potentially jeopardizing both food security and the livelihoods of local farmers. Adding to these challenges is the recent emergence of a second critical issue: the year-to-year fluctuations in production and productivity. These unpredictable variations create considerable obstacles for farmers, making it exceedingly difficult to plan their agricultural activities and secure a stable income. In response to this complex agricultural landscape, this paper examines the challenges



faced by farmers in the area, with a specific focus on the Vallapuzha Panchayath. Furthermore, it endeavours to shed light on the potential opportunities that exist within the realm of paddy cultivation, offering insights to enhance the prospects of farmers in this dynamic environment.

### Objectives of the study

1. Analyse the existing challenges and constraints faced by paddy farmers in the Palakkad region, with a focus on understanding the factors that hinder productivity, cultivation area, and economic stability within the sector.
2. Explore the scope of paddy farming in the region, suggest potential avenues and strategies for enhancing paddy farming practices, productivity, and economic viability in the Palakkad region, with the goal of identifying sustainable opportunities and innovative approaches for local farmers.

### 3.METHODOLOGY OF STUDY

#### 3.1 Sampling and Participants:

The research sampling size consisted of 53 participants surveyed from three different 'padashekarams'(paddy polders) in Vallapuzha village. The selection aimed to capture diverse perspectives and experiences within the local paddy farming community.

#### 3.2 Survey Questions

1. What are the major problems or challenges you face in paddy farming?
2. Can you rank the identified problems in order of their significance or impact on your paddy farming activities?

#### 3.3 Data Collection Methods

a. **Observations:** Direct observations of paddy farming activities, crop management were conducted to assess on-ground implementation.

b. **Surveys:** Structured questionnaires were administered to the selected participants to gather their feedback, insights, and perceptions paddy farming practices.

c. **Financial Analysis:** Financial data pertaining to the costs incurred during cultivation, which includes expenses for materials, equipment, and labour, were meticulously collected from presidents of padashekarams. This information was analysed to assess the economic feasibility.

#### 3.4 Data Analysis

Data collected from observations, surveys, and financial analysis were subjected to rigorous quantitative and qualitative analysis. Statistical tools and software were employed to analyse survey responses, while qualitative data was categorized, coded, and thematically analysed to identify

trends and patterns. The challenges in paddy farming were ranked based on the ratings given by participants on a scale of 1 to 5.

#### 3.4 Limitations

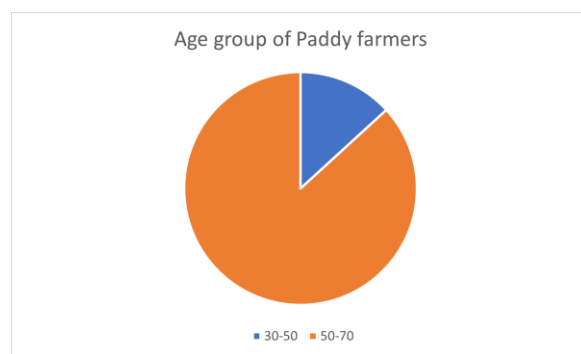
The study was conducted within the specific geographical context of Vallapuzha village, which may limit the generalizability of the findings to broader paddy farming regions. Additionally, as with any self-reported data, there may be potential biases in participant responses, which we have taken into consideration during our analysis. Despite these limitations, the research provides valuable insights on paddy farming in this particular area.

### 4.DATA ANALYSIS AND INTERPRETATION

Following the completion of data collection involving a sample of 53 farmers through both questionnaire administration and personal interviews, the subsequent phase involves data processing. This stage encompasses tasks such as data editing, classification, and analysis of the collected Primary Data. The Primary Data has been transformed into a coded format and subjected to analysis employing various charts and graphs. Software tools like Excel is utilized for this purpose. After the graphical representation, the data is then interpreted to derive meaningful insights.

