A Study on Farmers Perception on Problems of Pokkali Rice Farming in the State of Kerala

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ABSTRACT

Pokkali Rice Farming is an age old, eco- friendly, traditional and organic method of paddy cultivation followed in the coastal regions of Eranakulam, Alappuzha and Thrissur Districts bordering the Arabian Sea in the state of Kerala. Unfortunately this precious culture is encountering immense problems which resulted in its drastic decline of area under cultivation in last decade. In order to unearth the problems in Pokkali Rice Farming from farmers perspective this study was conducted. The selected study areas were North Parvur, Kalamasseri and Njarakkal blocks of Eranakulam district of Kerala with sample size of 120. Majority (45.17%) of the respondents had high overall perception towards problems in Pokkali Rice Farming. In depth analysis revealed that majority had high perception towards cultivation related (50%), socio economic (50%) and policy related (49.17%) problems where as the respondents had a medium perception towards anthropogenic (49.17%) and ecological problems (41.67%). Bringing drudgery works of land preparation and harvesting under MGNREGA, announcing premium price for Pokkali rice, intensive research efforts to develop suitable farm machinery and stringent measures for implementation of conservation acts were some of the suggestions made in the study for promotion of the Pokkali Rice Farming.

Key words: *Pokkali rice farming; Kerala; Perception; Problem; Eranakulam;*

Scientists often refer to wetlands as the 'kidneys' of the earth. Wetlands support a wide array of flora and fauna and deliver many ecological, climatic and social functions. Compared to other states of India, the state of Kerala is endowed with largest proportion of land area (one fifth of total land area of the state) under wetland. The paddy cultivating wetlands of the state are mainly located in the coastal plains and midlands. Extensive rice fields, growing specific cultivars (more than 600 in the state), are seen in the coastal regions of Kerala, along the coastal marshes and the back waters, lying almost at the sea level. The highly fertile wetlands in this area make good locations for rice cultivation.

Pokkali is a unique variety of rice that is cultivated in an organic way in the water-logged coastal regions of Eranakulam, Alappuzha and Thrissur districts of Kerala extending a total area of 5,500 ha. Pokkali rice is being cultivated for the past 3000 years. It is also among the oldest known crops cultivated organically in the world. In rice cultivation, the Pokkali variety has remained a favourite among many farmers and it has attained global recognition as well as exclusive cultivation and distribution rights to its Kerala growers, standing out as a befitting recognition of its superiority. Pokkali rice has been awarded the status of registered Geographical Indication (GI) by the Geographical Indications Registry Office, Chennai, Tamil Nadu in the year 2008-2009.

Pokkali rice is cultivated in traditional and natural ways followed by prawn farming. It has high market value and also numerous medicinal properties were attributed to it. It is also highly environment-friendly and chemical free. The Pokkali rice cultivation is practiced in Pokkali tracts during the low saline phase (June to mid October) and prawn farming is practiced during the high-saline phase (November to April). Pokkali fields are highly fertile hence manuring is not necessary and also Pokkali rice is tolerant to pest and diseases hence plant protection measures are not taken up, which make Pokkali rice naturally organic. Pokkali rice is perhaps

the strongest among rice varieties and able to survive the high salinity and acidity in marshy areas bordering the sea (*Jayan and Nithya, 2010*).

Unfortunately this precious culture is encountering immense problems such as acute shortage of farm hands for harvesting, shift to monoculture of prawn farming from rice- prawn farming system and other anthropogenic reasons such as conversion of Pokkali fields for other purposes like roads, bridges, residential or commercial activities, invasion of weed, over exploitation of fish and prawn etc. This has curtailed the area under Pokkali from 25,000 ha a few decades back to a mere 8,500 ha now. Out of which only 5,500 ha is under rice cultivation, the rest is either left fallow or used only for prawn farming (*Suchitra and Venugopal, 2008*).

Hence keeping in view of this alarming situation for Pokkali farming and deficit of studies on its social perspectives, the current study has been taken up to unearth the problems of Pokkali Rice Farming so that corrective measures can be taken up by concerned stakeholders.

METHODOLOGY

An ex post facto design was adopted for the study. The state of Kerala was selected for study purposively as Pokkali farming system is unique to Kerala. The district Eranakulam was selected purposively since out of total Pokkali cultivating land, major area of land is in Eranakulam district. Out of eight blocks of Eranakulam district, where Pokkali Rice Farming is concentrated, three blocks having largest area under Pokkali Rice Farming were selected. From each block, 2 villages were selected and from each village, 20 farmers engaged in Pokkali rice cultivation were selected making a total sample of 120 respondents for the study. Here the term problem was operationalised as the ability of the respondents to understand the unsatisfactory situation faced in Pokkali Rice farming.

