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FARMERS' ASSESSMENT OF THE FARM ADVISORY SERVICES OF PUBLIC AND PRIVATE AGRICULTURAL EXTENSION IN HYDERABAD DISTRICT, SINDH

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ABSTRACT:- The research work was carried out in Hyderabad district of Sindh. It was designed to assess the performance of farm advisory services of agricultural extension and pesticide/fertilizer companies. The most important finding of the study was the fact that farmers were not receiving new agricultural information from agricultural extension as most of the farmers were not visited. This entails the fact that farmers are not alone responsible for non-adoption of improved practices. Pesticide/fertilizer agents were viewed as effective in transferring messages, however, they were limited to their product sales since they have the task to achieve targets rather farmers' development. Agricultural suppliers/ dealers of the pesticide/fertilizer product sales were the most influential persons of the area as indicated by the farmers. Agricultural supplier/dealer makes all the decisions of the farmers regarding the use of pesticide/fertilize and/or seeds and other related inputs/products available in the market. Farm visits and result and method demonstration methods of technology transfer were perceived as effective methods of technology transfer. Farmers were able to increase the yields of their farm produce. However, the picture says that there is yield gap between the potential yield obtained by research scientists and yield obtained by the farmers. Farmers were of the opinion that both public and private extension should increase their timely visits. Farmers also suggest that they should be encouraged to attend seminars and workshops.

Key Words: Agricultural Extension; Public; Private; Farm Advisory Services; Pesticides Fertilizer Companies; Pakistan.

INTRODUCTION

In Pakistan, agricultural production especially cotton and rice crops can contribute much more to the export earnings, however, efforts should be made to fill the gaps between potential yields and yields obtained by farmers through proper utilization of agricultural extension techniques (Saleem, 1990). In spite of favorable climate, good soil conditions, and availability of irrigation water, the crop yield in Pakistan is far below the yield obtained in advanced countries. The unrealized potential increase in crop production in Pakistan may be attributed to the fact that farmers are not adopting a full package of crop production technology and still follow traditional methods. It is imperative to communicate appropriate technology to the farmers and motivate them to adopt it. It is therefore essential for national planners and extension educators to know what technology the growers are using and what sources of information are used. This base-line information is essential to strategic planning for improvement of crop production. Shah (1990) has drawn our attention to the yield gaps between farmers and research generators in Pakistan. He further stated that the Pakistani farmers' specifically small farmers are still unaware of the improved agricultural technologies for crop production. He finally concluded that there is a need and justification to redefine the role and functions of agricultural extension in Pakistan.

Farmers do not often make visits to the research stations, however, the farmers obtained the required knowledge from different sources such as mass media, fer-

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tilizer and pesticide/insecticide agencies. Farmers in Pakistan are more contacted by the private agencies such as fertilizer companies for adoption of innovation (Ali, 1980; Chaudhary, 1980). Innovation is reached to the big landlords or in other words innovators who positively response to the new technologies. The innovation reaches to the small scale farmers in a very slow mode till the other new technologies are in the market. (Tahseen, 1987; Rashid, 1987; Mahmood, 1987; Rogers, 1995). Jalvi (1990) has emphasized the need to carryout research on Agricultural Extension techniques throughout Pakistan for the purpose of updating and modifying extension system on a regular basis.

In addition, the agriculture development depends on capabilities in the generation of appropriate agricultural technologies most suitable to the agro-climatic conditions of the farmers. Technology generation, transfer and adaptation are interrelated processes of an integrated and dynamic system and are very instrumental for increasing agriculture production. The wide gap between technological production possibilities and the persistent low level of agricultural production in Pakistan has been an issue of concern in the agricultural development literature for decades. Wide adaptation and application of research findings and recommendations for the farmers in Pakistan remain limited, but there are at present applicable agricultural technologies that could, if widely adopted, increase production considerably. For dissemination of agricultural innovation, many different agricultural development models ranging from the classical technology diffusion, community development, green revolution and integrated rural development approaches have been adopted over the past decades with little success. Agricultural production in the country is still largely dominated by subsistence, low technology utilizing traditional procedures.

