COPY RIGHT

Paper Authors:

Abdul Rasool[1], Asif Ali[2], Izhar Ahmad[3], Muhammad Anwar[4]

USE THIS BARCODE TO ACCESS YOUR ONLINE PAPER

To Secure Your Paper As Per UGC Guidelines We Are Providing A Electronic Bar Code

TO STUDY THE AWARENESS AND ADOPTION OF PRODUCTION PRACTICES OF RICE GROWERS IN TALUKA SHAHDADKOT, SINDH, PAKISTAN

Abdul Rasool[1], Asif Ali[2], Izhar Ahmad[3], Muhammad Anwar[4]
Rural Development and Management China Agricultural University Beijing. PR China[1]
Zhengzhou University China[2]
University Of Malakand[3]
Sindh Agricultural University Tandojam[4]
E-mail: sociologyst.ab.95@gmail.com

Abstract: Rice crop is deemed to be the stable food for more than half of the world's population, playing the significant role for the economic importance in agriculture development, as well as poverty reduction. Keeping in view the concern of local people over awareness and adoption of production practices of rice growers, the researcher conducted a study in Taluka Shahdadkot, Sindh province of Pakistan. The quantified data from 160 respondents were collected on a valid and reliable extent using likert scale and analyzed through SPSS. The results revealed that majority of the respondents (M=37.7) years having the experience of almost (M=13.8) years of farming experience with roughly (54%) of primary education, showing somehow the maturity level of the respondents connected with rural areas. The results revealed that, majority of rice growers were maintaining extremely high level of knowledge regarding rice production practices such as irrigation practices, land management practices, soil test, transplanting, broadcasting and proper time of sowing with more than satisfactory level. While, there had some flaws noticed in adoption of new rice technology, where overwhelming (75%) of the farmers were disagree for exploiting the improved rice verities having mean M=-.019; SD=2.210) and were not ready to adopt the direct seeded rice. However, there was the discrepancy of modern technologies which could bring more production as compared to the traditional one, utilized by the developed nations. So far, diverse barriers were also noticed regarding improved verities, diffusion of technical knowledge, adopting new agricultural production activities and poor extension services. Thus, the research recommended that, the Government as well as Rice research institute and Agriculture extension services should take interest in growers for granting the awareness and adoption regarding new production practices such as direct rice seeded technology as well as advance variety production techniques. Besides that, training must be raised through technology diffusions and the mobilization to farmers by the public as well as private extension services for the sustainability.

Keywords: Rice Growers, Production practices, Awareness, Technology, Sindh

Introduction

Being as an agricultural based country, the masses of Pakistan is mainly rely on agriculture, as agriculture is the biggest sector of the economy of Pakistan (Awan and Alam, 2019). While, agriculture constitutes the largest sector of the economy contributing about 24% of the gross domestic production (GDP) and accounts for half of employed labor force and is the largest source of foreign exchange earnings (PBS, 2020). Thus, the blessings of diverse seasons make it favorable for production of variety crops, fruits and vegetables having considerable share in crop production especially in quality rice and cotton production (Umair *et al.*, 2020). The major crops of Pakistan contain both food and cash crops; among those, wheat and rice are leading food crops while cotton, sugarcane and maize are the important cash crops, sharing 6.5% of the country's GDP and used as raw material for many agro-based and other linked industries (Raza, 2018). Besides that, rice is the stable food for more than half of the world's population, grown on any type of soil except sandy soil. GOP, (2020) reported that, in Pakistan rice is grown on area of 3,034 thousand hectares with an annual production of

