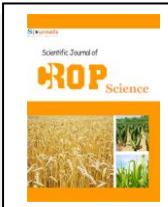


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Journal homepage: www.Sjournals.com**Original article****Role of public sectors for educating the farmers to produce the quality seed in wheat****M. Rizwan-Ul-Haq*, S. Muhammad, A. Yaquob, H. Muhammad Ahmad***University of Agriculture, Faisalabad, Pakistan.***Corresponding author; University of Agriculture, Faisalabad, Pakistan.***ARTICLE INFO***Article history,*

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ABSTRACT**Keywords,**

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Quality seed is assumed as one of the basic necessary elements for the successful cultivation of crops. Present study was conducted in Punjab, a province of Pakistan to estimate the role of public sectors for educating farmers to produce the good quality seed in wheat. A well structured and valid interview schedule was used for the data collection. From the interview results it was concluded that the overall satisfaction level of farmers regarding information received from extension field staff (EFS) was not perceived as good and hence it needs dire attention of extension field staff to increase level of satisfaction. Majority of the farmers were aware about the concept of approved seed. The farmers who purchased seed directly from the seed companies were satisfied but mean value of seed companies is quite apart from the research centers. Retailers and broker were also considered as viable seed sources in rural areas. About 8.3% respondents stated that they often used seed of wheat for cultivation from retailer or broker. Slightly greater than one fourth (27.5%) respondents reported the usage of seed from retailers or brokers occasionally. Most (46.6%) of the respondents indicated that they had rarely utilized seed from retailers or brokers.

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1. Introduction

Agriculture occupies a conspicuous place in the economy of Pakistan. Wheat is the most important source of income of the rural farmers living in the rural areas of country (Aujla, 2010). In Pakistan, still production of wheat per unit area is very low than potential. The average yield does not go beyond 30-35% of its optimum potential. The world's average yield of wheat is around 2.99 tons/ha, while in Pakistan it is about 2.49 tons/ha. It is important to depict that our potential for wheat yield must be over 38 million tons; we are annually losing minimum 3 billion US\$ due to wheat production inefficiencies (Rao, 2007).

Quality seed is considered to be one of the basic essentials to successfully grow any crop. Seed is labeled to be of good standard if it has varietal purity, free from weed seeds and inert matter, not adulterated with other classes or crops and has germination capacity of above 90%. Ousmane and Ajeigbe (2008) reported that the quality of seeds alone is known to account for an increase in productivity of at least 10-15%. Without quality seed it is impossible to exploit the potential growth rate in farm sector. During the cropping year 2007-08, 66% of the total wheat seed requirements were fulfilled by farmers' own stock in wheat-rice zone, 16% of the seed was obtained from dealers while 15% was purchased from progressive farmers and 3% was obtained from other sources (Aujla, 2010). The seed is the first determinant of the future plant development and consequently of successful cultivation. Usage of low quality seed is the major reason of low production (Hassan et al., 2003). According to Louwaars and Marrewijk (1999), the development and use of high yielding seed varieties have been the technological forces behind the successful green revolution. Seeds are the most precious resource of farmers, and concern about the viability of agricultural systems usually centers on the diversity and stability of the seed supply system (Tripp, 2001).

The public sector plays important role in plant breeding and some aspects of regulations; the private sector makes contributions in the area of seed multiplication, processing, and distribution (Minot 2008). Commercial seed trade is an essential feature of industrial agriculture (Tripp 2001), and seed marketing is a vital link between the seed producers and the farmers who ultimately use the seeds (OMaliko, 1998). The demand for improved seeds is relatively low, mainly due to various constraints, such as poor promotion and marketing efforts, high prices, and the inability of farmers to purchase complementary inputs, especially fertilizer. Copeland and McDonald (1995) reported that in some developing countries like Pakistan the availability of high quality seed is a problem. There may be insufficient seed producing organizations to meet the seed requirement, or farmers use their own seed obtained as a residue from their commercial crops and they do not grow any specific seed crops. Care for seed quality is limited to avoid contamination without seed crop husbandry techniques or any other post harvest processing or storage techniques to improve the quality. Seed quality can be increased by careful management of seed crops during production in the field, harvest, post harvest, processing and storage. Seed quality assurance is a systematic and planned procedure for ensuring the genetic, physical and physiological integrity of the seed delivered to farmers (Larinde, 2009).

