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## THE STUDY OF TECHNICAL SOURCES OF INFORMATION AS PERCEIVED BY WHEAT GROWERS IN TALUKA SHAHDADKOT

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### ABSTRACT

*Agriculture is the main source of income generation and poverty reduction tool in Pakistan but using traditional methods in agriculture have put it backward as compared to other nations. This research was therefore carried out with the aim to recognize technical source of information for wheat growers in taluka Shahdadkot, Sindh, province of Pakistan. For the purpose mixed method approach was applied for gathering related data, in which three in-depth interviews and survey were staged by engaging 120 respondents/farmers through random sampling method. The quantified data was analyzed involving SPSS software and manual assessment was done of qualitative data. Results showed that the preparation of the land for wheat sowing is good enough to get production appropriate ( $M=8.32$ ;  $SD=1.64$ ). Moreover, weedicide was preferred more than the other controlling methods in the study area having the mean ( $M= 7.21$ ;  $SD=1.98$ ). The majority (20.79%) of the farmers/respondents were obtaining information regarding production of the wheat crop by the pesticide workers. Besides that, utmost apprehension of the local farmers regarding problems was recorded as unavailability of the production and protection technology ( $M=8.10$ ;  $SD=1.16$ ), supposed to be the unavailable for the production in the study area as well as complexity originated in adoption of new variety/technologies in the proposed area. Nevertheless, some hurdles were shared with regards to the adoption of modern technologies, mainly including increased prices of inputs as well as lack of diffusion towards technical information. Thus, the researcher concludes that most of the local farmers were lacking positive attitude, financial constraints and improper awareness related to matter therefore favouring the traditional techniques for the wheat crops.*

**Keywords:** Technical Information, Technology, Wheat Crop, Sindh

### INTRODUCTION

Pakistan is an agricultural country, and its economy is typically dependent on agriculture sector with 19.5% contributing to Gross Domestic Product (GDP) (GoP, 2017). Kamal, et al., (2012) shared an approximately 53-82% breakthrough of yield in Pakistan as compared to other developed nations, because, this yield gap is associated due to the traditional methods application in farming (Ali, 2010), high cost of production (Khan & Akram, 2012), inappropriate knowledge of advance machineries and techniques (Jehangir, et al., 2007), having poor socio-economic status of farmers (GoP, 2012), disparity use of inputs (Iqbal & Ahmad, 2005), rigorous farming (Hussain, et al., 2003), diseases infestation (Khan & Akram, 2012), lack of awareness with regards to the use of pesticides and fertilizers (GOP, 2012), soil salinity (Qureshi, et al., 2008), water logging (Aslam, et al., 2008), climatic changes (Sattar, 2012) and poor educational level (Masood, et al., 2012). Raza, et al. (2020) identified that technical information has obtained the spacious range of acceptance as important resources of the time. The information sources for farmers depend on the type of work and services they perform (Ali, 2018). Information sources are tools that meet the information needs of extension workers. Ali (2016) stated that, there are the various sources included to provide the technical information to farmers with regards to the better production including extension worker playing the role to disseminate the information involving organizations, individual associates, local, national, and international seminars, workers, trainings, print and electronic media, telecommunication, and internet service. However, Koyenikan (2011) and Muhammad (2005) categorized the above-mentioned information sources as formal (electronic resources, newspaper, extension worker, TV, mobile phones and media e.t.c) and informal (friends, relatives, and nearby farmers) sources. Another related study carried out by Farooq, et al. (2019) specifically highlighted the role of Agricultural Research Institutes and

