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## Farmer's Perception Regarding Cultivation of Rice in Less Water in Tehsil Pindi Bhattian, District Hafizabad

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#### Abstract:

Rice production in Pakistan needs to increase to feed the fast-growing population. Though a complete assessment of the level of water scarcity in Pakistani rice production is still lacking, there are signs that declining quality and availability of water resources are threatening the sustainability of the irrigated-based rice production system. The purpose of the study was to assess farmer's perceptions regarding the cultivation of rice in less water in Tehsil Pindi Bhattian, District Hafizabad. A survey questionnaire was used as an instrument for assessing the desired research problem. Factors like demographic profiles of the respondents, constraints, their knowledge level, and satisfaction level were used to assess the research area. A systematic sample of 60 farmers was taken for analysis purposes. The results showed that almost all the farmers were not aware of the practices about rice cultivation in less water. The results revealed that no information is provided to the farmers and the extension field staff did not conduct the survey and there are no field assistants in the research area. It is very important to reduce the quantity of water which is used for the irrigation of rice crop. Because the water level below the earth is decreasing day by day and the soil is becoming saline and its productivity is reducing continuously. The extension field staff should provide information about the new varieties and the water management strategies for the cultivation of rice in less water at the doorstep of the farmer.

## INTRODUCTION

Rice is a staple food for more than half of the world's population and its demand is growing faster than the population. It is grown in more than one hundred countries. The bacterial population in the rhizosphere of rice may have an impact on the plant roots for their tolerance to stress (Majeed *et al.*, 2017; Rasool *et al.*, 2019). Proper management is needed for plant diseases that are causing production losses of rice crops (Hassanein *et al.*, 2018; Sandhu *et al.*, 2018). In Pakistan rice is the second staple food after wheat and has been a major source of foreign exchange earnings (Irshad *et al.*, 2018). Rice in Pakistan is grown on an area of 2.79 million hectares with a production of 6.8 million tons chiefly in the Punjab and Sindh followed by Khyber Pakhtunkhwa (KPK) and Balochistan (Asghar *et al.*, 2013). In the province of Punjab, there is a special rice area called the "Kallar tract" well known all over the world for fine aromatic "Basmati" rice production (Siddiqui *et al.*, 2007).

The past years have seen a growing scarcity of water worldwide. The pressure to reduce water use in irrigated agriculture is mounting, especially in Asia, where it accounts for 90% of total diverted freshwater. Rice is an obvious target for water conservation. It is grown over 30% of irrigated land and accounts for 50% of irrigation water (Barker *et al.*, 1999). Reducing water input in rice production can have a high societal and environmental impact if the water saved can be diverted to areas where competition is high. A reduction of 10% in water used in irrigated rice would free 150,000mm<sup>3</sup>, corresponding to about 25% of the total freshwater used globally for non-agricultural purposes (Klemm, 1999). However, rice is very sensitive to water stress. Attempts to reduce water in rice production may result in yield reduction and may threaten food security in Asia. Reducing water input for rice will change the soil from submergence to greater aeration. These shifts may have profound and largely unknown effects on the sustainability of the lowland rice ecosystem. Our challenge is to develop socially acceptable, economically viable, and environmentally sustainable novel

rice-based systems that allow rice production to be maintained or increased in the face of declining water availability. This chapter reviews the status of water resources in rice-growing areas and the opportunities and challenges of growing more rice with less water. A recent study found that credit is the main problem for small farmers so there should be the availability of credit for the small farmers to have increased production and income-generating activities. Proper management should be done for rice farmers (Muddassir *et al.*, 2016).

Pakistan ranks fourth among the leading rice-growing countries in the world. But unfortunately in Pakistan rice yield is not only very low, as compared to that of other countries, but also reported to be declined. Due to this reason in recent years agricultural scientists are being inspired to build their research plans on farmers' knowledge, perception, and practices that are the backbones of agricultural production systems and thus are helpful to evaluate future prospective of the systems. It was found that most of the farmers were unaware of credit facilities for the purchase of improved technologies. It was stated that the education of the farmers had a high effect on adoption (Nazam, 2000).

The research objectives of the study were to evaluate the demographic profile of the respondents and assess the different problems faced by rice growers. The present knowledge level of the farmers, the satisfaction level, and farmer's perception regarding the cultivation of rice in less water was also studied.

## MATERIAL AND METHODS

In this study, the survey questionnaire was used as the instrument for assessing the farmer's perception regarding the cultivation of rice in less water. The instrument was developed which is based on the research objectives of the study. The 53-item instrument was developed for the factors like selected demographic characteristics of the respondents (7 items), advisory services available to the respondents (1 item), different constraints to farmers (8 items), knowledge level

of the respondents regarding the cultivation of rice in less water and other rice management practices (20 items) and satisfaction level of farmers about rice cultivation in less water, information sources available to them and water application to rice crop (17 items). A 5-point Likert scale that ranged from none to very high was used to assess the knowledge level of the farmers. The instrument's content and face validity were checked.

### Sample size Data collection and Analysis

A sample of 60 farmers using systematic sampling was selected across Tehsil Pindi Bhattian district Hafizabad. The data were collected by face-to-face interviews with the respondents. Therefore the response rate for data collection was 100%. Finally, data were analyzed using Statistical Package for Social Sciences (SPSS).

