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TRAINING NEEDS ASSESSMENT OF WHEAT GROWERS REGARDING QUALITY WHEAT SEED PRODUCTION

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ABSTRACT

Seed has matchless position among various agricultural inputs as the efficiency of all other inputs mainly depends on the production prospective of seed. The sustainability of any crop depends upon seed quality. Meanwhile, being the staple food,- wheat occupies a significant position in agriculture of Pakistan. Wheat growers deserve special attention in terms of their training in quality seed production because seed is one of the most important farm input. The farmers producing quality seed have to be looked before giving them training. After finding their deficient areas, training should be organized. For conducting the research study, district Narowal of Punjab province was selected. A multistage random sampling technique was used for the selection of study sample of 360 respondents. The data were collected through a reliable and validated interview schedule and analyzed using statistical package for social sciences (SPSS-14). Descriptive and inferential statistical techniques were used for data analysis. Analysis of the data explains that a large majority of the respondents had no knowledge about the class of seed they used for seed production as well as no idea whether or not they had used the approved variety for seed production. A vast majority of the respondents had very low level of knowledge with respect to seed germination line spacing, seed depth, isolation distance and seed grading. Similarly above and below fifty percent of the respondents had very low level with respect to purity of seed, seed treatment, roughing, insect/pests control and use of farm machinery. The practices such as- source of quality seed, purity of seed, insect/pest control, seed germination, line spacing, seed depth, isolation distance, seed grading, roughing, use of farm machinery, harvesting, and threshing of seed crop, farmers knowledge is very low and low level and they needed medium to high level of training, while seedbed preparation, selection of land, seed rate, sowing method, weed management, and storage of seed, farmers knowledge is high and very high level and they required low to medium level of training. The aspects related to fertilizer application required medium to high level of training while low to medium level of training was required in case of irrigation aspects. The respondents knowledge fall in between low and very low level and they required training for succesful quality wheat seed production

Key words: seed, farers knowledge, wheat seed production.

INTRODUCTION

Wheat is the staple diet of the people and the leading food grain of Pakistan. It contributes 2.1% to GDP and 10.0% to the value added in agriculture. Production and area of wheat for the year 2014-2015 had been targeted at 25.979 million tons and 9180thousand hectares, respectively. Wheat was sown on an area of 8.63 million hectares during 2014, indicating a decrease of 1.9% over last year's (Govt. of Pakistan, 2015). The performance of wheat crop affects the overall growth of agricultural sector and ultimately the economy of country and livelihood of farmers as well. From the public perspective, government wants to keep the wheat price low to overcome the poverty and malnutrition. At the same time, self sufficiency in wheat production has always remained the major objective of the agriculture policy formulated by the government. It has been witnessed that the low wheat price has direct influence on the production system especially in the rising of inputs prices scenario. Resultantly, the area under which wheat is declining and issue of food security is rising. The population is increasing by 2.0% annually and the area and production of wheat is not increasing with the pace of increasing population in the country (Govt. of Pakistan 2013)

The world's average yield of wheat is around 2.55 tons/ha, while in Pakistan it is about 2.74 tons/ha (Amen, 2014). Moreover, its production per unit area is also very low as compared to its yield potential. The average yield does not go beyond 30-35% of its optimum potential (Mehmood *et al.,* 2014; Govt. of Pakistan, 2010). If we look back, before partition, the part of the Punjab now with Pakistan was known as *food basket* of the united India due to its abundant wheat production-, and Indian Punjab is presently called *food basket* as well as *granary of India* with an average yield of about 5.51 tons/ha. The Haryana state which emerged from the former Indian Punjab has shown a very good performance with an average yield of 4.95 tons/ha

(Jharwa, 2007). But wheat yield of Pakistan's Punjab is below 50% of the Indian Punjab.