agriculture officers as information sources. Besides that, Hussain (2016) considered radio and television as the main source of information to be perceived by the farmers. Kapoor (2018) stated that print media and fellow farmers perceive TV (80.83%) and radio (75%) as their major sources for agricultural information. Although, Siddiqui (2006) articulated that, (60%) of the farmers were perceiving the information through agriculture extension services, where market information system was found to be the second highest source of information, thus the lowest value was recorded the financial services in the reports. Besides that, Short Message Service (SMS) was also supposed to be adopted for the knowledge perceiving process more than the internet, voice, and radio. Aldosari et al. (2019) determined the opinion of the farmers towards electronic media application for perceiving the information, where it revealed that TV and radio has been the major source of information obtained for getting knowledge towards agricultural production. Nevertheless, Mobile (M=4.06), TV (M=3.96) and Radio (M=3.96) were perceived effective of almost high level on Likert scale (Raza, et al., 2020). Since Japan has introduced the technology of putting seed, pesticide, and the fertilizer with the help of technologies used in agriculture, while the modern applications of the knowledge transformation also took place through the multimedia application applied in the farms (Goodman, 2019). Although internet facilities have also been introduced in China for the agricultural purposes in local languages through agricultural applications by which the farmers could easily perceive the information related the farms (Zhanghaung, 2019). So far, in developing nations; the adoption of technical source had been a challenging, as articulated by Ullah, et al. (2020) that in developing nations especially Pakistan, the adoption of the advanced agricultural technologies has always remained the low. Hammed, et al. (2003) claimed that the unavailability of advanced farming is mainly accountable for low production, where adoption of advanced varieties can have more beneficial impacts in crops as well as the outputs (Pavithra, et al., 2017). Besides that, the increasing rates of fertilizer as well as pesticides are also the reason for low production, as; the rising costs of the fertilizers have also panicked the developing nations (Amir, et al., 2013). Beshir, et al. (2012) ascribed that low utilization of advanced technologies as well as information particularly cause the low yield in general and cereal crops. Based on the available literature, the study finds that; lacking the modern seed varieties, less utilization of advanced techniques, as well as increasing prices of the products generally used in agriculture pushes back the production level at greater extent. Therefore, the researchers were very keen to know the various technological sources of the information for the wheat growers either there is the modern technology adopted for the wheat production or still traditional practices are involved in taluka Shahdadkot, Sindh province of Pakistan.

## RESEARCH METHODOLOGY

The endeavor study is in line with descriptive and survey research method. This research technique has already been taken in different research methods in Pakistan (Muhammad, 1994). For achieving the objectives of this study, the mixed method approach (qualitative & quantitative) technique was adopted by primary basis interaction through interviewing and surveying method. For conducting the quantitative data, the ten-point Likert scale was justified to gain suitable data from the wheat growers of taluka Shahdadkot including various villages over valid and reliable scale. The targeted population for the study is Taluka Shahdadkot with its enclosed villages (Village Dhing, Village Qadir Bux Langah, Village Chakiyani and Village Darya Khan Mastoi). Since, the researcher applied simple random sampling method for quantitative data collection and staged a survey from 120 growers of wheat crop. For gathering qualitative data three (03) in-depth interviews were arranged, in which 2 famers and 1 landlord were engaged using purposive sampling method.

### Data processing and analysis

For analysis of the quantitative data the SPSS software was used for getting mean, mode, maximum, minimum and standard deviation, which was analyzed appropriately and put in results section accordingly. Nevertheless, the qualitative data was analyzed in different approaches. As the data was first recorded, transcribed, translated and again themes were made and set in results sections.

## RESULTS

With regards to the central objective of the study in terms of demographic and socioeconomic characteristics, the results mentioned in Table-1 indicates that, the mean age of the respondents were observed to be the 42 years old where minimum age was considered 25 and 60 as a maximum. So far, the seasonal family income of the respondents was deemed to be almost 80 thousand because most of the respondents perceived the income seasonally while there were some respondents which were getting their wages on crop by doing the land base

laboring. With regards to the education of the respondents, almost half of the population of wheat growers was either primary level or illiterate with the ratio of (69.2%), highlighting the actual situation of the education in the study area. Whereas (52.67%) of the respondents were having more than 20 years further providing the realistic position of the farming experiences, mostly living in the joint family system with the frequency of (70) and (58.3%) so far.

**Table-1. Demographic and socioeconomic characteristics of the respondents**

	Minimum	Maximum	Mean	Std. Deviation
Age	25.00	60.00	41.59	11.326
Seasonal family income	20000	100000	80360.00	11419.564

Variables	Frequency	Percentage
Education (Primary/Nil)	83	69.2
Farming experience (More than 20 years)	63	52.6
Family Structure (Combined/Joint)	70	58.3

