

Research Article



Extension Agents Perceptions Regarding Constraints to Adoption of Improved Agricultural Practices by Farmers

Ayesha Khan*, Zubair Ahmad Khan, Urooba Pervaiz And Mehmood Iqbal

Department of Agricultural Extension Education and Communication, The University of Agriculture, Peshawar, Khyber Pakhtunkhwa, Pakistan.

Abstract | The present study was conducted in Khyber Pakhtunkhwa (KP)-Pakistan. Three districts were randomly selected from zone C i.e. Peshawar, Swabi and Mardan with the objective to investigate the information sources of extension agents, views of extension agents on adoption constraints and the extension methods used by them. All agricultural officers and 40% of field assistants were interviewed making a sample of 81 extension agents; 10 agricultural officers and 71 field assistants. The study results indicate that 77% field assistants were educated up to Matric with two years diploma while 10% agricultural officers had M.Sc. (Hons) degree with the majority of extension agents having job experience of more than 20 years. The main sources of information for the majority (79%) of extension agents were extension publications and training. Extension agents viewed that poverty (49%), expensive inputs (21%) and illiteracy (16%) were the main adoption constraints faced by farmers. Majority (86%) extension agents reported that the extension services are farmer friendly. The most appropriate teaching methods were group meetings (38%) and method demonstration (24%), while the most frequently used method for farmers contact was individual contact method (63%) as identified by extension agents. Non- significant association exist between diffusion of improved practices with adoption constraints and best teaching method used, while significant association exist with frequently used contact method. It is recommended that necessary inputs on subsidised rates should be provided to extension agents to make extension services more farmers friendly.

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***Correspondence** | Ayesha Khan, Department of Agricultural Extension Education and Communication, The University of Agriculture, Peshawar, Khyber Pakhtunkhwa, Pakistan; **Email:** drurooba@aup.edu.pk

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Introduction

Land and resources play a very important role in Agriculture. Pakistan's economy, directly and indirectly, depends on agriculture for providing employment opportunities to 43.5% of the labour force and contributes 19.5% to the GDP of the country. Most of the people live in rural areas, i.e. one third and these people are directly dependent on the agricultural sector as the main source of their

livelihood. On the basis of population, Pakistan holds the sixth position in the World which shows a high ratio of population (GoP, 2016-17). During the last 65 years, its population has increased more than five times. Due to the increase in population, the urban areas have been expended many folds which have put a great pressure on the cultivated land (Zaidi, 2015). FAO (2004) reported that 60% of the population in Asian countries is attached with the agriculture sector for their livelihood. There are many challenges and

barriers to agriculture sector due to which it is unable to obtain the required production to fulfil the foods needs of the people.

Extension organisation perform a key role in the dissemination of improved agricultural techniques to the farming communities and their possible adoption by them. Ali (2013) reported that majority (68%) of the farmers receive information from various public and private sources.

Agricultural extension department was expected to play an important role in the overall development of agriculture but failed due to a number of weaknesses and challenges and cannot obtain the desired goals. There are many reasons for not being capable to having a significant impact such as no incentives for extension personnel's, lack of agricultural planning, weak policies, and communication gaps among the researchers and farming community resulting low adoption of improved practices (Takenaka, 2006).

Lack of proper communication system and weakness of extension system most of our farmers are unaware about the modern agricultural practices which result in low production. Increase in agricultural production for fulfilling our needs largely depends upon the availability of modern farming techniques and new technology, adoption of modern agricultural practices and other necessary skills (Inayatullah, 2007).

Agricultural extension agents are responsible for the transfer of agricultural information to the farmers. The role of agricultural extension is vital for the transfer of modern agricultural technology, but it is still failing due to some reasons (Eicher, 2001). Due to different constraints, relevant information cannot be transferred to farmer's community resulting in low adoption and ultimately low production. To increase our production, it is essential to know about these constraints and also to remove these because without their removal it is not possible to increase our agriculture production for fulfilling the food needs our people.

Objectives

The study objectives were to:

1. Find out the information sources of extension agents regarding improved agricultural practices.
2. Pinpoint extension agent's views about constraints faced by farmers in the adoption of improved agricultural practices.