#### 4.1 Age of farmers

Age group	Number of farmers	Percentage
30-50	7	13.3
50-70	46	86.7

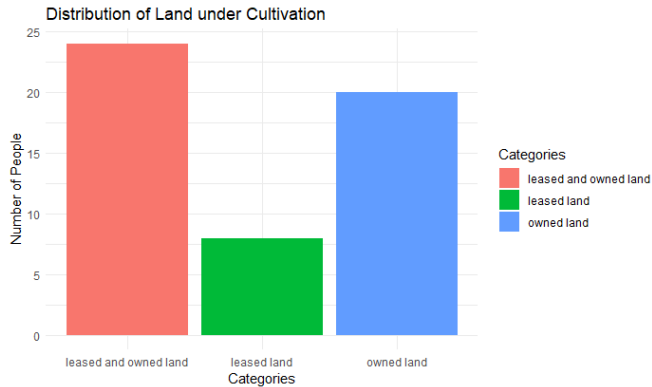


Most farmers, comprising 86.7%, fall within the age group of 50 to 70. This demographic distribution strongly implies that the younger generation is notably absent from paddy farming, which is a significant contributing factor to the decline in cultivated area.



#### 4.2 Nature of land area under cultivation

Nature of land area under cultivation	No of farmers
Leased and owned land	24
Leased land	8
Owned land	20

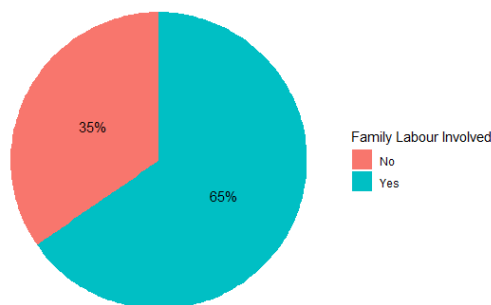


From the data, it is clear that, 24 farmers cultivate on both owned and leased land. 20 farmers used owned land only, 8 farmers cultivated on leased land only. Only a few farmers are willing to cultivate by taking land on lease.

#### 4.3 Involvement of family labour

Family labour involvement	No of farmers
Yes	34
No	18

Family Labour Involvement

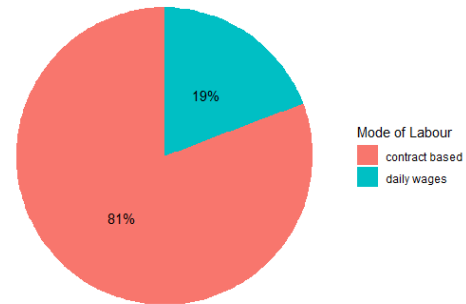


Notably, a significant majority, constituting 65% of the surveyed individuals, reported active involvement of family labour in their cultivation practices. In contrast, the remaining 35% indicated that family labour was not engaged in their cultivation activities.

#### 4.4 Mode of labour

Mode of labour	Number of farmers
Contract based	42
Daily wages	10

Mode of Labour

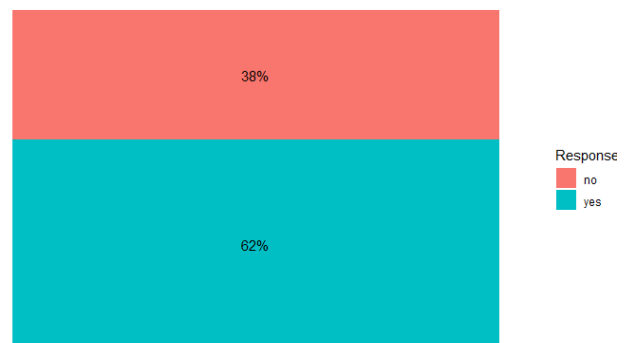


It is clear from the data that 81% of farmers got labourers from contractors while 19% of them employed labourers in daily wages form.

#### 4.5 Availability of farm machinery

Shortage of farm machinery	Number of farmers
Yes	32
No	20

Shortage of Farm Machinery



#### 4.6 Problems of paddy cultivation in the region

##### 4.6.1 Water Scarcity:

One of the most pressing concerns voiced by the majority of respondents was the significant decline in water availability, particularly impacting paddy cultivation. As captured in the nostalgia of a respondent, there were times when the region thrived with three cropping seasons, but the present scenario restricts this to merely one. "It's like nature's pendulum. One year we're flooded, the next, we're parched," lamented another participant. This erratic pattern, tied to climatic uncertainty, leaves farmers on an ever-shifting footing, trying to anticipate



and adapt. Echoing this sentiment, a respondent mentioned the absence of a river in the village as a significant exacerbating factor, stating, "Our fields long for a river's embrace, but it's just a dream for now." According to a farmer's statement, the absence of proper irrigation facility in the village is a major problem, further exacerbated by the fact that the village is not currently covered by any irrigation projects.

