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Effect of Joint Liability Groups on the Improvement of Paddy Farming in Thrissur District, Kerala

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HIGHLIGHTS

- Optimum production of paddy is vital for food security, while its area of cultivation has been declining in Kerala.
- Sub-optimum size of land holding is one of the major constraints in the ever-rising cost of paddy cultivation in Kerala.
- Joint liability groups have improved paddy farming in Thrissur district.

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ABSTRACT

To overcome the obstacles such as small landholdings, high cost of labour, shortage of credit, and modest mechanisation, collective farming initiatives like joint liability groups were launched in Kerala. Earlier research on joint liability groups in the agricultural arena of Kerala has rarely examined the effects of joint liability groups (JLGs) on the improvement of paddy cultivation. To find out the effect of JLGs, the present study has collected primary data from the Thrissur district of Kerala. The primary survey was conducted from January 2025 to April 2025. Statistical tools such as analysis of variance (ANOVA) and post-hoc tests were used to analyse the data. The findings indicated that operations of joint liability groups are effective in improving the production of paddy, reducing labour cost, and improving the marketing facilities of paddy cultivation in Thrissur district. The study recommends that the state government should support the joint liability groups to endure and triumph in paddy cultivation.

INTRODUCTION

The productivity of paddy has been declining for the last three decades in Kerala. For instance, in 2023-24, the area under paddy cultivation was 1.8 lakh hectares, showing a decrease of 5.9 per cent as compared to 2022-23. There are various causes that hinder the growth of paddy production in Kerala. Considering various problems in paddy cultivation, the Government of Kerala (GoK) has implemented specific schemes to improve the production of paddy. Most of these initiatives work as part of the state planning process and annual budgets (Sajesh, 2013; Titus, 2020; Vijayan, 2022; Kerala Economic Review, 2024).

Apart from the implementation of various initiatives of Government of Kerala, Kerala had marginal improvement in the production of paddy. The major obstacles of paddy farmers are small and fragmented holdings, poor access to credit, high cost of labour, inadequate marketing facilities, and shortage of labour. Group farming will be beneficial to access the benefits of 'economies of scale' and 'accessibility credit' (Goulet, 2013; Rejula et al., 2017; Bharath et al., 2024). Based on the benefits of collective farming, an initiative has been started in Kerala. i.e. joint liability groups. A 'JLG' is an informal association consisting of farmers who unite to secure a bank loan and operate joint farms collectively as a group. Members of JLGs collectively provide a joint commitment to the bank and facilitate their access to loans. JLGs liability groups have an active involvement in a wide range of activities in agriculture, thereby fostering economic growth and food security. Joint liability groups continued collective farming by organising farmers to take

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up lease land farming to empower farmers economically and help Local Self Governments (LSGs) to achieve food security. In Kerala, the total landholding under joint liability groups is 4459.15 hectares during the period 2023-24. Among the total land area of joint liability groups in Kerala, Thrissur district has the highest area of land holdings. More specifically, around quarter of the landholdings under joint liability groups were operated in Thrissur district (Thomas, 2004; Srinivasan, 2012; Ravikumar & Sudheesh, 2013; Sajesh, 2013; Pammi & Malamasuri, 2014; Titus, 2020; Krishnankutty et al., 2021; Kerala Economic Review, 2024; Rajkumar, 2024).

The data indicates that there is a growing importance on JLGs in paddy farming of Kerala. However, previous research has rarely examined the effect of joint liability groups on the progress of paddy farming. Although joint liability groups in paddy farming have gained momentum in Kerala, their progress has to be scientifically analysed. In this context, the major objective of the present study was to analyse the effect of joint liability groups on the improvement of paddy farming in Thrissur district. In addition, differences in the effect of joint liability groups on paddy farming concerning selected variables were also a major area of concern. This novel approach and findings from the present study will fill the existing research gap. Furthermore, it will contribute to the existing literature by suggesting measures to improve the impact of paddy farming in Kerala.