The variable was measured with the help of schedule developed for the study. It consisted of 25 statements. A three point continuum of Agree, Undecided and Disagree was used to record the responses with the scores of 2, 1 and 1 respectively. The problems were grouped under five categories namely: cultivation related problems (included 7 statements), anthropogenic problems (included 3 statements), ecological Problems (included 7 statements), socio-economic problems (included 5 statements) and policy related problems (included 3 statements).

The score of each respondent was computed by summing up the scores obtained for the statements in all categories.

In order to get in depth insight, based on scores obtained under each category of problems, respondents were grouped into low, medium and high based on exclusive class interval technique. The scores were worked out by summing up the scores obtained for the statements for all farmers in each category. The results were expressed in the form of frequencies and per centages.

Also, based on the total scores obtained for all statements, the respondents were again grouped into three categories of low perception, medium perception and high perception based on exclusive class interval method. The results were expressed in the form of frequencies and per centages.

Further, number of respondents occurring under each group of problems i.e., cultivation related problems, anthropogenic problems, ecological problems, socio-economic problems and policy related problems were also expressed statement wise in the form of frequencies and per centages.

In order to understand the nature of relationship between selected profile characteristics of the Pokkali rice farmers with their perception towards problems of Pokkali rice farming, correlation coefficient values ('r') will be computed and the relationship between the perception towards problems of Pokkali Rice farming and the selected personal, socio-economic and psychological characteristics of the respondents will be tested.

RESULTS AND DISCUSSION

Table 1 indicated that majority of the respondents had high perception (50.00%) on cultivation related problems of Pokkali Rice Farming followed by medium (29.17%) and low (20.83%) perception. In case of anthropogenic (man-made) problems of Pokkali Rice Farming, majority of the respondents had medium perception (49.17%) followed by high (40.00%) and low (10.83%) perception. In case of ecological problems of Pokkali Rice Farming, majority of the respondents had medium perception (41.67%) followed by high (36.66%) and low (21.67%) perception. In case of socio economic problems of Pokkali Rice Farming, majority of the

respondents had high perception (50.00%) followed by medium (28.33%) and low (21.67%) perception. In case of policy related problems of Pokkali Rice Farming, majority of the respondents had high perception (49.17%) followed by low (28.33%) and medium (22.50%) perception.

Table 1. Distribution (in %) of respondents according to their perception on problems of Pokkali Rice Farming (N =120))

Category	CP	AP	EP	SEP	PP
Low	20.83	10.80	21.67	21.73	28.32
Medium	29.17	49.20	41.67	28.27	22.48
High	50.0	40.0	36.66	50.00	49.20
Total	100	100	100	100	100

CP=Cultivation related problems (%), *AP*= Anthropogenic problems (%), *EP*=Ecological Problems (%), *SEP*= Socio economic Problems (%), *PP*= Policy related Problems (%)

From the above result it is clear that majority of the respondents had high perception on cultivation related problems, socio economic problems and policy related problems of Pokkali Rice Farming. Since majority of the farmers had a good experience in farming they are generally well aware of the cultivation related problems. The probable reason for their high perception on policy related problems and socio economic problems might be their high education level and high utilization of mass media sources.

Table 2. Distribution of respondents according to their overall perception on problems of Pokkali Rice Farming (N=120)

Category	No.	%
Low	25	20.83
Medium	41	34.16
High	54	45.00
Total	120	100

Table 2 revealed that majority of the respondents (45%) had high perception on the problems of Pokkali Rice Farming followed by medium (34.16%) and low (20.83%) perception on problems of Pokkali Rice Farming.

Due to multiple problems associated with Pokkali Rice Farming such as unavailability of farm hands for harvesting, reluctance of labour to work in Pokkali fields, lack of mechanization, deteriorating soil and water quality, preference of youth towards other trades over Pokkali Rice Farming etc, farmers were forced to do unsustainable monoculture of prawn farming or keep the field fallow. As a result, year by year the area under Pokkali rice cultivation is decreasing in an alarming rate. The result is in conformity with the finding of *Basheer (2008)* and *Vijesh et al. (2006)*.

For further in-depth analysis, farmers' perception on problems was done statement wise and then the problems were grouped into 5 categories viz. cultivation related problems, anthropogenic problems, ecological problems, socio-economic problems and policy related problems. The details were given in Table 3.

It is clear from Table 3 that among cultivation related problems, majority of the farmers (85.00%) agreed that unavailability of farmhands for harvesting is the major problem faced by them. They also perceived the problems of lack of mechanization in Pokkali field for harvesting and land preparation (76.67%) and hardships in harvesting (70.00 %). Further they believed that in the water logged and swampy Pokkali fields, it is difficult to use heavy machineries like tractors and harvesters (70.00%).