3. Identify the extension teachings methods used by the extension agents.

Materials and Methods

The present study was conducted in KP. There are five agro-ecological zones in KP. One zone i.e. zone C was randomly selected. Three districts, i.e. Peshawar, Mardan and Swabi were randomly selected from zone C. All the extension agents working in the selected districts were the population of the study. All the agriculture officers (AO) working in the selected districts were sample respondents, while approximately 40% of the field assistants (FA) were considered for data collection making a total of 81 extension agents (i.e. 10 agriculture officers and 71 field assistants). A well-structured interview schedule was used to collect primary data from AOs and FAs in the study area. The interview schedule was tested for its content and face validity before using it in the field (Wimmer and Dominick, 2003). Cronbach's Alpha was used to check the reliability (Wingenbach et al., 2003) and the value obtained was 0.80. Statistical Package for Social Sciences (SPSS) was used to analyse the data (Davis et al., 2004; Khan, 2012) and results were presented in frequencies and percentages. To test the association among different variables Chi-square test used is as follows:

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \frac{(O_{ij} - e_{ij})^2}{e_{ij}}$$

Results and Discussion

Socioeconomic characteristics of agricultural extension agents

Data concerning the socioeconomic characteristics of agricultural extension agents is given in Table 1. Data shows that 9% of Agricultural officers (AO) have age between 31-40 years, while 41% of field assistants (FA) have age above 41 years. This shows that majority of extension agents had age ranging 40 and above. These results are in accordance with that of Nawab (1994), Khan (2007) and Farooq et al. (2010) where they reported that majority of the respondents were 41-50 years. The educational standards require for a FA is Matric with two years training course in agriculture from the Agricultural Training Institute. Table 1 indicates that majority (77%) of the FAs was agriculture diploma holders, while the AO were educated up to various levels, i.e. 2% were B.Sc

(Hons), and 10% were M.Sc (Hons). The result of Adhikarya (1989) pointed out that majority of FAs had two years agriculture training after Matric. Khan (2007) reported that majority of AOs had Master degree followed by B.Sc and PhD. Job experience of majority (42%) of extension agents is above 20 years, followed by 37% having 5-10 years' experience which indicates that the respondents in the study area were quite experienced. The result presented is in accordance with that of (Khan, 2003; Farooq et al., 2010; Khan, 2012).

Table 1: Socioeconomic characteristics of agricultural extension agents.

Variables	Agricultural officers (AO)		Field assistants (FA)	
	Frequency	Percentage	Frequency	Percentage
Age (years)				
20-30	1	1	9	11
31-40	7	9	29	36
41 and above	2	2	33	41
Literacy level				
Matric	-	-	5	6
Agriculture diploma	-	-	62	77
B.Sc (Hons) Agri.	2	2	3	4
M.Sc (Hons) Agri.	8	10	1	1
Job Experience (years)				
1-4	1	1	1	1
5-10	6	8	23	29
11-15	-	-	4	5
16-20	2	2	10	12
Above 20	1	1	33	41

Source: Field Survey 2017.

Sources of information regarding improved technology

Agricultural extension agents depend on a variety of information sources to upgrade their own knowledge but also to impart knowledge to the farming community to fulfil their information needs. Extension agents communicate with clients, agents in the office at the country level, their supervisors, different news agencies, business organisations and administrators and teachers and researchers (Rama and Joan, 1996; Farooq et al., 2010). Table 2 indicates that majority (79%) of extension agents source of information was extension publications while small proportion utilises other sources of information like training (10%), Agricultural research institute (5%), TV/Radio (4 %) and internet (2%). More or less similar results were reported by Farooq et al. (2010).

Table 2: Sources of information of agricultural extension agents regarding improved practices.

Information Sources	Location						Total (%)	Rank
	Peshawar		Swabi		Mardan			
	No.	%	No.	%	No.	%		
Extension publication	23	85	21	77.8	20	74.1	64 (79)	1
Training	4	15	2	7.4	2	7.4	8 (10)	2
Internet	-	-	-	-	2	7.4	2 (2)	5
TV/Radio	-	-	2	7.4	1	3.7	3 (4)	4
Agricultural research institutes	-	-	2	7.4	2	7.4	4 (5)	3
Total	27	100	27	100	27	100	81 (100)	

Source: Field Survey 2017.

Table 3: Perception of agricultural extension agents regarding diffusion of improved practices and ways to improve diffusion among farming community.