Seed has a distinct position among various agricultural inputs to exploit the yield potential because the effectiveness of all other inputs mainly depends on the production capacity of the seed. With the utilization of quality seed, yield of wheat could be increased to about 15-20% (Asif *et al.,* 1999). It is usually found that the distribution of quality seed and complementary inputs has overthrown the fear of shortage of quality seed and food from the shoulders of millions of small and poor farmers (Singn, 1990; Ellis, 1993). Quality seed increases the genetic potential of a plant; it measures the upper limits of yield and even the production of other inputs (Jaffee and Srivastava, 1992). Thus, provision of seed, both in disaster and normal years, is a requirement for increasing production of food, improving income of farmers, allevating poverty, and ensuring food security.

However, before launching any training program to equip the growers with the production technologies regarding above mentioned aspects, the Department of Agricultural Extension must identify their training needs and the deficient areas of the farmers requiring training to be more effective for the wheat seed growers at the present scenario and the importance of the subject, the present research is designed and conducted. It is anticipated that the outcome of the study would furnish the needed information to the Department of Agriculture (Extension) launching the training programs on quality wheat seed production for the farming community.

MATERIALS AND METHODS

The study was conducted in Narowal district of the Punjab province, consisting of three tehsils. Using multistage random sampling technique, one markaz from each tehsil was selected at random. From each selected markaz, 3 union councils were selected and from each selected union council, 2 villages were chosen randomly. Twenty wheat growers from each village were selected at random, thus making a sample size of 360 respondents from the entire population of 2527 wheat growers using Table for determining sample size (Fitz-gibbon and Morris, 1987). Keeping in view the objectives of the research study, an interview schedule was developed for data collection. Considering, the suitability of Likert scale for assessing the farmers' training needs, a five point Likert scale (1= Very Low, 2= Low, 3= Medium, 4= High, 5= Very High) was used. Descriptive statistics and inferential statistic such as frequency, means, standard deviation and t-value were used for the interpretation of data and results.

RESULTS AND DISCUSSION

Table 1. Distribution of the respondents according to the class of seed they generally use for seed production.

Class of seed	f	%
Pre-basic seed	0	0.0
Basic seed	0	0.0
Certified/ Registered	76	21.1
Do not know	284	78.9
Total	360	100.0

Table 1 indicates that 78.9% of the respondents had no knowledge about the class of seed they had used for seed production. While only 21.1% of the respondents had used certified seed for seed production. Pre-basic and basic seed was not used by any of the respondents. From the above results it is clear that farmers' knowledge about different classes of seed was very poor and a vast majority had no idea whether or not the seed being used for wheat seed production was certified/registered. The results of present study are in line with those of Aamir (2013) who reported that 27.5% of the respondents had used certified seed while 72.5% of them had no knowledge about class of seed used for crop production. Similarly, Bishaw *et al.* (2011) reported that 22% of the respondents used certified source of seed from the formal sector.

The data presented in Table 2 show that the mean values of existing knowledge regarding most of the aspects of quality wheat seed production fell in between very low and low categories meaning thereby that the respondents were quite deficient in knowledge regarding these aspects. The mean values of required knowledge about seed germination, line spacing, seed depth, isolation distance, seed grading, seed treatment and roughing fall between medium and high categories but tending towards high category. While, mean values of required knowledge about sources of quality seed, purity of seed, insect/ pest control, use of farm machinery, harvesting and threshing of wheat crop fall between medium and high categories but tending towards medium category. The mean values for the required knowledge about the selection of land, seed rate, sowing method and weed management for seed crops' existing knowledge fall in between low and medium categories but tending towards medium category.

The mean values of required knowledge about seedbed preparation, and storage of seed fall in between low and medium categories but tending towards low category. The mean values of required knowledge of seed rate and seedbed preparation are less than those of existing knowledge with their negative t- values.

It is evident from the t-values that there existed a highly significant difference between existing and required knowledge of almost all the aspects of quality wheat seed production except seed rate and storage of seed which showed a non-significant difference.