These results clearly indicated that labour issues and issues related to lack of machineries are severe in Pokkali farming. So, the government and research personnel should give prime importance to address these issues. Government can take steps to allocate MGNREGA workers to practices such as land preparation and harvesting in farmers fields and also can provide substantial incentives and health insurance cover for harvesters to attract labourers to neutralize the drudgery in harvesting. Research personnel should concentrate on development of suitable machineries for land preparation and harvesting in waterlogged, marshy Pokkali fields.

In case of anthropogenic problems, about one third of the respondents (37.50%) perceived that large areas of Pokkali fields are getting converted for coconut cultivation and other purposes like construction of roads, buildings etc but rest of the respondents were undecided or disagreed with this. Further, majority disagreed that (58.34%) real estate agents have been persuading them to sell their farm lands for very attractive prices because farmers cannot sell their fields or convert it to other purpose due to existing conservation acts of state government. This is a positive sign for the conservation of Pokkali rice farming. In spite of legal compulsions of government unless appropriate actions are taken to

Table 3. Distribution of respondents according to their perception on problems of Pokkali Rice Farming (N =120)

Statement	Agree		Undecided		Disagree	
	No.	%	No.	%	No.	%
Cultivation Related Problems						
Unavailability of farmhands for harvesting is the major problem faced by Pokkali rice farmers.	102	85.00	10	8.33	8	6.67
Labours have to stand in knee-deep water and bend to cut tall Pokkali rice varieties which make labourers reluctant to go for harvesting of Pokkali rice.	84	70.00	22	18.33	14	11.6
Labours are getting payment as kind, not as cash is another reason for their reluctance towards this job.	36	30.00	22	18.33	62	51.6
Lack of mechanization especially for harvesting.	92	76.67	16	13.33	12	10.0
In the water logged Pokkali fields it is difficult to use heavy machineries.	84	70.00	10	8.33	26	21.7
Dewatering is a main problem in Pokkali fields.	43	35.83	38	31.67	39	32.5
Local Pokkali varieties are low yielders.	81	67.50	24	20.00	15	12.5
Anthropogenic Problems						
Large areas of Pokkali fields are converting for coconut cultivation and other purposes like construction of roads, buildings etc.	40	33.33	35	29.17	45	37.5
Real estate agents have been persuading farmers to sell their farm lands for very attractive prices.	43	35.83	7	5.83	70	58.3
Poisoning the fields by the leasers after fishing is completed is a threat to Pokkali Rice Farming.	36	30.00	47	39.17	37	30.8
Ecological Problems						
Pokkali rice farming is threatened by deteriorating soil and water quality.	97	80.83	18	15.00	5	4.17
Pokkali rice yield is reducing due to damages by fish, tortoise and rats.	34	28.33	45	37.50	41	34.2
Invasion of weeds and new pest attack causes reduction in the yield.	21	17.50	32	26.67	67	55.8
Lodging reduces the yield of Pokkali rice.	76	63.33	33	27.50	11	9.17
Pokkali rice cultivation is seriously threatened by attack of the bird-'Purple Moorhen'	42	35.00	27	22.50	51	42.5
Increase in salinity reduces rice and shrimp yield.	32	26.67	43	35.83	45	37.5
Pokkali fields are lying near 'Vembanad' and 'Kochi' back waters are severely polluted.	64	53.33	35	29.17	21	17.5
Socio- Economical Problems						
Young generation of traditional farm workers prefer other trades to Pokkali Rice Farming as it is not remunerative.	106	88.33	12	10.00	2	1.67
Lack of interest in Pokkali Rice Farming after tasting the success in shrimp farming.	92	76.67	19	15.83	9	7.50
Monoculture of prawn challenges insitu conservation of indigenous pokkali rice.	87	72.50	22	18.33	11	9.17
Labour charges are very high.	82	68.33	21	17.50	17	14.2
The preferred prawn- prawn monoculture is un sustainable in both social and ecological context compared to Pokkali-prawn rotational cultivation.	90	75.00	15	12.50	15	12.5
Policy Related Problems						
Lack of encouragement from the government in the form of subsidies or premium prices.	76	63.33	12	10.00	32	26.7
Lack of attractive export policies for Pokkali rice export.	53	43.33	43	35.83	25	20.8
Poor quality of Pokkali rice is not fetching M.S.P from government.	97	80.83	12	10.00	11	9.17

make Pokkali rice farming more remunerative, this unique cultivation will extinct soon. This result is in line with the findings of *Jayan and Nithya (2010)*.