7,410 hectares having an average yield of 2,442 kg ha. Shahzadi, (2018) stated that In Asia, more than 80% of the people depend on rice, and their primary food security is entirely dependent on volume of rice produced in this part of the world. Since the rice is the accounted for 3.2% of the value added in agriculture and 0.7% of the GDP in Pakistan. Thus, the rice crop is deemed to be the significant role player for the economic importance in agriculture development as well as poverty reduction process. Rice is mainly grown in two provinces of Pakistan i.e. Punjab and Sindh. Both provinces account more than 88% of total rice production, due to agro-climatic and soil conditions, yet rice crop is cultivated in upper and lower parts of Sindh Province of Pakistan (Abedullah and Mushtaq, 2017). The most important and major rice varieties in Sindh are Basmati, Begghi, Kangnee, IRRI-6, IRRI-9, DR- 82, DR- 83, etc,(Noonari *et al.,* 2012). Mostly, Basmati and IRRI-6 verities are found almost in the studied area; somehow the hybrid verities are also taking place. Hybrid rice technology is one among those technologies globally known since China announced the successful development and cultivation of the rice hybrids in 1976 (Ajibefun, 2018) and is sown in various areas due to its efficiency of production increasing in terms of percentage as compared with average yield of the locality. So far, the updated technologies have again increased the production level of crops in terms of advanced seed verities as well as controlling measure with the pesticides/fertilizer applications. Yoji, (2017) suggested that 'implementation of the advance techniques can improve the rice production and farm incomes. Unluckily, it is rare that entire farmers are capable and keen to implement new techniques, because deterrence through a variety of socio-economic, institutional and environmental factors imposed by new technology. Abbas *et al,.* (2019) examined factors affecting adoption of improved rice varieties by smallholder farmers in Northern Sindh, Pakistan. The empirical results showed that year of education ($P \leq 0.093$), farming experience ($P \leq 0.043$), soil quality ($P \leq 0.077$), farm machinery

ownership ($P \leq 0.000$), access to market information ($P \leq 0.055$) and contact with extension agents ($P \leq 0.006$) had significantly positive influence on adoption of improved rice variety, while age ($P \leq 0.053$) had significantly negative effect. Fleming *et al.,* (2019) conducted a cross sectional study in Philippines, the analysis revealed that the adoption of certified seeds has a significant and positive impact on productivity, efficiency and net income in rice farming. Shaobing *et al.* (2019) reported that rice production in China has more than tripled in the past five decades mainly due to increased grain yield rather than increased planting area. This increase has come from the development of high-yielding varieties and improved crop management practices such as nitrogen fertilization and irrigation.

STATEMENT OF PROBLEM

In Asia, more than 80% of the people depend on rice, and their primary food security is entirely dependent on volume of rice produced in this part of the world; thus the rice production is now lagging behind population growth. As prescribed by the GOP (2020) that Pakistan's share of the world rice trade is around 11%, rice is grown in an area of 2.57 million hectares and the average rice yield in Pakistan is 2240 kg per hectare, which is very low compared to the potential yield. Considering rice crop playing the significant role in rural life as well as to the GDP of the country is lacking to be the best comparing the other countries like china, which creates a matter of thinking for such issue. Thus the regional and global issue of the production and the practices for rice crop motivated researcher to conduct the research. In which the concerns of local farmers must be raised with regard to the statements perceived from the literature either there is the flaws in production awareness or there is lack of technology with proper diffusion. Therefore, this study was mainly designed to gather the data direct from various local farmers in order to determine the awareness and adoption level of farmers knowledge with regards to the practices as well as modern technology applied for rice crop.

Thus, after recognizing the issue it is exceptionally imperative to suggest/ recommend some good agricultural practices of rice crops in the studied area for sustainable development.