The data presented in Table 3 show that the mean values of existing knowledge about nitrogen, phosphorous and potassium dose, time and method of application fall in between very low and low categories meaning thereby that respondents were quite deficient in knowledge regarding dose, time and method of application of fertilizer. The mean value of required knowledge about potassium dose falls in between medium and high categories but tending towards high category. While, the mean values of required knowledge about dose of nitrogen, phosphorous, time of application of nitrogen, phosphorous, potassium and method of application of phosphorous and potash fall in between medium and high categories but tending towards medium category. The mean value of required knowledge about application of nitrogen falls in between low and medium categories but tending towards medium category. There existed highly significant differences between existing and required knowledge about dose, time and methods of application of nitrogen, phosphorous and potash.

Table 2. Mean comparison between existing and required knowledge regarding various aspects of quality wheat seed production.

Aspects of quality wheat seed production	Existing knowledge		Required knowledge		t-value
	$\overline{X}$	S.D	$\overline{X}$	S.D	
Selection of land (productive, free from weeds)	2.32	.67	2.68	.67	7.325**
Seedbed preparation (3-4 plowings with planking)	2.70	.53	2.30	.54	-9.238**
Sources of quality seed (PSC, research stations, seed dealers, own storage)	1.93	.73	3.07	.73	20.879**
Purity of seed (genetic purity, physical purity)	1.62	.69	3.38	.69	34.536**
Sowing method (drill)	2.10	.70	2.90	.72	14.894**
Seed rate(35-50 kg/acre)	2.58	.88	2.42	.90	-1.734 NS
Seed germination (above 90 %)	1.25	.57	3.75	.56	58.374**
Line spacing (22.5cm)	1.07	.25	3.93	.27	137.596**
Seed depth (5-7cm)	1.18	.39	3.82	.39	87.161**
Isolation distance (150cm)	1.07	.25	3.93	.26	137.596**
Seed grading (with grader)	1.37	.61	3.63	.63	48.154**
Seed treatment (fungicide)	1.72	.71	3.28	.70	28.063**
Weed management (weedicide spray, seedbed preparation, crop rotation, clean seed, “dab” method)	2.33	.72	2.67	.77	5.992**
Roughing (tillering, heading)	1.62	.69	3.38	.71	33.691**
Insect/pest control (biological control, chemical control)	1.75	.75	3.25	.72	27.216**
Use of farm machinery (cultivator depth 17.78 cm, drill calibration, harvester speed 650-700 rpm and use different sprayer nozzles)	1.62	.73	3.38	.74	32.568**
Harvesting (clean the harvester, 18-20% moisture level and harvester speed 650-700 rpm)	1.75	.50	3.25	.54	38.616**
Threshing (600-700 rpm speed, clean thresher and threshing done at mid day time)	1.75	.65	3.25	.60	32.675**
Storage (fresh jute bags, room free from insects, well concrete walls and floor, fill cracks of walls and floor, clean room before storage, transport material are cleaned before use, place bags 50 cm away from walls and roof, kill rats by using zinc phosphate	2.45	.64	2.55	.73	1.638 NS

Table 4 indicates that the mean values of existing knowledge on the irrigation aspects in relation to producing quality wheat seed fall in between low and medium categories implying that respondents were quiet deficient in knowledge regarding irrigation aspects. The mean values of required knowledge about 2nd, 3rd and 4th irrigations fall in between low and medium categories but tending towards medium category. Whereas, the mean value of required knowledge about 1st irrigation falls in between low and medium categories but tending towards low category. From the above discussion it is clear that farmers' knowledge about 1st irrigation was relatively

more than that of subsequent irrigations. There existed a highly significant difference between existing and required knowledge about all irrigations.

Table 3. Mean comparison between existing and required knowledge regarding various aspects of fertilizer application for quality wheat seed production.