**Table-2. Production and application characteristics in wheat crop**

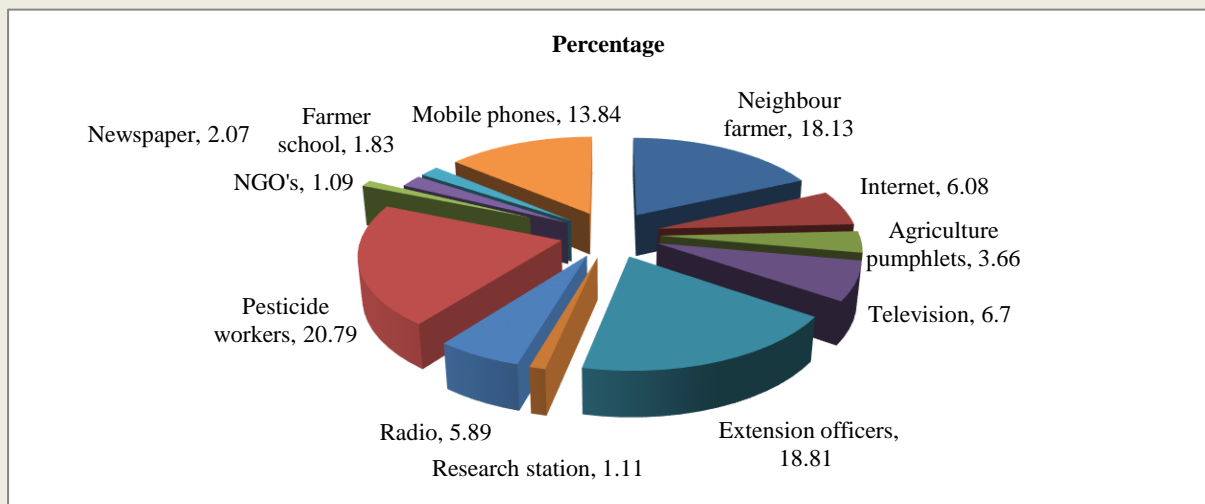
Variables	Unit	Minimum	Maximum	Mean
Crop output	Mounds/acre	35	90	48.80
Farmers capacity of land holding	Acre	5	60	10.05
Seed putting in crop	Kg/Acre	35	120	60
Fertilizer application	Kg/Acre	40	80	50
Loan for crop	PKR	20000	200000	160000

With regards to the production and applications of different approaches in wheat crop, the researcher interviewed some of the basic questions from the wheat growers to get justifiable responses. The consequences shown that the output of wheat crop per acre were justified minimum 35 mounds per acre to maximum 90 mounds per acre, depending over the land soil quality/nature, whereas; almost 49 mounds per acre was justified as the mean value in the area. Yet, (M=60) kg per acre was of seed was put in land per acre, whereas the responses were recorded with some differences ranging from 35 kg per acre to 120 kg per acre. Because, with regards to the responses of the growers, it was noticed that broadcasting by hand includes less seed, while by tillage it increases in double. Besides that, the fertilizer/ DAP included one bag of 50 kg per acre with some differences as mentioned earlier. Since, the expenses of wheat seed, fertilizer/ DAP, pesticide, and others include almost 160000 rupees for 10 acres with minimum loan rate of 20000 to 200000 rupees. Moreover, the expenses and loans were provided by the landlords, which were finally subtracted when the crop is finished and sold in market.

**Table-3. Level of adoption of production and protection technology of wheat**

S. No	Items	Min	Max	Mean	SD
01	Preparation of land for wheat sowing is good enough	4.00	10.00	8.3267	1.64748
02	Mostly, seed is owned by the farmer for next season	2.00	10.00	4.3263	2.85626
03	Sowing time of crop is well maintained	5.00	10.00	7.3571	2.47829
04	Seeds are bought at normal rates	2.00	7.00	4.7820	2.90514
05	Most of the fertilizer and pesticide labels are read before application	1.00	7.00	3.3780	1.43547
06	I use GYM & FYM for pest control as well as production	1.00	5.00	1.3472	2.37910
07	Chemical control is more supportive than the biological or cultural control	4.00	10.00	8.1893	1.52962
08	Crop rotation is done after multiple years	1.00	7.00	3.6779	2.78816
09	Harvesting is done manually	1.00	10.00	7.1475	1.23089
10	Dosage is used as prescribed on the cartoons	1.00	5.00	2.5802	2.60571
11	I perceive good amount of income from markets	3.00	8.00	6.9049	2.65081