Diffusion	Location						Total (%)	Rank
	Peshawar		Swabi		Mardan			
	No.	%	No.	%	No.	%		
Yes	26	96.3	27	100	27	100	80 (98.8)	-
No	1	3.7	-	-	-	-	1 (1.2)	-
Ways to improve diffusion								
Provide need-based inputs	8	29.6	13	48.1	6	22.2	27	1
Exhibitions	6	22.2	2	7.4	4	14.8	12	4
Training/refresher courses	5	18.5	5	18.5	10	37	20	2
Demonstration	4	14.8	5	18.5	4	14.8	13	3
Literature	-	-	1	3.7	-	-	1	6
Provision of resources	4	14.8	1	3.7	3	11.1	8	5

Source: Field Survey 2017.

Diffusion of improved practices to farmers

Diffusion of improved practices to the farmers can enhance their agricultural production. In Table 3, the overwhelming majority (80) extension agents claimed that they diffuse improved practices to the farming communities in their respective areas while only one extension agent in Peshawar reported no diffusion. This result is at par with Khan (2012) who reported that 97% of extension agents disseminate research findings to the farmers and Nawab (1994) results also confirm that 63% and 33% of extension workers often and sometimes, respectively disseminate

research findings to farmers. Twentyseven extension agents suggested that providing needed inputs to the farmers, 20 reported training/ refresher courses while 13 respondents reported demonstrations to improve diffusion process. However, 12 respondents mentioned exhibitions followed by provision of resources by 8 and literature by only one extension agent as a means to improve diffusion. It is evident from Table 3 that majority expressed provision of needed inputs and refresher courses as a way to improve diffusion. These results contradict the results of Farooq et al. (2010) and Axinn (1988) where they reported provision of resources as a mean to speed up diffusion to the farming community.

Perception of extension agents regarding farmers' friendly extension services

The more farmers' friendly the extension services, the more fruitful results will be achieved as the farmers depend on extension agents to provide them useful information. Farmers can be easily motivated and persuaded to adopt improved practices by the friendly behaviour of the extension agent. Table 4 indicates that majority (86%) extension agents reported that the extension services are farmer-friendly while 14% reported negatively. Those who reported that extension services are not farmer-friendly; they were asked to suggest ways to improve the situation. Out of these, 9% demanded provision of resources like funds, transport, offices, equipment etc. while 4% suggested subsidies on inputs and 1% demanded provision of necessary inputs on time to make agricultural extension services farmer friendly.

Table 4: Perceptions of extension agents regarding farmer friendly extension services.

Farmer-friendly extension services	Location						Total %	
	Peshawar		Swabi		Mardan		No.	%
	No.	%	No.	%	No.	%		
Yes	23	85	20	74	27	100	70	86
No	4	15	7	26	-	-	11	14
If no, ways to make extension services farmer friendly								
Provision of resources	2	7.4	5	18.5	-	-	7	9
Provide necessary inputs on Time	-	-	1	3.7	-	-	1	1
Subsidies on inputs	2	7.4	1	3.7	-	-	3	4

Source: Field Survey 2017.

Constraints in the adoption of modern technology

Robert et al. (1989) mentioned that there are various

constraints due to which farmers are unable to adopt modern agricultural technology. He suggested that modern equipment and training related to modern technology should be provided to increase agricultural production. The data in Table 5 shows views of extension agents regarding constraints faced by farmers in the adoption of modern technology. According to the results of the study, 49% and 21% extension agents respectively reported poverty (rank 1) and expensive inputs (rank 2) as major constraints in the adoption of modern technology. The reason behind this is that the farmers are poor and are not able to purchase the required inputs even if they are made available on time. However, illiteracy and limited resources were mentioned by 16% and 14% extension agents as core hurdles faced by farmers in the adoption of recommended modern technologies. These results are at par with that of Farooq et al. (2010) where he reported a lack of resources and costly inputs as major hurdles in the adoption of modern technology.

Table 5: Extension agents' perception regarding farmer's constraints in adoption of modern technology.

Constraints	Location			Total	Rank	
	Peshawar	Swabi	Mardan			
	No. of extension agents					
Poverty	10	11	19	40	49	1
Illiteracy	6	3	4	13	16	3
Expensive inputs	6	8	3	17	21	2
Limited resources	5	5	1	11	14	4

Source: Field Survey 2017.

Teaching methods used by extension agents

Agricultural extension agents use a variety of tools and methods to deliver the latest information and skills to the farming community with the objective to increase production and improve standards of their living (Ogunwale, 1991). Results of the study regarding best teaching method used are indicated in Table 6 which shows that group meetings were considered as best teaching method by 38% extension agents and is ranked 1. The methods which are ranked second by the extension agents are method demonstration (24%) and group discussion (24%), followed by face to face (12%) and mass media (2%) for learning of the farmers.