RESEARCH METHODOLOGY

Research methodology elucidates the practices and procedures of the research to conduct a scientific study. In order to meet the research objectives, we adopted the quantitative research technique because quantitative research is associated with the paradigm of positivism or the scientific method and provide opportunity to address the study goals concerning mainly theoretical ideas and concepts into real numerical measures that signify these ideas. By following the quantitative procedures, social survey technique was adopted and a reliable and valid scale was developed. Nevertheless, the survey was carried out in rural areas of Taluka Shahdadkot using multistage cluster sampling methods. This method lies under probability sampling technique and generally known as "area sampling" (Agresty and Finlay, 2008). Generally, Shahdadkot taluka is considered as the agricultural vicinity, therefore, 4 rural UCs were randomly selected; however, 40 farmers from each UCs were interviewed that finally worked 160 respondents/farmers. So far, selection of respondents/ farmers was also made randomly and interviewed personally by the main author. Thus, all the necessary information was gathered on point likert scale. Yet, the likert scale had been well renowned among the scholars for achieving the perception base study these days (Teck, 2012). Finally, SPSS was used to conduct the descriptive analysis by mean, mode, minimum, maximum, and standard deviation.

RESULTS AND FINDINGS

This section of the article is limited to the findings of detailed interviews conducted during 2019-20. Where the results are comprised regarding socioeconomic background, farmer's knowledge of various production practices, sources of information, adoption of new technologies.

Descriptive statistics of the respondents

Table-1: Background of the respondents

Particulars		Descriptions
Age (years)		M=37.7
Farming experience		M=13.8
Most frequent Variety (Basmati)		58.2%
Family size (No)		M=8.7
Literate (minimum primary)		53.7%
Family status (Percentage)	Joint	84%
	Nuclear	16%
House characteristics (Percentage)	Pakka	55%
	Kacha	15%
	Semi Pakka	30%

Source: field survey 2019-20

The study was conducted to study the awareness and adoption of production practices of rice growers in taluka Shahdadkot. For the purpose descriptive research was applied to know the awareness level as well as production practices in the studied area. Thus, the results revealed that on average the respondents were in the age of (M=37.7) years having the experience of almost (M=13.8) years of farming experience growing the Basmati variety more than others in the study area having (58.2%) Joyce *et al*., (2016) stated that, farmers with more than 10 years have quite excellent knowledge regarding cropping patterns to gain appropriate production. Hence, the primary education (53.7%) was noticed higher, showing somehow the maturity level of the respondents connected with the rural areas. Normally, in Pakistan the average family size is almost 6.4 but in study area (M=8.7) was observed, where mostly people were living in the joint family system and in pakka houses.

Table-2: Descriptive statistics analysis

Variables	Unit	Minimum	Maximum	Mean
Yield/output	Mounds/acre	30.00	70.00	42.80
Land holding	Acre	4.00	80.00	12.95
Seed	Kg/Acre	8.00	30.00	20.80
Fertilizer	Kg/Acre	40.00	80.00	50.00
Loan	PKR	20000	200000	130000

Source: field survey 2019-20

The results of descriptive statistics analysis are presented in Table-2. An average output of rice was found to be almost 43 mds/acre with minimum and maximum production of 30 mds/acre and 70 mds/acre respectively. Whereas, the average farm size was 12.95 acre cultivated under rice crop with minimum and maximum farm size was 4 acre to 80 acre. Furthermore, the average seed rate per acre was used with 20.80 kg with minimum of 8 kg to maximum 30 kg and the normal fertilizer rate per acre was supposed to be 50kg per acre. Moreover, the perceived loan by the farmers of rice crop from tillage to final harvesting was noticed to be 1,30000 PKR with regards to their expeditions level.

Table-3: Level of awareness regarding various production practices

S/No	Items	Range	Min	Max	Mean	S=D
01	Land preparation for rice crop is good enough for sowing	160	4.00	10.00	8.3313	1.32470
02	Seed is almost kept by ourselves for next season	160	2.00	10.00	3.4216	2.90256
03	I am agree with the sowing time of the crop	160	5.00	10.00	7.6315	2.55994
04	I buy the seed at fair prices	160	2.00	7.00	4.6303	2.14509
05	Labels are read before application of fertilizer and pesticide	160	1.00	7.00	2.6735	1.35874
06	I use GYM & FYM for pest control as well as production	160	1.00	5.00	2.5734	1.14338
07	Water is good in quantity for crop	160	5.00	10.00	7.9403	2.19409
08	Harvesting is done manually	160	1.00	10.00	7.8904	1.93208
09	Dosage are used as prescribed on the cartoons	160	1.00	5.00	3.2805	2.98065
09	I perceive good amount of income from markets	160	3.00	8.00	6.5782	2.87607
	Number of effective cases (rows)	160				