METHODOLOGY

The purpose of the present study was to analyse the effect of joint liability groups in the improvement of paddy cultivation in Kerala. The present study was conducted in Thrissur district of Kerala. The number of 'joint liability groups' and the 'area under paddy cultivation' are the highest in Thrissur district (Kerala Economic Review, 2024). Therefore, Thrissur district has been selected for an in-depth investigation. The sampling framework to collect the primary data is as follows. Firstly, the district was classified into block panchayaths. From each block panchayath, total joint liability groups in paddy farming were identified. It was collected from the data of Krishi Bhavans, village offices and block panchayath offices in Thrissur district. There are 16 block panchayaths in Thrissur district. Eight groups were selected from each block panchayath. The sample size was determined through the following process. There are four types of groups with respect to the number of farmers in each group. Therefore, four groups were selected from each block and it accounts 84 groups. From each group, 4 types of sample farmers were required. Sample size constituted 336 paddy farmers. Subsequently, joint liability groups were classified into four sub-groups. They are: (i) group of upto 8 paddy farmers; (ii) 9-12 paddy framers; (iii) 13-18 paddy farmers and (iv) 19 and above paddy farmers. From each group, farmers were stratified with respect to their socio-economic and agricultural characteristics. These characteristics are educational level of farmers, experience of farmers in farming, land area under cultivation and age of farmers. Subsequently, the farmers were selected randomly from each stratum. The present study followed 'proportionate sample size technique' through 'Lahiri method' to identify the sample farmers from each stratum (Hounyo & Lahiri, 2023). Subsequently, a 'semi-structured questionnaire' has been prepared. The semi-structured questionnaire contains six sections and sub-sections. The sections consist of socio-economic characteristics of farmers in liability groups, demographic features, structure of groups, improvement in paddy production, cost of labour, marketing facilities, experience of farmers, land area of groups and satisfaction of farmers.

A pilot study was conducted among joint liability groups in Thrissur district. The interactions were fixed after seeking the convenience and availability of respondents. Data collected through pilot survey was tested for consistency and validity using Cronbach's Alpha (Kennedy, 2022). Based on the insights from pilot study, final primary survey has been fixed. As per the convenience of the sample farmers from respective groups, face-to-face interviews were conducted. Finally, the present study has collected the information from 336 paddy farmers who participated in joint liability groups. In addition, the information has been collected from selected office bearers of sample joint liability groups. The final primary survey was conducted through face-to-face mode between January 2025 and April 2025. Each interview with respondents took almost 40 to 45 minutes. Responses of the sample farmers were collected in a 5-point Likert scale. Subsequently, the present research considered the factors such as nature of the data, objectives and previous literature to choose the tools of statistical analysis. Based on the insights from methodological review and sample survey, the present study selected statistical tools such as Mean, ANOVA test and post-hoc test to analyse the data. To apply these tests, the assumptions such as normality, homogeneity of variance and independence of observations were used (Kozak & Piepho, 2018).

RESULTS

The basic profile of the primary data collected from the sample district is exhibited in Table 1. Column 1 contains socio-economic, demographic and agricultural variables such as number of farmers in each group, average holding of each group (in hectares), average experience of farmers in farming (years), average age of farmers and average educational qualification of farmers. The framework to classify and present the primary data was adapted from various sources. They are: (i) discussion with Krishi Bhavan officers; (ii) discussion with village officers; (iii) insights from Kerala Economic Review; (iv) pilot survey and (v) publication of government of Kerala such as compendium of Agricultural Statistics. Based on these sources, the data is classified as follows (A Compendium of Agricultural Statistics: Kerala 2023; Kerala Economic Review, 2024). Based on the insights from these factors, a row-wise classification is presented in column 2 of Table 1. Firstly, the number of paddy farmers in joint liability groups were categorised with respect to the number of paddy farmers in each liability group.