Frequently used methods to contact farmer

There are different methods used by the extension agents to contact farmer in order to disseminate and create awareness about the latest technology. The

data in Table 7 shows that majority (63%) of the extension agents use individual contact method while 25% reported farmer meetings as a method to contact farmer. Demonstration and FFS as a contact method are mentioned by a small number of extension agents, i.e. 11% and 1% respectively. It is evident from the data in Table 7 that extension agents uses a different method depending on the specific situation to contact farmers, so we can say that a particular method is sufficient for the learning of the learning of farmers. Studies of Nawab (1994) and Khan (2012) also mentioned that 70% and 61% of extension personnel respectively used individual contact method for communication with farmers.

Table 6: Distribution of extension agents regarding best teaching methods used.

Teaching methods	Location			Total	Rank
	Peshawar	Swabi	Mardan		
	No. of extension agents			No.	%
Method demonstration	6	6	7	19	24 2
Group discussion	8	5	6	19	24 2
Group meetings	7	14	10	31	38 1
Mass media	-	-	2	2	2 4
Face to face	6	2	2	10	12 3

Source: Field Survey 2017.

Table 7: Distribution of extension agent regarding frequently used methods to contact a farmer.

Contact methods	Location			Total	Rank
	Peshawar	Swabi	Mardan		
	No. of extension agents			No.	%
Individual contact	16	19	16	51	63 1
Demonstration	4	2	3	9	11 3
Farmer meetings	7	6	7	20	25 2
FFS	-	-	1	1	1 4

Source: Field Survey 2017.

Chi-square analysis of diffusion of improved agricultural practices to farming community with different variables

Table 8 shows the results of Chi-square test among diffusion of improved agricultural practices to farming community and constraints in adoption of new technology. It is observed that there is a non-significant association ($P > 0.05$) among constraints in adoption of new technology and diffusion of improved agricultural practices to the farmers. There is non-significant ($P > 0.05$) association between teaching

methods, and diffusion of improved agricultural practices as P-Value is .508 and Chi-square value is 3.304 which indicates that the teaching method used did not affect on the diffusion of improved agricultural practices. The study concludes that diffusion will take place whatever teaching method is used. All extension teaching methods are important, but one had to choose a method which is suitable for a particular situation. It was found that there is significant ($P < 0.05$) association among diffusion of improved agricultural practices to the farming community and frequently used method for farmers contacts. This shows that the type of method used for farmers contact had great effect on the diffusion of improved practices. It is clear from the data that the individual contact method is frequently used for diffusion. The extension workers give full attention and importance to individual farmer who had a positive effect on diffusion and adoption of improved practices.

Table 8: Chi-square analysis of the diffusion of improved agricultural practices to farming community with different variables.

Variable		Diffusion of improved agricultural practices		Chi Square	P value
		Yes	No		
Adoption constraints of agricultural technologies	Poverty	40	-	5.296	0.151 ^{NS}
	Illiteracy	12	1		
	Expensive inputs	17	-		
	Limited resources	11	-		
Best teaching method	Method demonstration	18	1	3.304	0.508 ^{NS}
	Group discussion	19	-		
	Group meeting	31	-		
	Mass media	2	-		
	Individual contact	10	-		
Frequently used methods for contact	Individual contact	51	-	8.100	0.044 ^{**}
	Demonstration	8	-		
	Farmers meeting	20	-		
	FFS	1	-		

Calculated by Author.

Conclusions and Recommendations

The main source of information used by extension agents is extension publication followed by training and internet. The most appropriated teaching method for farmers learning was a group discussion and

method demonstration, while individual contact method was most commonly used for farmers contact. The major constraints in the adoption of modern technology were poverty, expensive inputs, illiteracy and limited resources. Extension services were farmer friendly, and it was stressed that resources, necessary inputs and subsidies on inputs could make it more farmers friendly. There exists a on-significant association between constraints in adoption and diffusion of improved agricultural practices and also best-teaching methods used while diffusion of improved agricultural practices to farming community and frequently used method for farmers' contacts was significantly associated.

Keeping in view the conclusions of the study the following recommendations were put forward.