In developing countries such as Pakistan, farmers do not even get the opportunity to try new technology for their own benefit, because of high risk and cost. An efficient extension system aiming at transferring appropriate practices/technology to the small-scale/subsistence farmers can play a crucial role in the solution/alleviation of this problem. There are a number of factors which may influence the adoption of innovation (Abdelmagid and Hassan, 1996; Igodan et al., 1988; Nkonya et al., 1997 and Mbata, 1997). These factors include lack of money (poverty) with which to purchase seasonal agricultural inputs such as seed and fertilizer, the lack of basic farming implements, notably the ox-drawn single furrow plough, the lack of draft cattle, farm size, inadequate family labor for agricultural work, level of education, social participation, contact with extension, access to credit, empathy and leadership roles, lack of inputs in the market at the right time, and shortage of irrigation. In Pakistan, farmers are facing problems in getting agricultural inputs at the right time. Most of the farmers do not get the pure inputs such as seed and pesticides which affect the adoption rate among farming community (Mirani et al., 1999).

There is no doubt that agricultural extension in Pakistan has made significant contributions in improving agricultural productivity, however, there is still a big gap between the average yields and potential yields obtained at the research stations by the researchers and the yield obtained by the Pakistani farmers (Khan, 1997; Jalvi, 1996). In Pakistan, Government and donor agency (The World Bank) are trying to find ways to reach better to the farmers with a few trained staff and the use of mass media and NGO's (Operations Evaluation Department, 1994).

The prevailing situation demands for the proper use and transfer of appropriate technology to the farmers for adoption. Agricultural Extension, Pesticide/Insecticide agencies, and Fertilizer Industry have developed a modern network and used different ways to effectively transfer the modern technology in the concern areas. However, it is still in vague whether the farm advisory service of these departments/agencies is working effectively in the area.

Such a situation calls for researchers to carryout the study to assess the impact of these efforts in adoption of new farm practices. Therefore, the study sought to evaluate the working strategies and achievements of the farm advisory services as used by public and private extension services in Hyderabad district of Sindh. In viewing this crucial situation, the present study identify the farmers' perception regarding the assessment of farm advisory services of public and private Agricultural Extension in Hyderabad.

MATERIALS AND METHODS

Research Design

Although there are several research designs in the field of educational research, the study employed a survey research design. Survey research is commonly used in the field of education. A wide range of educational problems can be investigated in survey research (Gall et al., 2006). According to Leedy (2005), survey design provides the plan for the study and overall framework for collecting data. Survey research design is an effective way to measure responses on a fairly easy fashion as it uses well developed and reviewed questionnaire.

Population and Sample

The target population for this study consisted of all farmers of Hyderabad district. The list of farmers was obtained from the Revenue Departments of respective district. After obtaining the lists, a sample size was determined using the tables of "Selecting the Samples from a Given Population" (Fitz-Gibbon and Morris, 1987; McCall, 1980; Wunsch, 1986) at 5% sampling error rate. A total of 400 farmers were taken randomly. The sample was selected using sampling techniques. Sample selection was made on random basis using a table (Cochran, 1977).

Data Collection Analysis

For accumulating the perceptions of farmers about the assessment of farm advisory services, a questionnaire was developed. Frequency of visits, diffusion and adoption of improved agricultural practices of sugarcane cotton and wheat, and various extension activities were identified and determined as variables to assess the farm advisory services. Likert-type scales were used where deemed fit to measure the responses. Personal interviews were conducted from farmers and extension and pesticide/fertilizer agents during June - August, 2009.

A data-coding sheet was developed and inserted into computer statistical software SPSS/PC (Noursis). Data were analyzed using frequencies, means and standard deviation. A comparison was also made for increase in yield of sugarcane, cotton, and wheat and for performance of agricultural extension and pesticide/fertilizer agents using paired t-tests.

RESULTS AND DISCUSSION

Major Farming Problems

Farmers often face problems/constraints in adoption of new agricultural practices. The study inquired about the constraints faced by the farmers in Hyderabad district. Majority of farmers (66.5%) faced shortage of irrigation followed by 63.8% of farmers who perceived that insect pests and diseases is a major problem of their area. Only 12.5% of farmers perceived that water logging and salinity is a major problem of their area (Table 1).

Assessment of Farm Advisory Services

An important aspect of the study was to explore the frequency of visits by the extension and pesticide/fertilizer personnel to the farmers' field. The results shows that majority of farmers (78.0%) perceived that extension personnel pay no visit to their farm (Table 2). Only 19.5% of farmers received one visit and 2.0% and 0.5% received twice and thrice visits per month, respectively. A large number of farmers (41.3%) received twice a month visits followed by 25.3% of farmers who received thrice a month visits to their farms by the pesticide/fertilizer personnel.