Majority of the respondents perceived the ecological problems like threatening of Pokkali Rice Farming by deteriorating soil and water quality (80.83%) and severe pollution of Pokkali fields lying near 'Vembanad' and 'Kochi' back waters (53.33%). The pollution of backwaters is due to indiscriminate effluent discharge from factories, by oil from overboard engines of boats and also by the wastes from nearby cities which negatively affects Pokkali rice farming and questions its organic nature. Therefore, to address this, government should take immediate and strict pollution control measures in these areas. 63.33 per cent of the respondents agreed that lodging reduces the yield of Pokkali rice. So, Scientists in Vyttila Rice research station should give priority to develop new varieties that are lodging resistant and semi tall.

In case of socio- economic problems, majority of the farmers agreed that young generation of traditional farm workers prefer other trades to Pokkali Rice Farming as it is not remunerative (88.33%). 76.67 per cent of the farmers also opined that farmers are quitting Pokkali rice farming due to lack of interest in Pokkali Rice Farming after tasting the success in shrimp farming. Therefore to attract the young generation towards Pokkali rice farming, government should take steps such as announcing premium price for Pokkali rice exclusively, assist the farmers for organic certification, branding and export so that the cultivation will bring more returns to farmers. Further, extension personnel should conduct awareness programmes and trainings to unemployed youth in the areas of farm mechanization and value addition.

Majority of the respondents had high perception towards policy related problems. They opined that they are unable to sell Pokkali rice to government civil supplies corporation that fetches a more price of rupees 18 per kg as a result of poor quality of grains. Quality of grains was affected due to unavailability of farmhands for harvesting in proper time (80.83%). which force them to sell their produce to private mill owners who give only 8 to 10 rupees per Kg of produce. This is another reason for their reduced returns. Therefore government should address the labour issues immediately and extension personnel should conduct trainings, demonstrations and exposure visit to farmers for quality improvement so that they can sell their produce to government (Civil Supplies Corporation) for Minimum Support Price.

To understand the nature of relationship between selected profile characteristics of the Pokkali rice farmers with their perception towards problems of Pokkali rice farming, correlation coefficient values ('r') were computed and the values are presented in the Table 4.

The relationship between the perception towards problems of Pokkali Rice farming and the selected personal, socio-economic and psychological characteristics of the respondents were tested by relevant null and empirical hypothesis.

Table 4 also revealed that, the calculated 'r' value between perception of respondents towards problems of Pokkali rice farming and land holding was greater than table 'r' value at 5 per cent level of probability. Whereas, it was greater at 1 per cent level of probability in case of socio economic status, experience in Pokkali Rice Farming, sources of information utilized and socio political participation. Therefore, it can be concluded that, there was positive and significant relationship between perception of Pokkali rice farmers on problems of Pokkali Rice Farming and above profile characteristics.

Table 4. Correlation coefficient values between profile characteristics and perception of respondents towards problems of Pokkali Rice Farming

Profile characteristics	r values
Age	0.182^{NS}
Education	0.013^{NS}
Land holding	0.266**
Socio economic status	0.208*
Extension agency contact	0.124^{NS}
Credit Orientation	0.003^{NS}
Input availability	0.156^{NS}
Experience in Pokkali Rice Farming	0.213*
Scientific Orientation	0.153^{NS}
Economic Motivation	0.067^{NS}
Risk Orientation	0.097^{NS}
Sources of Information utilized	0.195*
Trainings undergone	0.121^{NS}
Marketing orientation	0.100^{NS}
Socio-political participation	0.224*

****** Significant at the 0.01 level of probability
***** Significant at 0.05 level of probability
NS : Non significant

The variables such as land holding and socio economic status were found to be positively and significantly correlated with perception on problems of Pokkali Rice Farming which indicated that farmers who are rich and having more prestige in society were well aware of the problems associated with this farming. It might be due to their active involvement with social organizations and cosmopolited ness.

CONCLUSION

The overall result in this study indicated that majority of the respondents had high perception on problems of Pokkali Rice Farming. . As a result, year by year the area under Pokkali rice cultivation is decreasing in an alarming rate. This may be due to multiple problems associated with Pokkali Rice Farming such as unavailability of farm hands for harvesting, reluctance of labour to work in Pokkali fields, lack of mechanization, deteriorating soil and water quality, preference of youth towards other trades over Pokkali Rice Farming etc, farmers were forced to do unsustainable monoculture of prawn farming or keep the field fallow. Therefore, government, research workers, extension personnel, NGO's, private companies, Pokkali Land Development Agency etc all related organizations should take immediate actions to revive this unique paddy cultivation in order to save Pokkali rice farming from fastly approaching danger of extinction.

This study also revealed that majority of the respondents had high perception on cultivation related problems, socio economic problems and policy related problems of Pokkali Rice Farming. Since majority of the farmers had a good experience in farming they are generally well aware of the cultivation related problems. The probable reason for their high perception on policy related problems and socio economic problems might be their high education level and high utilization of mass media sources.

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