The characteristics of the primary data is as follows. Firstly, the classification of number of farmers in each group is presented. There are 28 farmers from group 1 (upto 8 farmers group) followed by 24 farmers from group 2 (9-12 farmers), 21 farmers from group 3 (13-18 farmers) and 11 farmers from group 4 (19 and above). The first group (28 farmers) has the highest number of paddy farmers in Thrissur district. Secondly, the classification of 'average

Table 1. Basic Profile of the Sample Groups in Kerala

Variables	Categories	Frequency/percentage
Sample Joint Liability Groups (Number)	Up to 8	28 (33)
	9-12	24 (29)
	13-18	21 (25)
	19 and above	11(13)
	Total	84 (100)
Average Holdings (in hectares) of JLGs	Up to 10	16 (19)
	11-15	31 (37)
	16-20	25 (30)
	21 and above	12 (14)
	Total	84 (100)
Average Experience of Paddy Farmers (Years) in JLGs	Up to 15	74 (22)
	16-20	101 (30)
	21-25	105 (31)
	26 years and above	56 (17)
	Total	336 (100)
Age of Farmers (Years) in JLGs	Up to 45	39 (12)
	46-50	107 (32)
	51-55	132 (39)
	56 and above	58 (17)
	Total	336 (100)
Educational Qualification of Paddy Farmers in JLGs	Up to 7th standard/Primary Education	43 (13)
	8th standard to 10th standard	174 (52)
	Higher Secondary/Plus two	105 (31)
	Graduation and above	14 (4)
	Total	336 (100)

Notes: (1) Classifications adapted from Kerala Economic Reviews and discussions with Krishi Bhanvan officers; (2) Figures in Parentheses indicate percentage to sub-total; *Source:* Authors computed from primary data

holding of land among joint liability groups' is as follows. They are: (i) upto 10 hectares; (ii) 11-15 hectares; (iii) 16-20 hectares and (iv) 21 and above hectares. Joint liability groups who have 11-15 hectares of land are the highest (37.0 per cent) as compared to other sample groups of Thrissur district in Kerala.

The third characteristic of the joint liability groups is the 'experience of paddy farmers', which is exhibited and classified as follows. They are: (i) Upto 15 years (ii) 16 to 20 years; (iii) 21 to 25 years; (iv) 26 years and above. Data indicates that average experience of farmers is the highest to the third group (31.0%). It seems that farmers in joint liability groups have adequate experience in farming. It may be argued that there would be a positive relationship between agricultural experience of farmers in groups and production of agricultural output (Goodwin et al., 2002; Panneerselvam et al., 2012; Goulet, 2013).

Fourthly, the average age of farmers in joint liability groups is presented. It was found that the majority of the farmers in the joint liability groups are in an age group of 51-55 years. Fifthly, the educational qualification of paddy farmers is examined. It is found that average educational qualification of farmers in joint liability groups is 8-10 standard (52%). It indicates that they require expert support to improve their awareness in scientific paddy farming practices.

After the classification of characteristics of respondents, the present study analysed the effect of joint liability groups on the progress of paddy farming in Thrissur district. The perceptions of farmers in joint liability groups were coded, categorised and applied with statistical tools. The results of the analysis were presented in Table 2, Table 3, Table 4 and Table 5. Data on Table 2 indicates that Mean and Standard Deviation (SD) on perceptions of farmers on the improvement of paddy farming is normally distributed.

The Cronbach Alpha and ANOVA-test results are exhibited in Table 3. The score of Cronbach Apha is 0.90 and it was satisfied with the standard benchmark. It indicates that the scale used in the present research is reliable and satisfactory (Kennedy, 2022). The p-value and F-values are also found to be significant. The p-value calculated for the 'average land holding of joint liability group' is 0.000 which is very low as compared to the standard benchmark (0.05% significance level).