For maintaining the quality of seed, the government sector is facilitating farmers through extension services. Extension field staff is guiding farmers for the application of improved technologies to ensure better harvest mainly through demonstrations. The demonstration plots are managed under the guidance and supervision of Agronomists. These are very helpful in persuading farmers for the adoption of improved practices at their farms. Since demonstration encompass has three basic processes of learning i.e. seeing, hearing and doing, it is the most persuasive method (Rajput, 1997). Beside demonstrations, the farmers are also provided with relevant materials in printed form to increase awareness about quality seed production and other crop management practices.

The effectiveness of extension in many low income countries is highly contingent on relaxing wider barriers to the successful development of the agricultural sector as a whole, including such potentially limiting factors as credit, technology, input supplies, price incentives, institutions and human resources constraint (Purcell and Anderson, 1997). The general objective of the present research was to evaluate the role of public sector extension in educating farmers for quality seed production of wheat in Punjab, Pakistan.

2. Materials and methods

2.1. Population

The study focused on the role of public sector extension in educating farmers for quality seed production of wheat in Punjab. Thus all the wheat seed growers in Shahkot (Punjab) were considered as population of the study.

2.2. Study sample

Study was confined to District Shahkot (Punjab). From this one district 4 unioncouncils were selected randomly. From each selected union council 2 villages were selected at random. Fifteen wheat growers were selected randomly from each selected village, thereby making a sample size of 120 respondents.

2.3. Data collection

2.3.1. Preparation of interview schedule

In order to collect required data an, interview schedule was developed, keeping in view the study objectives.

2.3.2. Pre-testing of interview schedule

To check the validity and reliability of interview schedule it was pretested on 20 respondents (other than study sample) who were actively engaged in wheat cultivation. After pre-testing the interview schedule, necessary amendments were incorporated to finalize the schedule.

2.3.3. Interviewing the respondents

The respondents were interviewed at their farms and/or homes. Even though the interview schedule was prepared in English language but to ensure the maximum possible accuracy and good quality data, questions were asked in Punjabi (local language). While interviewing, it was tried to create informal and friendly environment in order to obtain accurate data.

2.3.4 Analysis of data

The collected data were statistically analyzed with the help of SPSS (Statistical Package for Social Sciences). Descriptive statistical measures i.e. frequencies, percentages, means and standard deviation were calculated to interpret the results and to draw conclusions and formulate suggestions. To check the relative ranking of different factors, their scores were calculated through multiplying the score value allotted to each category with frequency count. Means were calculated as sum of values divided by number of observations.

3. Results and discussion

3.1. Demographic characteristics

The demographic characteristics of respondents include age, educational level, income generating sources, tenancy status, size of land holding and area under wheat cultivation along with area under wheat seed cultivation. Various studies revealed that the socio-economic/demographic characteristics had greater impact on the adoption behavior regarding improved practices. Hassan et al. (2003) described a significant relationship of age and education of the respondents with the adoption of new practices. Therefore, it is necessary to investigate the socio-economic characteristics of the respondent

The respondents were asked about their seed sources that from where they get the seed of wheat for cultivation over a period of time. Sources varied from own storage to research centers. Furthermore, farmers were inquired about the extent of use of seed from these identified sources i.e. extent starting from always and ending on never.

Data depicted in Table 3.1 indicate that 5.6% farmers had always used their own stored seed while 56.7% respondents reported the usage of own stored seed often. About 38% respondents disclosed that they had utilized own stored seed occasionally. None of the respondent was found to reveal that he had used own stored seed rarely or had never used the own stored seed.

Retailers and broker are also considered as viable seed sources in rural areas. About 8.3% respondents stated that they often used seed of wheat for cultivation from retailer or broker. Slightly greater than one fourth (27.5%) respondents reported the usage of seed from retailers or brokers occasionally. Most (46.6%) of the respondents indicated that they had rarely utilized seed from retailers or brokers. Slightly less than one-fifth (17.5%) respondents reported never usage of seed from retailers or brokers.