Only 13% of farmers did not receive any visit of pesticide/fertilizer personnel.

Another important aspect of the study was to explore the improved practices as diffused by the extension and pesticide/fertilizer agents in Hyderabad district. A 1 to 4 Likert-Type scale was used. Result (Table 3) indicated that on average most of improved practices were partially diffused by extension and pesticide/fertilizer personnel except insect pest control method and fertilizer practices were moderately diffused by extension and pesticide/fertilizer personnel. The results are not promising as diffusion of new agricultural practices always play a crucial role in increasing crop productivity of the farms thus enable farmers to get the maximum output by minimum efforts. The study identified new agricultural practices as adopted by the farmers of the area. Since the diffusion results were not promising (Table 3), adoption rate is also affected. Results show that majority of farmers did not adopt improved agricultural practices "completely" (Table 4-6). Only 'insect pest control method" and "fertilizer" practices were "moderately adopted' by the farmers.

Table1. Major farming problems as perceived by farmers

Possible farming problems	Not a problem		Minor		Major	
	F	P	F	P	F	P
Non availability of inputs	283	70.8	99	24.8	18	4.5
Adulterated inputs	224	56.0	157	39.3	19	4.8
Insect pests and diseases	12	3.0	133	33.3	255	63.8
Irrigation	54	13.5	80	20.0	266	66.5
Waterlogging and salinity	145	36.3	205	51.3	50	12.5

F= Frequency, P=Percentage

Table 2. Frequency of visits by extension and pesticide/fertilizer workers as perceived by farmers

Visits in a month	Extension worker		Pesticide/Fertilizer worker	
	F	P	F	P
None	312	78.0	52	13.0
Once	78	19.5	82	20.5
Twice	8	2.0	165	41.3
Thrice	2	0.5	101	25.3

F= Frequency, P=Percentage

Table 3. Perception of farmers regarding diffusion of improved practices of sugarcane cotton, and wheat crops by extension and pesticide /fertilizer workers

Possible improved practices	Sugarcane	Cotton	Wheat
Soil and water sample testing	1.49±0.74	1.61±0.76	1.50±0.78
New varieties	1.91±1.01	2.00±1.01	1.94±1.02
Seedbed preparation	2.05 ±0.97	2.21±0.95	2.11±0.97
Seed treatment	1.95±0.92	2.20±0.98	1.98±0.93
Seed rate	2.21±1.01	2.33±0.96	2.24±0.97
Sowing method	2.26±1.09	2.44±1.02	2.28±1.06
Inter-culturing method	1.71±0.84	1.92±0.95	2.37±1.02
Weed control method	2.02± 0.98	2.09±0.97	2.27±1.00
Insect pest control method	2.71±1.17	3.12±1.02	2.37±1.12
Disease control method	2.20±1.10	2.40±1.03	2.17±1.00
Irrigation practices	1.94± 0.89	2.08±0.90	2.00±0.87
Fertilizer	2.61±1.17	3.02±1.03	2.91±1.03
Harvesting/picking	1.82± 0.91	2.36±0.99	2.08±0.89
Farm machinery	1.64±0.82	1.52±0.72	1.44±0.70
Threshing (only for wheat)	-	-	2.94±1.11

Likert-Type scale: 1= not diffused, 2= partially diffused, 3= moderately diffused, 4=completely diffused

Table 4. Adoption of improved practices of sugarcane, cotton, wheat by farmers

Possible improved practices	Sugarcane	Cotton	Wheat
Soil and water sample testing	1.18±0.46	1.23±0.54	1.20±0.47
New varieties	1.50±0.84	1.63±0.86	1.59±0.82
Seedbed preparation	1.88±0.93	2.05±0.92	1.98±0.91
Seed treatment	1.61±0.71	1.77±0.81	1.64±0.68
Seed rate	1.99±0.96	2.06±0.93	1.98±0.94
Sowing method	1.94±0.95	2.15±0.96	1.91±0.93
Inter-culturing method	1.35±0.62	1.47±0.70	1.87±1.37
Weed control method	1.52±0.79	1.63±0.84	1.76±0.91
Insect pest control method	2.46±1.15	2.90±1.03	1.70±0.83
Disease control method	1.75±0.90	1.91±0.93	1.56±0.72
Irrigation practices	1.61±0.77	1.65±0.73	2.70±0.99
Fertilizer	2.47±1.15	2.80±1.03	1.81±0.85
Harvesting/picking	1.54±0.84	2.21±0.92	3.03±0.99
Farm machinery	1.31±0.58	1.23±0.49	1.27±0.57