The p-value calculated for the 'average experience of paddy farmers in joint liability group' is 0.003 which is very low and it is

Table 2. Farmers' Perception on the Effect of Joint Liability Groups in Paddy Farming

Items	Mean	SD
The quantity of Paddy production improved	5.47	1.253
Satisfaction increased in collective farming	5.26	1.297
The approach of financial institutions was improved	5.18	1.723
Credit Facilities improved	5.39	1.117
Cost of labour reduced	5.48	1.465
Marketing facilities improved	5.62	1.386

Source: Authors computed from primary data

Table 3. Cronbach Alpha Score and ANOVA Results

Cronbach Alpha Score					
Variable		Questions asked	Score	Test result	
Improvement in Paddy farming		6	0.90	satisfied	
ANOVA Results (Average Land Holding)					
Disparity	Sum of squares	Degree of Freedom	Mean square	F-Value	Significance
Between Groups	10516.244	3	2629.061	7.056	0.000
Within Groups	40357.300	333	188.586		
Total		336			
ANOVA Results (Average Experience of Paddy Farmers)					
Disparity	Sum of squares	Degree of Freedom	Mean Square	F-Value	Significance
Between Groups	3170.0333	3	1056.678	4.762	0.003
Within Groups	47703.511	333	221.877		
Total	50873.544	336			

Source: Authors computed from primary data

significant. It is evident from the data presented in Table 3 that 'average land holdings' and 'average experience of farmers' has shown a positive effect of the joint liability groups in the improvement of paddy farming.

Based on the significant results of ANOVA test, post-hoc test is applied. Post-hoc test was applied to test the difference of significance between perceptions towards effect of joint liability groups in paddy farming. The post-hoc test results are presented in Table 4 and Table 5. Post-hoc test was applied to test the difference between perceptions towards the effect of joint liability groups in the improvement of paddy farming in every group with respect to selected variables. The post-hoc test was conducted in selected groups such as 'average land holdings of paddy farmers in joint liability groups' and 'average experience of paddy farmers in joint liability groups. Results of the post-hoc test with respect to these variables are presented in Table 4 and Table 5 respectively. Results in Table 4 indicates that in the 'higher land holdings' under joint liability groups would have significant positive effect in the paddy farming of Thrissur district. Results indicate that on the basis of 'different level of land holdings' of paddy farmers, most of the farmers have positive perceptions towards improvement of paddy cultivation in group farming.

Results in Table 5 indicates that the 'experience of paddy farmers in joint liability groups' are positively related to the paddy farming in Thrissur district. It may be inferred that different levels of 'agricultural experience' and 'average land holdings' are positively related to improvement of paddy farming in joint liability groups of Thrissur district.

In a nutshell, the results of the analysis argue that larger number of paddy farmers have positive perceptions regarding the effect of farmer groups on the factors such as quantity of paddy production, financial support to paddy farming, marketing facilities of farmers and reduction in cost of labour.

DISCUSSION

The present study analysed on the effect of joint liability groups in paddy farming in Thrissur district of Kerala. Findings indicated that joint liability groups have made a positive effect in the production of paddy in Thrissur district. Therefore, it may be inferred that promotion of joint liability groups would improve the production of paddy in Thrissur district. This finding seems to be indirectly supported by the earlier literature on joint liability groups in agriculture and microfinance. Some previous findings have shown a similar finding on paddy farming while others have exhibited a

Table 4. Post-Hoc test (Multiple comparisons) on Size of the Holdings

Land Holdings	Land Holdings	Mean	Std.Error	significance	95% Confidence Interval	
(In hectares) (I)	(In hectares) (J)	Difference			Lower bound	Upper Bound
UP to 10	Nov-15	-0.900376	2.4984434	0.523	-6.3810243	4.411053
	16-20	17.0025514*	5.214861	0.043	6.3404566	27.247028
	21 and above	-2.1241185*	3.3462052	0.021	-8.2202661	3.9672716
Nov-15	UP to 10	0.900376	2.4984434	0.523	-4.411053	6.3810243
	16-20	17.8211295*	4.9267687	0.013	8.1887493	27.601927
	21 and above	-1.0832736*	2.4874571	0.01	-6.1587773	3.7422905
16-20	UP to 10	-17.0025514*	5.214861	0.043	-27.247028	-6.3404566
	Nov-15	-17.8211295*	4.9267687	0.013	-27.601927	-8.1887493
	21 and above	-18.8572455*	5.2670547	0.004	-29.151524	-8.6767703
21 and above	UP to 10	2.1241185*	3.3462052	0.021	-3.9672716	8.2202661
	Nov-15	1.0832736*	2.4874571	0.01	-3.7422905	6.1587773
	16-20	18.8572455*	5.2670547	0.004	8.6767703	29.151524