The attempted research was focused on the study of the technical sources of the information as perceived by the wheat growers in taluka Shahdadt. For the purpose, perception of the local growers on the level of adoption of production and protection technology were inquired using 10-point Likert scale (10= strongly agreed; 1=strongly disagree). With regards to their responses, the result revealed that the preparation of the land for wheat sowing is good enough to get production appropriately having mean value (M=8.32; SD=1.64), showing the greater part of responses in related questions. Moreover, chemical control was preferred more than the other controlling methods in the study area having the mean (M= 8.18; SD=1.52) which highlights the greater part of satisfactory to the chemical control in the study area, yet shortage of the farmyard manure application observed in the study area and showing dissatisfactory responses in that regard (M=1.34; SD=2.37). Following that, the sowing time for wheat crop is accepted in the study area with (M=7.35; SD=2.47) and were satisfied with the manual harvesting (M=7.14; SD=1.23); which was seemed to be lacking the technological methods for harvesting, while it was also highlighting the positivity with regards to the livestock purpose in terms of wheat straw. Following that, most of the growers disagreed with regards to the statement of seed owned by the nearby farmer with the mean value (M=4.32; SD=2.85), again marking the seed importing from markets. Whereas the seeds were bought at normal rates from markets (M=4.78; SD=2.90). Besides that, most of the growers were unaware with regards to the fertilizer and pesticide practicing before application having (M=3.37; SD=1.43), linked to that; the responses with regards to the dosage applied as prescribed on the cartoons were also negative with (M=2.58; SD=2.60), highlighting the lack of technical information towards crop. Nevertheless, the crop rotation in the study area was neglected with the mean (M=3.67; SD=2.78) showing the dissatisfaction level of the respondents. Being such hurdles, the perceiving amount of income from markets for crop was initiated satisfactory (M=6.90; SD=2.65), asking for the improvement in prices as well.



**Fig-1. Sources of information about adoption of technical information by wheat growers**

Figure-1 highlights the opinion of the farmers regarding the technical source of information for adoption of the production in wheat crop. The results revealed that, majority (20.79%) of the farmers were obtaining the information regarding production of the wheat crop by the pesticide workers, while the second highest majority (18.81%) of the respondents was of getting the acquaintances from the extension officers. Besides that, the neighbor farmer was also used as key informant for the diffusion of the information regarding the productions. So far, some of the populations (13.84%) were using mobile phones to increase their knowledge with regards to the production, as the television was also used as source of information for the crop with the ratio (6.7%) in the study area. Thus, Agriculture pamphlets, radio, research stations, NGO's and newspapers were rarely used for perceiving the information for wheat crop. It can be concluded that the source of information in local growers of wheat is manually taken more than the online or advanced sources.

**Table-4. Problems towards technology adoption for the wheat growers**

S. No.	Items	Min	Max	Mean	SD
01	Lack of knowledge regarding new technology	3.00	8.00	7.8043	2.15093
02	Lack of diffusion of technical knowledge	2.00	9.00	6.9034	2.68205
03	Complexity in adopting new agricultural practices	4.00	10.00	7.9805	2.10934
04	Unavailability of production and protection technology	5.00	10.00	8.1093	1.16835
05	New technology is expensive	2.00	7.00	7.7236	2.11305
06	Shortage of technical information by the experts/departments	4.00	8.00	6.1667	2.18109
07	Communication hurdles for the adopting of new technology	3.00	10.00	6.0105	1.55603

Table-4 shows the problems with technology adoption for wheat growers. With regards to the reactions of the local growers of wheat crops, the data shows that, most apprehension having (M= 8.10; SD=1.16), of the respondents were having unavailability of technologies in relation with production and protection technology and facing the complexities in adopting new agricultural practices with (M=7.98; SD=2.10). So far, the deficiencies in knowledge regarding new technologies having proposed mean (M=7.80; SD=2.15) reflecting the traditional method for production in the area. Moreover, new technology (M=7.72; SD=2.11) was supposed to be the expensive from the reach of the common growers to afford the expeditions for the production as compared to the prehistoric technologies. Somehow, the mainstream (M=6.90; SD=2.68) of the respondents were lacking the diffusions of technical knowledge in the study area which were deeming to be the deficiency in adoption process. So far, the shortage of technical information by the experts/ departments (M=6.16; SD=2.18) was also creating a hindrance in adoption of modern technology to a greater extent. Finally, there were the communication hurdles observed in the study area (M=6.01; SD=1.55) for adopting new technology as a whole.