Fellow farmers are assumed as the major information sources for the farmers because farmers feel good and comfortable to exchange problems with each other. In this regard they trust immensely on each other. Shah et al., (2010) reported fellow farmers as major seed source as in rural areas majority of the farmer remains dependent on fellow farmers. Alemu et al. (1998) narrated that because of low prices farmers prefer informal seed sources despite knowing that quality seed gives more production. Almost one-fourth respondents were using seed from fellow farmers occasionally followed by about one-tenth (9.2%) respondents using seed from fellow farmers rarely.

Table 3.1

Distribution of respondents according to their seed sources.

Seed Sources	Always		Often		Occasionally		Rarely		Never	
	F	%	F	%	F	%	F	%	F	%
Own storage	7	5.8	68	56.7	45	37.5	-	-	-	-
Retailer/brokers	-	-	10	8.3	33	27.5	56	46.6	21	17.5
Fellow farmers	-	-	74	61.7	28	23.3	11	9.2	7	5.8
Seed companies	-	-	17	14.1	7	5.8	67	55.8	29	24.2
Research centers	-	-	-	-	-	-	23	19.2	97	72.8

Where F: Frequency.

Several seed companies are working now days in the entire country for the agricultural services. Provision of seed is also one of the important aspects of being provided by the seed companies. About 14.1% respondents revealed the often seed usage followed by 8.5% respondents using seed from seed companies occasionally. About, one-fourth (24.1%) respondents argued that they had never used the seed from seed companies.

Shah et al. (2010) described that the price of quality seed remains always higher as compared to grain because the production of quality seed is highly technical and institutional activity. Therefore farmers prefer to grow their own seed (HailuGebremariam 1992).

Research centers are more authentic and effective seed sources as they provide certified seed having better potential but in research area situation was not as good as it should be. None of the respondents was found using seed from research centers. About one-fifth (19.2%) respondents were found who had used the seed from research centers rarely followed by a large majority (72.5%) of respondents who never had experience of using seed from research centers.

Farmers who had experience of using seed from various sources were inquired to reveal their satisfaction level regarding quality of seed. General look indicates the maximum response of excellent about the seed of research centers although very few respondents had experienced its usage. Regarding own stored seed usage, only 5.8% respondents rated the seed as good followed by half of the respondents stating own stored seed as satisfactory. Furthermore, 36.6% respondents declared own stored seed as fair to cultivate followed by 7.5% respondents quoting own stored seed as poor (Table. 3.2).

Table 3.2

Distribution of respondents according to the quality of seed obtained from different sources.

Seed sources	Quality									
	Excellent		Good		Satisfactory		Fair		Poor	
	f	%	F	%	f	%	f	%	f	%
Own storage	-	-	7	5.8	60	50.0	44	36.66	9	7.5
Retailer/brokers	-	-	11	9.2	27	23.3	52	43.33	9	7.5
Fellow farmers	6	5.0	31	25.83	61	50.8	-	-	15	12.5
Seed companies	17	14.2	41	34.16	4	3.3	-	-	29	24.1
Research centers	23	19.1	-	-	-	-	-	-	-	-

Note: Farmers whose response was never in Table 4.8 were not enquired about quality issues.

Almost one-tenth (9.2%) respondents stated seed obtained from retailer/brokers as of good quality followed by 3.3% respondents declaring seed quality as satisfactory. Most (43.3%) of the respondents declared the quality of seed as fair while 7.5% farmers rated the seed quality as poor.

Fellow farmers were appeared as the major seed source despite the fact that nominal numbers of respondents stated the seed quality as excellent. About one-fourth (25.8%) respondents were found declaring seed provided by fellow farmers as good quality. Moreover, about half of the respondents declared the quality of seed obtained from fellow farmers as satisfactory, while 12.5% respondents were found stating seed of poor quality.

About 14.2% farmers were found rating seed provided by seed companies as excellent quality followed by 34.16% respondents who were quite satisfied with the quality and ranked the seed as good quality. Negligible number of respondents (3.3%) reported the seed provided by seed companies as satisfactory. Almost one-fourth (24.5%) respondents regarded the seed of seed companies as poor. The major reasons found during informal discussion were the adulteration and poor germination of seed.