- The government of Khyber Pakhtunkhwa Agricultural Extension Department must provide facilities to the extension agents to improve their contact with the farming community.
- Necessary inputs, need-based information and subsidies should be provided by the government to make extension services farmer friendly and to enhance the adoption of modern technologies by the farmers.

Authors Contribution

Ayesha Khan: Wrote the manuscript.

Zubair Ahmad Khan: Collected the data.

Urooba Pervaiz: Helped in data analysis and edited the manuscript.

Mehmood Iqbal: Edited the manuscript.

References

- Adhikarya, R. 1989. Strategic extension campaign: A case study of FAP'S experience. Food Agric. Organ., United Nations.
- Ali, J. 2013. Farmers' perspective on quality of agricultural information delivery: A comparison between public and private sources. J. Agric. Sci. Technol. 15: 685-696.
- Axinn, G. 1988. Guide on alternative extension approaches. FAO, Rome.
- Davis, K., S. Franzel, P. Hildebrand and N. Place. 2004. Extending technologies among small scale farmers in Meru: Ingredients for success in farmer groups. Proceedings of the 20th Annual Conf. Assoc. Int. Agric. Ext. Educ. (AIAEE). Dublin, Ireland. pp: 902-913.
- GoP (Economic Survey of Pakistan). 2016-17. Government of Pakistan, 2015. Islamabad. pp. 1-2.
- Eicher, C.K. 2001. Africa's unpublished business: Building sustainable agricultural research system. Staff paper, 2001-10. Dep. Agric. Econ. Mich. State Univ. East Lansing, Michigan. pp. 5-6.
- FAO. 2004. Institution building to strengthen agriculture extension. In. proceedings of the 27th FAO regional conference for Asia and the pacific, Beijing, China. 17-21, May, 2004. Food Agric. Organ. U. N. Reg. Off. Bangkok, Thailand. pp. 1-2.
- Farooq, A., M. Ishaq, N.A. Shah and R. Karim. 2010. Agricultural extension agents and challenges for sustainable development. Sarhad J. Agric. 26(3): 419-426.
- Inayatullah, J. 2007. Institutsional changes in agricultural support services in rural Northwest Pakistan. Int. J. Agric. Appl. Sci. 7 (2): 111-118.
- Khan, A. 2012. Analysis of barriers to communication regarding production technology among researchers, extension personnel and farmers in Khyber Pakhtunkhwa: Pakistan. Ph.D dissertation, Dep. Agric. Ext. Educ. Commun. Univ. Agric. Peshawar, Pak. 146-148.
- Khan, J.A.M. 2003. Identification and rank order development of self-perceived competencies possessed by agricultural extension agents in the Punjab, Pakistan. Ph.D dissertation, Univ. Faisalabad, Pak. pp. 100-177.
- Khan, M.Z. 2007. An investigation into professional competencies of agricultural extension agents in NWFP, Pakistan. Ph.D dissertation, Dep. Agric. Ext. Educ. Commun., Univ. Agric. Peshawar, Pak.
- Nawab, K. 1994. Linkages among researchers, extension personnel and farmers in the NWFP of Pakistan. MS thesis, college of Agric. For. West Virginia Univ. Morgantown, West Virginia.
- Ogunwale, A.B. 1991. Extension communication patterns in Oyo North agricultural development project. Unpublished M. Phil thesis, Obafemi Awolowo Univ. Ile-Ife. pp. 1-195.
- Rama, B.R. and S.T. Joan. 1996. Extension agents' use of information sources. J. Ext. 34 (1):23-27.
- Robert, P., Arnold and A.T. Lori. 1989. Farmers first farmers innovation and agricultural

- research. Intermed. Technol. Publ. Lond. p. 9.
- Takenaka, S. 2006. Enhancement of extension systems in agriculture. Published by the Asian Productivity Organization (APO). Report of the APO seminar on enhancement of extension systems in agriculture. Held in Pakistan, 15-20 December, 2003.
- Wimmer, R.D. and J.R. Dominick. 2003. Mass media research: an introduction (6th edition). Belmont, CA: Wadsworth Publ. Co. pp. 46.
- Wingenbach, G.J., B.L. Boyd, J.R. Linder, S. Dick, S. Arispe and S. Haba. 2003. Student's knowledge and attitudes about international agricultural issues. J. Int. Agric. Ext. Educ. 10(3): 25-35.
- Zaidi, S.A. 2015. Issues in Pakistan's economy. Third edition. OUP Catalogue. Karachi. pp. 12-14.