Source: field survey 2019-20

The attempted study was staged on the awareness and adoption of production practices of rice growers in Taluka Shahdadkot Sindh, Pakistan. For the purpose various related questions were asked on 10 point Likert scale (1=strongly disagree to 10=strongly agree) based on their perceptions, where nine questions were asked from the respondents of taluka Shahdadkot and higher the mean score represented the higher the problem or issue.

Results show in Table-4.1.1 that the highest concern of local people is about land preparation of rice crop (Mean=8.33; SD=1.32), which was ranged from 4 to 10, showing the perception magnitude greater with satisfactory standard deviation. Followed by, the quantity of water used for the crop is good enough for the production (M=7.94; SD=2.19) as indicated by the respondents that is placing the positivity regarding the crop production. While, the sowing period of crop (M=7.63; SD=2.55) is deemed constructive with harvesting which was carried out manually. Therefore a significant majority of the respondents are highly agreed with production process. Hence, the seed is bought from the markets on lowest price (M=4.63; SD=2.14), showing somehow dissatisfactory level of the respondents/farmers, because seed is not reserved for the next season application process. So far, the highest concern regarding dosage convention is also supposed to be neglected (M=3.28; SD=2.98) showing manual practice in fields by the farmers, yet, quite a few majority (M=2.67; SD=1.35) were reading labels before application which shows the lack of education as well as awareness level regarding the labels. Besides that the implication of FYM, GYM (M=2.57; SD=1.14) were totally abandoned in the field, that highlights the application of pesticide in huge quantity.

Table-4 Level of adoption of new Rice production technologies

S.No	Item	1=Majority%	2= Majority%	Mode	Mean	SD
01	Improved rice verities	75 (Disagree)	15 Neutral	Disagree	-.19	2.210
02	Direct seeded rice	66 (partial disagree)	15 (agree)	Partial Disagree	.04	2.489
03	Use of pesticides	63 (strongly agree)	26 (agree)	Strongly agree	2.01	1.731
04	Modern technology for diverse applications	68 (disagree)	17 (partial disagree)	Disagree	-.20	1.203
05	Mechanized harvesting technology	52 (Neutral)	21 (agree)	Neutral	.01	1.848
06	Optimum seed rate	48 (Partial disagree)	26 (partial agree)	Partial disagree	.68	2.016
07	Fertilizer application	49 (Strongly agreed)	33 (agree)	Strongly agree	1.44	1.850

Source: field survey 2019-20

In this table-4: growers were asked to provide level of adoption of new rice technology using 7 point Likert scale (-3=Strongly disagree; -2=Disagree; -1=Slightly disagree; 0=Neutral; 1=Slightly agree; 2=Agree; 3=Strongly agree), where neutral point was labeled as '0' and positive answers were recorded as 'plus' and negative were perceived as 'minus' answers. The results revealed that an overwhelming majority (75%) of the respondents were disagreeing by the adoption of improved varieties with the mean value of (M-.1; SD=2.210). While, another majority (68%) of the respondents were disagree using modern technology for diverse applications. However, direct seeded rice (66%) in the study area was supposed to be the missing (M=0.4; SD=2.489), showing the big loop of modern instruments as well as improved practices in the studied area. Shaheen *et al.*, (2017) analyzed that the direct seeding method is more profitable for dry rice farmers in terms of yield and also increases the efficiency of farmers.. Besides that the highest concern of local people (63%) were agreed about the pesticide application in proper manner, as well as the fertilizer application manually found positive having the mean value (M=2.01; SD=1.203). However, the mechanized harvesting technology were neutrally taken in consideration at studied area with (52%) showing somehow satisfactory level with mean value of (M=0.1; SD=1.486). Thus, from the data it seems that the local people are lacking of the various improved activities in cropping pattern demonstrating the weakness as a whole.