About one-fourth (23%) respondents were found who had experience of using seed from the research centers and all of them rated the seed as excellent. During informal discussion with users it was revealed that purity and maximum germination was the major benefits, moreover, it is also right to say that prices of seed remain high in research centers and non-availability of seed in research centers creates problems.

Use of quality seed is assumed as key to the better production but it's also obvious that every one cannot use quality seed because of many reasons. In this regard respondents were inquired about the reasons hindering the utilization of quality wheat seed.

Several reasons were reported by the respondents as mentioned in Table 3.3. Adulteration of seed was the major reason reported by 67.5% respondents. It was revealed during the informal discussion that majority of the farmers was relying on the own stored seed or on the fellow farmers because of satisfaction that seed is stored by themselves and is pure. Respondents were afraid of investing high cost on seed being sold by seed companies or research centers, just because of risk of adulteration which deteriorates the quality of germination. It is supported by Waqas (2012) that adulteration of inputs is on high trend as companies or dealers do so to earn more profit. Misconception about quality was also the problem as indicated by one-third respondents.

Table 3.3

Perceived reasons for not using quality seed of wheat.

Reasons	F	%
Unavailability of seed	21	17.5
Expensive seed	27	22.5
Adulteration	81	67.5
Poor output of the seed available in market	17	14.16
Water shortage	11	9.16
Reliance on own storage	52	43.3
Misconception about quality issues	40	33.33

High cost and non-availability of seed were reported as other reasons by 22.5 and 17.5% respondents, respectively. High price was another constraint for farmers therefore they remain uncertain to buy the seed being sold at research centers and by seed companies. Obviously the rates at these points are too high. Similarly, despite high prices, seeds availability also remains an issue. Most of the time seed remains short on sale points. This shortage of seed promotes black marketing as people store seed to sell it on high rates at the sowing time. Water shortage was also reported as a reason for not using quality seed by 9.16% respondents. In this study area most of the areas were not having canal water; tubewells and rainfall are important irrigation sources. In this regard respondents revealed that this water shortage had negatively affected their interest to use quality seed.

3.2. Contribution of extension field staff (EFS) in capacity building of farmers for quality seed production

EFS are the public sector servants working for the development of farmers. These workers are basically agricultural experts. Within the Agriculture Department (Extension) their major function is to disseminate

agricultural technology to the farmers through different ways. In present study their performance can be judged through farmers' perceptions regarding capacity building of farmers for quality wheat seed production.

The data in the table 3.4 indicates that majority (96.7%) of the farmers are dependent on fellow farmers for information followed by EFS and retailer brokers (76.7%), electronic media (53.3%) and print media (40.0%).

Table 3.4

Distribution of respondents based on source of information acquisition regarding quality seed production.

Sources	F	%
EFS	92	76.7
Fellow Farmer	116	96.7
Electronic Media	64	53.3
Print Media	48	40.0
Retailers and Brokers	92	76.7

To assess the contribution of EFS in capacity building of farmers for quality seed production were obtained on 5 point Likert scale. "1. Poor 2. Fair 3. Satisfactory 4. Good 5. Excellent". In order to have ranking of various practices their weighted scores were computed by multiplying frequencies with score value allotted to each category of the scale. Moreover, means and standard deviations were also determined.

Data given in Table 3.6 reflects that sowing is on top with mean value of 3.90 and score of 468 while intercultural operation is at the last with minimum mean value and minimum score of 2.97 and 356 respectively. During informal discussion farmers revealed their strong dependency on extension field staff for up to date information. Therefore, EFS (76.7%) were reported as important information source for them in table 4.17. Farmers narrated that EFS delivered some of information in all aspects of the wheat seed production. It was also revealed during discussion that, farmers meetings, and demonstrations were the better methods being used by the EFS for farmers. Moreover, mobile phone was revealed as the most effective tool as it could be helpful in getting any relevant information in case of emergency. Sowing is followed by the Varietal selection acquiring mean value of 3.63. Seedbed preparation got the mean value of 3.57 and stood on 3rd rank. Insect pests and diseases are the dangerous for the crop productivity. Their impact is not limited to only at sowing or at maturity of the crops. The impacts also prevail during storage, resultantly decreasing the quality of stored grains. Anyhow, control of insects/pest remained on fifth rank with mean value of 3.37. Irrigation, harvesting/transportation/storage and fertilizer application are the important steps but unfortunately the information in these perspective was not perceived as good and need dire attention of EFS.