**4.6.2 Changing Labour Dynamics and Shortage of Farm Machinery**

Diving into labour dynamics, respondents painted a contrasting picture of the past and present. As one interviewee reminisced, "There was a time when our fields buzzed with native laborers, but now they chase different dreams in the city." This shift towards urban, non-agricultural jobs is not just an economic decision but a reflection of changing aspirations. Another intriguing transformation highlighted by a respondent is the emerging trend of contract-based labour, introducing a departure from traditional practices. Mechanization, too, has carved its own space in this evolving landscape. While tractors have become a common sight, planting machines remain elusive, as mentioned by one farmer. In contrast, harvesters have become indispensable, but their availability sometimes poses challenges. "We're at the mercy of neighbouring states when it comes to certain machinery," shared another respondent. This reliance, juxtaposed with a lack of subsidies for mechanized farming, was a recurring concern among participants.

**4.6.3 Pig Attack**

Wildlife interactions have always been a part of farming, but the village's challenge with pig attacks seems to have intensified. Electrified fences, as described by a respondent, seemed like a beacon of hope. However, the tales of accidents and fatalities associated with these fences have given them a sinister undertone. The narratives oscillate between efficacy and fear. As one farmer put it, "The fences protect our crops, but at what cost?" This dilemma, layered with safety concerns, continues to haunt many in the village.

**4.6.4 Others**

Paddy cultivation, as the respondents described, is a symphony of challenges and aspirations. Seed quality emerged as a chorus among the voices, with many stressing the need for enhanced varieties. The delicate dance between fertilization and weed management was another motif, beautifully captured by a farmer's statement: "It's like tending to a child, knowing when to nurture and when to discipline." Market dynamics, too, resonated across narratives, with participants emphasizing both the value of their produce and the support they yearn for from the market and government.

**4.7 Overall ranking of the problems**

Given in the table is the ranking of the problems. Farmers were asked to rate these challenges on a scale of 1 to 5, with 1 indicating the lowest severity and 5 indicating the highest severity. The overall score, calculated by adding all the ratings given by farmers, is represented in the table. Additionally, the number of farmers who gave different ratings between 1 to 5 for each problem is also indicated.

Challenges	Overall score	Rank	1	2	3	4	5
1.Climatic variability	238	1	1	2	3	11	36
2.Shortage of farm machinery	198	2	2	4	12	23	12
3.Insufficient irrigation infrastructure	195	3	1	12	5	20	15
4.Lack of supply of climate resilient varieties	176	4	7	7	12	16	11
5.Excess growth of weeds	175	5	4	6	22	12	9
6.Lack of quality seeds	128	6	15	16	11	7	4
7.Pest and disease	120	7	16	19	11	7	1

**4.8 Economic viability of paddy farming**

In the given table below, the cost of paddy cultivation per hectare is calculated, along with the profit per hectare of paddy cultivation. These calculations are based on data collected from the presidents of Padashekarams through direct interviews.

Sl no	Components	Cost per ha(rs)
1	Hired human labour	33200
2	Machine labour	8900
3	Seed	3500
4	FYM and Chemical fertilizers	8300
5	Plant protection	2000
6	Land tax and irrigation	210
7	Repair and maintenance charges of implements, machinery and building	120
8	Miscellaneous cost	1500
	Total cost	57730

Considering the returns, recent trends suggest that there is an average of 3000 kg/ ha productivity. Supply-co procures it and average rate of 28 rupees/kg .





So total returns =  $3000 \times 28 = 84000$   
Net profit per ha =  $84000 - 57730 = 26,270$  rs per ha

## 5.FINDINGS

**1. Demographic Shift in Cultivators:** The domain of paddy cultivation in Vallapuzha is currently dominated by farmers with a lengthy history in the occupation, having started at a young age. This generational shift and the reluctance of the younger generation present significant challenges.