Table-5: Barriers in adoption of production and protection technologies and practices

S/No	Items	Range	Min	Max	Mean	S=D
01	Lack of technical knowledge about production practices	160	3.00	8.00	7.8043	2.15093
02	Lack of diffusion of technical knowledge	160	2.00	9.00	6.8034	1.78205
03	Lack of skilled labors	160	1.00	7.00	5.7903	2.98403
04	Complexity in adopting new agricultural practices	160	4.00	10.00	7.9805	2.10934
05	Shortage of water	160	1.00	7.00	4.0126	1.76920
06	Lack of knowledge about climate change	160	1.00	10.00	6.0817	1.29070
07	Unavailability of pure seed and variety	160	5.00	10.00	8.1093	1.16835
08	Not allowed to adopt new variety	160	2.00	7.00	7.9036	2.11305
09	Lack of poor extension services	160	4.00	8.00	6.1667	2.18109
10	Un afford ability of new rice technology	160	3.00	10..00	8.0105	1.55603
	Total number of effective cases (rows)	160				

The table-5 shows the barriers in adoption of production and protection technologies and practices. The results revealed that the highest concern of the local farmer regarding barrier was recorded pure seed and variety (M=8.10; SD=1.16) ranges from 5.00 to 10.00, which was supposed to be the unavailable for the production in the study area. Jasim *et al*., (2019) determined farmers' knowledge level on modern rice cultivation, the results revealed that, knowledge scores of the farmers ranged from 29 to 70 with a mean of 46.51 and 34.6 percent of the farmers had low knowledge compared to 66.2 percent having moderate knowledge and 5 percent high knowledge which were lacking of the quality production in the studied area due to the lack of expertise and technical knowledge for rice crop. However, second highest apprehension of the local farmers (M=8.01; SD=1.55) were about the unaffordable for new rice technology, which were creating the question mark on the local area growers. Thus, the farmers were of the opinion that the new varieties are not well adopted (M=7.90; SD=2.11) showing the greater problem. Besides that, there had been big hurdle in adoption of new agricultural practices (M=7.98; SD=2.10) which were justified as the traditional methods implication in the area. Moreover, there had been the lack of technical knowledge (M=7.80; SD=2.15) in local farmers about advanced production practices and there had been big hurdle for diffusion of new production practices among the farmers as well as other companies. Nevertheless, fair majority (M=6.08; SD=1.29) of the respondents were unaware about the climate change, while there had been lack of poor extension services (M=6.16; SD=1.55) in the studied area, showing somehow unawareness. Finally, there had been deficiency of skilled labour (M=5.79; SD=2.98) which could provide some advance knowledge regarding the crop production and protection practices highlighting the traditional methods more than the technical one.

CONCLUSION AND RECOMMENDATIONS

On behalf of the results, the researchers concluded that, majority of rice growers were maintaining extremely high level of knowledge regarding rice production practices such as irrigation practices, land management practices, soil test, transplanting, broadcasting and proper time of sowing. Similarly, mostly farmers have deficiency of the direct seeded technology, lack of awareness regarding the dosage applications. Besides that, barriers were also concluded concerning the advance technical applications of the rice variety as well as pure seed selection, climate change awareness, and other adoption of technical harvesting in the studied area.

Keeping in mind the results the study recommends that, Government as well as Rice research institute and Agriculture extension services should take interest in growers for granting the awareness and adoption regarding new production practices such as direct rice seeded technology as well as advance variety production techniques.

Secondly, public and private extension services should provide training regarding use of mechanical technology and new production practices in the study area for the sustainable development.