**Hurdles in adoption of technical source of information for production of wheat crop**

With regards to achieving the objective, the in-depth analysis technique was adopted from the wheat growers of taluka Shahdadkot. The results revealed that, most of the growers perceived the information from mainly experienced farmer, landlord as well as pesticide agents. As articulated by Paul & Manhas (2019) that village *sarpunch*/landlord and other local leaders are deemed to be the main contributor in knowledge sharing for any crop. Since, the grower stated that, *“Most of the time we have been asked to put repeated seed as adopted last year, while there is not any specific information, we have been given from any organization towards seed variety, new technology, as well as advanced techniques which could be diffused to bring sustainable change in wheat crop. Besides that, zero tillage option was mainly adopted to put for growing of wheat crop. Nevertheless, all the information that we have perceived is from our landlord and nearby farmers. So far, there is not any information we have adopted for applications of fertilizer and pesticide, as a result most of us are infected”*. With regards to the response of the grower, it seemed that, there is the lack of diffusion of technical source of information perceived by the wheat growers to adopt new technology. Since, the landlord stated that, *“..... bringing new technology isn’t hard but expenses are met at higher extent which could not be accepted by the farmers because of the wheat rate in the area. Since, I was also asked by the agriculture department to adopt laser leveler as well as hybrid variety which is nearly pricier than the variety already used. While, for putting the pesticide and fertilizer the traditional techniques are involved, where all the farmers themselves put the dosage. If we adopt drones and other machinery for putting applications in wheat crops can be additional costly than expectations, that couldn’t be accepted by the farmers”*.

**DISCUSSION**

Information sources are the tools that are used to adopt new techniques as well as technologies for agricultural development. Thus, the researcher conducted a study on the technical source of information perceived by the wheat growers, in which the major objective of the research was to recognize the technical sources adopted by the growers of wheat crop either there is the modern technology implemented to produce wheat crop or still there are the traditional techniques involved for cultivation. The results of the study revealed that most of the growers had more than 20 years of farming experience, while 10 to 20 years of experience were also shared by the majority. Besides that, the production level per acre was recorded at almost 49 Mounds with some variances ranging from 35-90 mounds per acre. Showing somehow the satisfactory line. With regards to the opinions of the

growers, the highest concern of local farmers perceived the technical information regarding crop was from the pesticide agents ( $M=20.79$ ) as well as extension workers/ officers ( $M=18.81$ ). Samansiri, et al. (2018) articulated that extension workers are more relevant to allocating information with regards to the technical knowledge to the local farmers. Whereas pesticide agents, NGO's and commercial agencies were also sharing the confirmatory technical information towards crop protection as well as production (Dangi, et al., 2019). Since, neighbor farmers were also found satisfactory in terms of sharing agriculture-based knowledge towards production, like Patodia (2019) concluded that more than 75 per cent farmers had utilized friends, neighbors, and television in acquiring the information about improved farm practices with mean per cent scores (MPS) 90.66, 86.00 and 76.66 respectively. Although, mobile phones have also been the major contribution in information sharing with ( $M=13.84$ ) in the study area because of the increasing technical knowledge to disseminate the information for agricultural development. Mittal, et al. (2017) pointed out that "the mobile phone has generally reduced the burden of price increasing in relation with information transferring from one another as well as saved the timings at greater extent, while most of the times, the usage of mobile phones and advanced updated agriculture software has completely benefited the local formers to perceive knowledge related to their crops in terms of production and protection. Besides that, there had been big hurdles in adoption of advanced techniques in agriculture especially for wheat crop. On behalf of the consequences, it was evaluated that, the second highest concern of the respondents were lacking the technical knowledge with regards to the diffusion of advance seed, adoption complexity in agriculture and climate change with almost ( $M=7$ ;  $SD=2.10$ ). As identified by Gaal, et al. (2014), Malla (2008) and Borgesen & Olesen (2011) that, the temperatures always had a problematic change in crops and yield to a global extent. So far, increasing prices of the products were also making the grower uncomfortable with regards to the better yield. Because the increasing rates of fertilizer as well as pesticides are also the reason for low production, as; the rising costs of the fertilizers have also panicked the developing nations (Amir, et al., 2013). However, with regards to the in-depth interviews, it was clear that increasing rates of new technologies as well as lack of diffusions of the technical information were creating hurdles to adopt advanced technology. As, it is confirmed that, it is underestimated that, the adoption of advanced varieties can have more beneficial impacts in crops as well as the outputs (Pavithra, et al., 2017). Since, all the information was perceived by the near farmers as well as landlords which was also creating a question mark on the progress of growers' attitude towards development.

## CONCLUSION & RECOMMENDATIONS

The study concludes that the local wheat farmers are lacking technical/advanced level of information, where the main sources for information was acknowledged as pesticide agencies, extension workers as well as nearby progressive farmers. Most of the local farmers were lacking positive attitude related to matter therefore favouring the traditional techniques for the wheat crops more than the technical one. Since, there were some hurdles observed in adoption of the modern technologies as well as advances application due to the increasing of input prices, which was general lacking the production at greater extent. The study recommends that the governmental and non-governmental organizations both take interest in providing technical information to the wheat growers for achieving maximum output and profitability. Finally, the study recommends that, there must be the policy for adopting new machinery/technology in field crops for the better improvement of wheat crop.

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