Table 3.5

Distribution of respondents based on information acquisition from EFS regarding quality seed production.

Information regarding quality seed production	1		2		3		4		5		6		Total
	F	score	F	score	f	score	f	score	f	score	f	Score	score
Seedbed preparation	4	4	28	56	44	132	12	48	4	20	28	168	428
Varietal selection	0	0	36	72	32	96	20	80	4	20	28	168	436
Sowing	0	0	16	32	44	132	24	96	8	40	28	168	468
Irrigation	8	8	36	72	36	108	8	32	4	20	28	168	408
Fertilizer application	8	8	52	104	24	72	8	32	0	0	28	168	384
Intercultural operations	16	16	56	112	20	60	0	0	0	0	28	168	356
Control of insect/ pest/diseases	4	4	44	88	32	96	12	48	0	0	28	168	404
Harvesting/transportation/storage	12	12	32	64	40	120	8	32	0	0	28	168	396

Scale: 1. Poor 2. Fair 3. Satisfactory 4. Good 5. Excellent.

Data given in Table 3.7 depict several reasons narrated by the respondents, which are responsible for below average contribution of EFS for farmers' capacity building. Ignorance of farmers appeared as the most prominent

reason reported by a large majority (73.33%) of the respondents. Another major reason revealed by a sound majority (63.33%) of respondents was more dependence on FA (Field Assistant) than AO (Agriculture Officer). Farmers explained that FA occasionally visits our fields and we get some help from him, but AO never visited the fields. Some people also disclosed that they had never seen the AO or DO of their area. The knowledge and competence of FA cannot be compared with that of AO who holds the agricultural degree. Therefore, the role of AO should be increased instead of FA. Sound majority (61.66%) of respondents reported the occasional visits paid by EFS as one of the reasons for the below average contribution in capacity building of farmers. EFS remains unavailable in their offices and do not possess the latest knowledge as revealed by the 56.67 and 36.67% respondents respectively as other reasons.

3.3. Level of satisfaction of farmers regarding the information received from extension field staff (EFS)

Extension is a service which provides assistance to the farmers in improving their farming techniques and methods, increasing productivity, income and level of livelihood. Extension agents have the task of bringing latest technical and scientific knowledge to the farming communities. In this regard, Bradfield (1966) described that the ultimate objective of extension is to enhance the productivity of agriculture. Extension workers are responsible for the dissemination of accurate information to the farmers. Data given in Table 3.9 reflects that satisfaction of farmers regarding information received from EFS on Seedbed preparation is on top with mean value of 2.99 and score of 359 while satisfaction regarding fertilizer application is at the last with minimum mean value and minimum score of 1.90 and 228 respectively. Seedbed preparation is followed by the Varietal selection and sowing acquiring means values of 2.77 by sharing the 2nd rank. Intercultural operations got the mean value of 2.53 and stood on 3rd rank. Information received from EFS regarding fertilizer application had least level of satisfaction by gaining mean value of 1.90. The overall satisfaction level of farmers regarding information received from EFS is not perceived as good as the data depicts closeness to mean value of 1 and hence it needs dire attention of EFS to increase level of satisfaction. Furthermore, farmers were inquired about the reasons hindering their satisfaction level and data in this regard are given in Table 3.9.

4. Conclusions

In the light of above facts and figures, it can be concluded that the overall satisfaction level of farmers regarding information received from extension field staff (EFS) is not seeming as good as the data depicts, for fulfill the requirement of farmers there is need of more attention of EFS to increase their level of satisfaction. It was also observed that respondents were afraid of investing high cost on seed being sold by seed companies or research centers, just because of risk of adulteration which deteriorates the quality of germination.

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