Finally, there is the need of mobilization for the technical production level as was concluded the traditional one, which could provide the local farmers an opportunity to grow more successfully.

Literature:

1. Abbas, A., Chandio Aand Yuansheng J. 2019.Determinants of Adoption of Improved Rice Varieties in Northern Sindh, Pakistan.Journal of Rice Science. 25 (2) : 103-110.
2. Abedullah, S. K and Mushtaq K. 2017. Analysis of technical efficiency of rice production in Punjab (Pakistan). Pak Econ Soc Rev, 45(2): 231–244.
3. Agresti, A and B. finlay. 2008. Stastitical option for the social sciences (4th edition) Upper saddle river. NJ: pretience Hall.
4. Ajibefun, I.A., Battese, G. E andDaramola A.G. 2018. Investigation of factors influencing technical efficiency of smallholder croppers in Nigeria..CEPA Working Papers, No 10/ 96, Department of Econometrics, University of New England.
5. Awan, A.G and Alam A. 2019. Impact of agriculture productivity on economic growth: A case study of Pakistan. Indus. Eng. Lett. 5(7): 27-33.
6. GOP. 2020. Economic Survey of Pakistan.Ministry of Food, Agriculture and Livestock, Government of Pakistan, Statistics Division (Economic Wing), Islamabad.
7. Jasim, U., Billahand K. M. M andGolam R. 2019.Farmers' Knowledge on Modern Rice Cultivation Techniques at DumkiUpazilla.Journal of Agricultural Economics. 80 (4) : 311-319.
8. Joyce, R., HauwaK J., Omokore D. F and Akpoko J. G. 2018.Adoption of recommended rice production practices among women rice farmers in Nasarawa State, Nigeria. Journal of Agricultural Sciences. 20 (1) : 122-128.
9. Noonari. S., Memon,I. N.,Jatoi, A. A.,peerzadio, M. B.,Chandio, A A.,Wagan, S. A.,Sethar,A. A.,Kalwar, G. Y.,Bhatti, M. A.,Korejo, A. S.,Panhwar, G. M and Shah T. 2015. Analysis of Rice Profitability and Marketing Chain: A Case Study of District Sukkur Sindh Pakistan. International Journal of Business and Economics Research. 4 (3) : 133-143.
10. Pakistan Bureau of statistics, Government of Pakistan (2020) (report) updated at 4-11-2020. Email: pbs@pbs.gov.pk.
11. Raza, M.A., Fenga,L.Y.,Manaf, A.,Wasaya, Aand AnsarM. 2018.Sulphur application increases seed yield and oil content in sesame seeds under rainfed conditions. Field Crops Res. 51-58
12. Shaheen, S., Fatima, Hand Khan M. A. 2017. Technical Efficiency Analysis of Rice Production in Pakistan under Dry and Puddle Conditions: A Case Study of

Selected Districts of Punjab province, Pakistan. 15 (2) : 119-130.

13. Shahzadi, N., Akhter, M., Ali, M and Misbah, R. (2018). Economic aspects of basmati rice in Pakistan. *J Rice Res.*Vol 6 (2): 192.

14. Shaobing, P., Tang, Q and Yingbin, Z. 2019. Current status and challenges of rice production in China. Journal of Plant Prod. Sci. 12(1) : 3-8.

15. Teck, H. T., 2012. Housing satisfaction in medium- and high-cost housing. *The case of Greater Kuala Lumpur, Malaysia,* 36(1), pp. 108-116.

16. Umair, T., Robert, A and Han, H. 2020. Reciprocation of socio-economic attributes of the resource-poor rice growers: implications for outreach organizations in Pakistan. Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol. 20, Issue 3, 2020.

17. Yoji, T., Kunimitsu, M and Ueda T. 2017.Economic and environmental effects of rice-straw bioethanol production in Vietnam.Paddy and Water Environment. 11(1-4): 411-42.