Source: Authors computed from primary data

Table 5. Post-Hoc test (Multiple comparisons) on experience of farmers

Experience of Paddy Farmers (Years) in JLGs	Experience of Paddy Farmers (Years) in JLGs	Mean Difference (I-J)	Std.Error	significance	95% confidence interval	
					Lower bound	Upper Bound
UP to 15	16-20	5.3878435	2.3690757	.061	0.2282733	10.3033308
	21-25	20.9776004*	4.7894528	.020	11.2422785	30.5976896
	26 and above	8.6289034*	3.0868245	.009	2.9176033	14.2419373
16-20	UP to 15	-5.3878435	2.3690757	.061	-10.3033308	-0.2282733
	21-25	15.5971010*	4.6633154	.012	6.3940826	24.6971258
	26 and above	3.4229543*	2.5448902	.005	-1.5283844	7.7340121
21-25	UP to 15	-20.9776004*	4.7894528	.020	-30.5976896	-11.2422785
	16-20	-15.5971010*	4.6633154	.012	-24.6971258	-6.3940826
	26 and above	-12.4157346*	4.7793007	.003	-21.7330392	-2.8709741
26 and above	UP to 15	-8.6289034*	3.0868245	.009	-14.2419373	-2.9176033
	16-20	-3.4229543	2.5448902	.005	-7.7340121	1.5283844
	21-25	12.4157346*	4.7793007	.003	-21.7330392	-2.8709741

Source: Authors computed from primary data

mixed result (Sajesh, 2013; Madhuri & Gupta, 2014; Titus, 2020; Sreejith, 2023; Sabu & Roy, 2024).

Secondly, the present study has identified that there are some variables which could affect the performance of joint liability groups in Thrissur district. For instance, the average size of the holdings of farmers in joint liability groups had a positive impact on paddy farming. These findings are seemingly similar in some of the earlier findings on joint liability groups in agriculture and related sectors. For instance, previous research argue that collective farming has a crucial role in determining the size of the land holding and accessibility of credit (Sajesh, 2013; Pammi & Malamasuri, 2014; Sreejith, 2023; Patil & Mehta, 2024).

Thirdly, the present study inferred that the agricultural experience of farmers in joint liability groups has a significant impact on the improvement of paddy cultivation. It might have indirectly promoted the rural paddy-entrepreneurship and micro-finance among paddy farmers. In other words, there would be a positive correlation between the experience of paddy farmers and performance of joint liability groups. These findings seem to be implicitly comparable to some of the previous findings on group farming in agriculture in general and paddy cultivation in particular. More specifically, previous research argued that experience of farmers has a crucial role in determining the agricultural output (Cherian & Ramchandran, 2012; Titus, 2020; Sreejith, 2023; Chundru et al., 2024).

CONCLUSION

Variables such as the agricultural experience of farmers and the size of the landholdings of joint liability groups have had a positive effect on the paddy farming of Thrissur district. Local Self-Governments (LSGs) and paddy farmers have crucial roles to play to improve paddy production. Local Self-Governments can take initiatives and thereby optimize the average land holdings in joint liability groups. Awareness programmes in collective paddy farming will be beneficial to improve the knowledge base of paddy farmers. It can supplement the experience and educational level of paddy farmers. Monetary and non-monetary incentive mechanisms to join collective farming will also be fruitful. Government of Kerala (GoK) should allocate enough resources in the annual budgets of the state to support joint liability groups.

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