Likert-Type scale: 1= not adopted, 2= partially adopted, 3= moderately adopted, 4=completely adopted

Table 5. Perception of farmers regarding use and effectiveness of communication methods as employed by agricultural extension and pesticide/fertilizer workers

	Extension workers		Pesticide/Fertilizer workers	
Possible methods	Used	Effectiveness	Used	Effectiveness
Farm visits	1.46±0.55	2.84±0.38	2.41±0.61	2.86±0.39
Seminars	1.15±0.41	1.70±0.69	1.34±0.51	1.64±0.68
Method demonstration	1.33±0.50	2.58±0.60	1.94±0.73	2 6 ± 0 . 5 5
Result demonstration	1.33±0.51	2.65±0.53	1.94±0.73	2.65±0.58
Pamphlets	1.24±0.50	1.38±0.59	2.48±0.72	1.46±0.59
Booklets	1.25±0.51	1.32±0.54	2.46±0.71	1.45±0.58
Office call	1.12±0.37	1.24±0.47	1.23±0.49	1.23±0.46
Lecture meetings	1.31±0.50	1.45±0.55	1.42±0.52	1.52±0.56
General meetings	1.34±0.50	1.52±0.59	1.44±0.52	1.57±0.59
Field day	1.26±0.46	1.70±0.74	1.31±0.49	1.66±0.74
News papers	1.18±0.42	1.31±0.47	1.59±0.57	1.37±0.51
Magazines	1.16±0.39	1.27±0.45	1.58±0.57	1.34±0.49
Radio	1.20±0.44	1.35±0.56	1.66±0.55	1.47±0.58
Television	1.21±0.43	1.36±0.56	1.69±0.57	1.48±0.60

Likert-Type scale: 1= not satisfied, 2= somewhat satisfied, 3= satisfied, 4=highly satisfied

Table 6. Paired t-test for increase in yield of wheat, cotton and sugarcane

		Paired differences				
Crop		Mean±SD	Mean Difference	SE	t-value	Sig.
	Pre	24.14±1.95				
Wheat			5.39	0.19	5.00	0.001**
	Post	29.53±3.56				
	Pre	21.13±2.38				
Cotton			4.57	0.12	4.33	0.001**
	Post	25.70±2.00				
	Pre	828.12±63.72				
Sugarcane			127.64	22.00	65.61	0.001**
	Post	955.76±43.88				

Public and private extension uses variety of teaching methods to pursue farmers for adoption of improved/recommended agricultural practices. Present study identified the methods employed by public and private extension and their effectiveness as perceived by the farmers. The results show that on average, extension uses farm visits (Mean = 1.46), lecture meetings (Mean = 1.31), and general meetings (Mean = 1.34) "to some extent", whereas farmers perceived that pesticides/fertilizer agents uses farm visits (Mean = 2.41), pamphlets (Mean = 2.48), and booklets (Mean = 2.46) "to a greater extent" (Table 5).

Farmers perceived that farm visits, method, and result demonstrations are effective method "to a greater extent".

Present study inquired about the increase in yield of wheat, cotton, and sugarcane as a result of adoption of the improved agricultural practices. An open ended response was recorded where farmers identified their crop yields prior to adoption and after adoption. A Pre-Post comparison was made using a paired t-test (Table 6). The results show that there is a highly significant difference between the pre-post yield of wheat, cotton, and sugarcane (P = 0.001). Yield of these crops are increased significantly.

Farmers were asked to perceive the effectiveness of extension and pesticide/fertilizer agents' performance. The responses were recorded on a 1 to 4 Likert-type scale where 1 was "not satisfied", 2 was "somewhat satisfied", 3 was "satisfied", and 4 was "highly satisfied". A comparison was made between the extension and pesticide/fertilizer agents' performance using independent sample t-test. A highly significant difference was observed (P = 0.001) between agricultural extension and pesticide/fertilizer agents performance.

Farmers perceived high to pesticide/fertilizer agents performance as compared to agricultural extension agents performance (Table 7).

Farmers were asked to provide their perception regarding various services offered to them by agricultural extension and pesticide/fertilizer agents. A 1 to 5 Likert-type scale was used where 1 stands for "very poor", 2 stands for "poor", 3 stands for "fair", 4 stands for "good", and 5 stands for "excellent". Results in table 12 indicated that on average farmers perceived agricultural extension agents services as "poor" to "fair" whereas farmers perceived pesticide/fertilizer agents services as "fair" to "excellent" on various aspects (Table 8).