## RESULTS AND DISCUSSION

Our results showed that the average age of the respondents was found 43 years in the study

area. Thirty-two percent of the respondents were from the age group of 41-50 years. The most neglected profile of the respondents was education. Sixteen percent of the respondents were completely uneducated. Eleven percent of respondents were educated up to grade 5. However, only 22% of respondents had education above grade 10. The results of the study indicated that respondents on average had more than 20 years of experience in dealing with food grain crops storage techniques in rural areas of the tehsil Pindi Bhattian. Our results are supported by a previous study that documented that indicated that respondents on average had more than 16 years of experience in dealing with food grain crops storage techniques (Royal *et al.*, 2014).

The data also indicated that the average landholding among the progressive farmers of the area was 38.02 acres from the 60 respondents. No extension/Advisory is available to the farmers regarding the rice crops. Another study reported average landholding among the progressive farmers of the area was 22 acres (Rajpar *et al.*, 2019).

**Table 1.** Means, SDs, and Ranks for constraints faced by farmers

Constraints	N	Mean	Std. dev.	Rank
Land and soil problem	60	1.27	.44595	7
Water problem	60	1.90	.37243	2
Soil fertility	60	1.40	.49030	6
Leveling	60	1.08	.27872	8
Variety selection	60	1.83	.45721	3
Input costs	60	1.72	.52373	5
In adequate post-harvest technology	60	1.72	.55515	4
Lack of recommended information	60	2.78	.49030	1

**Mean\*** 1=Low, 2=Some, 3=Much

The finding from Table 1 shows that the farmers were low to some constraints. The main problem was the lack of recommended information; the farmers did not get any information about rice crops or any other Agriculture related information from the extension field staff. The second problem for the farmers of tehsil Pindi Bhattian district Hafizabad was the availability of water. There is a head Sagar in the District

Hafizabad four canals passes from the district and two canals passes from tehsil Pindi Bhattian despite that the farmers don't get sufficient water for irrigation of rice crop.

Table 2 shows that the "problems in rice growing in less water" scored the highest mean which implies that the farmers know in the middle of moderate and high about the problems which

the farmers were to face during rice cultivation in less water. On the other hand “rice varieties being cultivated in less water” scored lowest mean it shows that the farmers have low knowledge about the varieties which are cultivated in less water and the second last rank

is of the “techniques of growing rice in less water” it means that the farmers were less to moderate knowledge about the techniques which are used to grow rice in less water. This is supported by a previous study (Rijsberman, 2004).

**Table 2.** Means, SDs, and Ranks for knowledge level.

Knowledge level	N	Mean	Std. dev.	Rank
Problems in rice growing in less water	60	3.55	1.09583	2
Problems in rice cultivation on waterlogging soils	60	3.50	1.04962	3
Rice varieties being cultivated in less water	60	2.28	.78312	8
Bed preparation for rice cultivation	60	3.78	.52373	1
Techniques of growing rice at low water	60	2.30	.72017	7
Water requirement for rice cultivation at low water	60	2.37	.68807	6
Water management practices particularly in the cultivation of rice at low water	60	2.43	.72174	5
Recommended fertilizer requirement for rice cultivation in low water	60	2.68	.79173	4

Mean\* 1=None, 2=Low, 3=Moderate, 4=High, 5=Very high

**Table 3.** Satisfaction level of farmers.

Satisfaction level	N	Mean	Std. dev.	Rank
The information provided by extension department	60	1.30	.53043	8
The instructions given by extension department	60	1.23	.49972	9
Canal water application to rice crop	60	2.60	.66892	4
Rice cultivation practices in less water	60	1.78	.64022	6
The guidance to grow rice in less water by any government institute	60	1.03	.18102	11
The guidance to grow rice in less water by any private organization	60	1.05	.21978	10
Recommended irrigation of rice crop from its transplanting to its harvesting	60	2.62	.66617	3
Rice cultivation technologies	60	3.32	.46910	1
Certified seeds	60	2.53	.65008	5
Rice market dealers	60	2.93	.70990	2
Govt. policies regarding rice cultivation in less water	60	1.53	.59565	7

Mean\* 1=unsatisfied, 2=poor, 3=fair, 4=satisfied, 5=strongly satisfied

The results show that the farmers were not satisfied with the items given in the table. The “rice cultivation technology” scored highest mean between fair and satisfactory and the second-highest scored mean was of “rice market dealers” which lie between poor and fair while “the guidance to grow rice at less water by any government institute” scored lowest mean which shows that the farmers were fully unsatisfied about the information given by government institute. Farmer's perception regarding the cultivation of rice in less water was assessed almost all the farmers said that they did not know the accurate way to grow rice in less water

and if they grow rice in less water their production decreases from 20 to 25 Munds/acre which was a big loss for them. The farmers said that they don't get canal water they only get water for 27 minutes for one acre on their turn and in 27 minutes the water doesn't reach their land. Various studies have reported the perception level of farmers regarding the cultivation of crops which supports our findings (Boazar *et al.*, 2020; Kumar *et al.*, 2011).

## CONCLUSION

The cultivation of rice in less water is very important because the water level below the land is decreasing day by day and the land is becoming saline and its production is decreasing. I did this study in tehsil Pindi Bhattian, District Hafiz Abad which lie in kallar region which is also known as the city of rice. No information is provided to the farmers in the research area they are unaware of the cultivation of rice in less water. No subsidies or facilities are provided to the farmers. The extension field staff doesn't conduct any survey. So the information about rice cultivation in less water should be provided to the farmers and the farmers should be acknowledged about the new varieties and enough water should be supplied to the farmers for irrigation of rice crop.

## CONFLICT OF INTEREST

There is no conflict of interest.

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