**2. Climate Variability:** Unpredictable weather patterns, swinging between floods and droughts annually, intensify the challenges in paddy cultivation. Intense rainfall leads to runoff, eroding topsoil with high water-holding capacity, this combined with Excessive borewell digging exacerbates groundwater depletion, creating a destructive cycle.

**3. Insufficient irrigation infrastructure:** A notable lack of irrigation infrastructure, coupled with the absence of a proximate river, reduces cropping seasons. The absence of an effective rainwater storage system results in challenges during dry periods.

**4. Changing Labor Dynamics:** Indigenous workers are transitioning to different livelihoods, with laborers from neighbouring states filling the void. This shift appears to be driven by the prospect of consistent year-round earnings in alternative professions as opposed to the seasonal income from rice cultivation. Additionally, the study revealed the emergence of contract-based labour arrangements, representing a departure from longstanding agricultural practices, where labourers were available on daily wage basis.

**5. Mechanization Deficit:** There's a dependency on machinery from neighbouring states, which presents challenges concerning the consistency of equipment quality and its timely availability, subsequently affecting productivity.

**6. Wildlife Concerns:** Frequent wild boar intrusions and the associated risks of conventional electrification methods highlight the need for newer protective strategies.

**7. Weed Proliferation:** Inadequate knowledge about herbicide application and prevailing misconceptions contribute to the proliferation of weeds.

**8. Requirement of climate resilient varieties:** There should be supply of climate resilient varieties to farmers in the region. There is an urgent need to popularize such varieties.

## 6.SUGGESTIONS

1. Adoption of rice production methods that require less water, such as aerobic rice system, the system of rice intensification, alternate wetting and drying method and direct seeding, it is essential to raise awareness among farmers regarding these systems. Further research needs to be conducted to assess the suitability of these systems to this region.

2. Farmers in the Padashekarams region have the opportunity to foster collaboration and establish a new Farmer Producer Company. They can unite to initiate a Custom Hiring Centre, with financing options accessible through the National Agriculture Infrastructure Financing Facility under the Department of Agriculture and Farmers Welfare.[2]

3. To promote youth involvement in agriculture, it is imperative for both the central and state governments to implement more schemes. Furthermore, enhancing the effectiveness of existing initiatives such as ARYA (Attracting and Retaining Youth in Agriculture) implemented by ICAR (Indian Council of Agricultural Research) is essential. Establishing awards and recognition programs for young farmers who excel in agricultural innovation is also Necessary.[3]

4. Wild Boar Deterrence: Implement the use of Borep, an olfactory repellent by Kerala Agricultural University (KAU), to reduce pig attacks, ensuring better crop safety and yield.[4]

5. Educational Initiatives on Weed Management: Offer comprehensive training on herbicide application techniques, eradicating misconceptions and fostering effective weed control strategies.

6. Implement sustainable farming practices, including conservation tillage, crop rotation, and cover cropping, to minimize soil disturbance and erosion. Additionally, use organic matter and mulching to improve soil structure. Plant grass strips, windbreaks, and erosion control structures to reduce wind and water erosion in open fields.

7. Promote rainwater harvesting and aquifer recharge to replenish groundwater levels. Enforce laws and regulations to regulate borewell drilling and penalize illegal or unauthorized digging.

8. Key areas of improvement in irrigation infrastructure include promoting larger rainwater harvesting tanks, diversifying rainwater usage, increasing awareness through outreach programs, streamlining government subsidy processes, addressing tap connection issues in rain water



harvesting tanks, emphasizing regular tank maintenance, promoting sustainable gutter materials, encouraging diverse roofing materials, monitoring system sustainability, promoting year-round rainwater use, and assessing tank capacity to meet actual needs effectively.[5]

## 7.CONCLUSION

Paddy cultivation in Palakkad is at a crossroads, confronted by both natural and socio-economic challenges. From shifting labour dynamics to climate unpredictability, farmers face a myriad of obstacles. However, through strategic interventions and collaborative efforts, there is potential to turn these challenges into opportunities. Proper implementation of the above suggestions, combined with continued research and support, can set the course for a sustainable and prosperous future in paddy cultivation.

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