Opinion Survey

The third section of questionnaire comprised of opinion survey. These were open-ended questions where farmers were allowed to give their opinion freely. Majority of the farmers suggested that extension and pesticide/fertilizer agents should use farm visits for better diffusion-adoption of agricultural innovations, followed by demonstration (both method and result) as the second best teaching method. It was also noticeable that majority of the farmers were not satisfied with the performance of agricultural extension agents as they blame them faulty of being very irregular in their visits to farmers' field. Farmers generally appreciated the performance of pesticides/fertilizers agents only because of their regular visits. They prefer the suggestions offered to them by pesticide/fertilizer agents as compared to agricultural extension agents.

The farmers also described "dealer' as an influential figure affecting their decision-making in adoption of recommended practices for various crops grown at their field. "Most of the decisions regarding the use of any improved agricultural practice such as fertilizer, pesticide, and seed are made by the "dealer' of the area" as highlighted by majority of farmers. When data collector asked farmers about the strength and weakness of agricultural extension and pesticides/fertilizers agents in delivering latest information, only a few farmers replied and suggest measures for that. Farmers suggested that extension and pesticide/fertilizer agents should be more regular in their farm visits, conduct demonstration plots, invite farmers to the seminars and

Table 7. Perception of farmers regarding the performance of agricultural extension and pesticide/fertilizer agents

Category	Mean	SD	Mean difference	SE	t-value	Sig.
Extension agents	1.47	0.61				
			1.04	0.04	25.18	0.001**
Pesticide/Fertilizer agents	2.51	0.77				

Table 8. Perception of farmers regarding the effectiveness of services offered by agricultural extension and pesticide/fertilizer workers

Services	Agricultural Extension	Pesticide/Fertilizer
Visits farms on a regular basis	2.16±0.74	4.26±0.70
Methods of conducting farmer group meetings	2.36±0.61	3.53±0.51
Conducting demonstration	2.10±0.80	2.26±0.70
Explaining procedures for carrying out improved practices	2.40±1.00	3.73±1.03
Giving fair treatment to all farmers	2.30±0.79	2.26±0.70
Careful planning	2.40±1.00	3.73±1.03
Knowledge of farming problems	2.30±0.79	2.26±0.70
Timely meetings	2.13±0.93	2.93±0.96
Allowing farmers to discuss	2.23±0.77	3.40±0.63
Providing opportunity to understand and demonstrate learning	2.30±0.79	2.26±0.70
General performance in disseminating agricultural practices	2.46±1.00	3.60±1.12

workshops more often, to be more realistic in their approach, and they should work for the best terment of farmers rather than their own profit.

RECOMMENDATIONS

- Both public and private extension should improve and increase its visits to farmers' field. There is need to use participatory approach in diffusion of any improved agricultural practices. Diffusion of new improved practices should be continued with more realistic approach. For this, there should be linkages between public and private extension.
- Diffusion of improved practices is not just the end of any endeavor. Proper adoption of these improved practices is a necessary step. For this follow up should be made through regular visits to farmers' field and if the practices are not adopted properly, it is imperative to help farmers understanding what is the right step.
- Insect pest is an emerging problem of Hyderabad district. Government should take initiative to tackle this problem introducing alternative methods of insect pest control such as integrated pest management techniques.
- Agricultural extension should use demonstration methods as these methods proved to be effective methods in understanding the concept. It should involve farmers by inviting a convincing number of farmers in seminars, workshops, and farmers' day and not just inviting a few selected growers. Private mass communication channels should be involved in diffusion of new agricultural practices. Village fairs, farm festivals, seminars, and exhibitions should be carried out at the district and union council level for better transfer of new technology

and taking farmers into confidence for adoption.

- There is a knowledge gap exists between research and farmers which should be filled out by means of public and private extension. The advisory services as performed by agricultural extension are completely inefficient in performing their proper duties in knowledge transfer and follow up as indicated by farmers. These services are the strength of any extension program and must be given top priority for better development.
- Provincial government should take initiative to help district governments in planning, implementing, and monitoring of these services so that the dream to fulfill the goals of rural development and poverty alleviation from the province are achieved. There should be additional research on the factors responsible for yield gaps between potential yield obtained at the research stations and yield obtained by farmers.

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