Fertilizer application	Existing knowledge		Required knowledge		t-value
	$\overline{X}$	S.D	$\overline{X}$	S.D	
		N			
Dose (100-120 kg/ha)	1.80	.51	3.20	.54	36.880**
Time of application (1/3at sowing, 1/3 after first irrigation,1/3 at booting stage)	1.90	.68	3.10	.68	23.637**
Method of application (broadcast)	2.15	.73	2.85	.76	12.890**
		P			
Dose (60-70 kg/ha)	1.53	.70	3.47	.69	37.006**
Time of application (at sowing time)	1.73	.63	3.27	.63	32.664**
Method of application (drill)	1.93	.77	3.07	.78	19.847**
		K			
Dose (60 kg/ha)	1.38	.61	3.62	.66	48.258**
Time of application (at sowing time)	1.75	.54	3.25	.54	37.345**
Method of application (drill)	1.82	.62	3.18	.62	29.584**

Table 4. Mean comparison between existing and required knowledge regarding application of irrigation water for quality wheat seed production.

Application of irrigation water	Existing knowledge		Required knowledge		t-value
	$\overline{X}$	S.D	$\overline{X}$	S.D	
1st Irrigation (21-25 days after sowing)	2.68	.81	2.32	.81	-6.095**
2nd Irrigation (80-90 days after sowing)	2.12	.61	2.88	.61	16.893**
3rd Irrigation (100-110 days after sowing)	2.03	.63	2.97	.63	19.799**
4th Irrigation (125-130 days after sowing)	2.02	.58	2.98	.62	22.013**

Conclusions: The study revealed highly significant difference between existing and required knowledge of almost all the aspects of quality wheat seed production except those of seed rate and storage of seed that showed non-significant difference. Existing knowledge of the wheat farmers on various aspects of quality wheat seed production was very low as compared to the required knowledge. The mean values for the existing knowledge regarding most of the aspects of quality wheat seed production fell in between very low and low categories meaning thereby that the respondents were quite deficient in their knowledge in these areas. The mean values of required knowledge about seed germination, line spacing, seed depth, isolation distance, seed grading, seed treatment and roughing fell between medium and high categories but tending towards high category. While, mean values of required knowledge about sources of quality seed, purity of seed, insect/ pest control, use of farm machinery, harvesting and threshing of wheat crop fell between medium and high categories but tending towards medium category.

Highly significant differences were realized between existing and required knowledge about dose, time and methods of application of nitrogen, phosphorous and potassium. The mean values of existing knowledge about nitrogen, phosphorous and potassium dose, time and method of application fell in between very low and low categories indicating that respondents were quite deficient in knowledge regarding dose, time and method of application of fertilizer.

There existed a highly significant difference between existing and required knowledge about 1st, 2nd, 3rd and 4th irrigations. The mean values of existing knowledge about irrigation aspects of quality wheat seed production fell in between low and medium categories meaning thereby that respondents were quiet deficient in knowledge regarding irrigation aspects.

Recommendations: The mean values of existing knowledge in most of the areas of quality wheat seed production fell in between very low and low categories meaning thereby that the respondents were quite deficient in knowledge regarding these aspects. The Department of Agriculture (Extension) Punjab should arrange frequent trainings for wheat seed growers to enhance their competency in the identified weak areas. The department

should also arrange seminars, workshops etc. regarding wheat seed growing practices especially before the start of wheat sowing season. The agricultural universities should also make arrangements for the dissemination of wheat seed production technologies through their outreach programmes and also develop short courses for the training of wheat seed growers with special focus on the identified weak areas like sources of quality seed, purity of seed, insect/pests control, seed germination, line spacing, seed depth, isolation distance, seed grading, roughing, use of farm machinery, harvesting and threshing of seed crop.

Quality seed production need to be initiated at farming community level under close the supervision and guidance of some seed certification agency/ extension organization to make the quality seed available to the farmers at the affordable prices to enhance the wheat production and ensure food security at the national level.

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