Gender Discrimination in Extension-Farmers Contact: An Evidence from Khyber Pakhtunkhwa, Pakistan

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Abstract

The current research work gender discrimination in extension-farmers contact is carried out in three districts of Khyber Pakhtunkhwa, Pakistan. For the study purpose 384 women farmers either involved directly or indirectly in agriculture and livestock sector were selected through random sampling technique. Other respondents were the public sector agriculture officials of the Extension Department and they were 80 in number in the three selected districts. Well-structure and pre-tested interview schedule was used separately for both respondents and collected data were analysed. Only 14.3% women respondents received trainings from the private sector organizations. All female farmers reported unavailability of female extension staff in the study area. Data regarding extension staff show that majority (97.5%) were male, whereas only 2.5% were female in the study area. Majority (76.3%) of the extension staff was field assistants, in which 67.5% were Diploma holders and only 10% were M.Sc. (Hons) graduates. Lack of resources and finance were the basic cause for not organizing trainings and workshops for women farmers, resulting in extension-farmers gap, only 43.8% of extension workers were providing training facilities in their respective domains only to male farmers It is concluded that the role of extension department in creating awareness among women farmers is very poor. Women farmers are deprived of their due right to access of information; as a result they are hindered from obtaining new opportunities. Female extension worker (Field Assistant) position does not exist in agricultural extension department in Khyber Pakhtunkhwa. Agriculture related trainings for women farmers were very uncommon in the study area. The study recommends that separate female training opportunities must be provided to women farmers especially intensive trainings in the field of kitchen gardening and livestock related problems. In-service trainings and employees' development of the public sector extension staff is required for effective extension field operations.

Key Words: technology dissemination, women farmers, extension workers, trainings.

Introduction

Efficient and useful diffusion of latest technology and findings to the rural farming community is essential for increasing production (Safdar and Pervaiz, 2020). The latest technology and findings may consists of improved varieties and planting methods, pesticides, insecticides and fertilizer application and better post-harvest

activities (Yahaya, 2001;Muhammad, 2005; Mahmood and Sheikh 2005; Sanaullah *et al.*, 2020). In the past farmers transfer the agriculture related information verbally among themselves (Diamond, 2002). It has now become clear that adequate and timely information communication makes easy the acceptance of technology (Lwoga, 2010).

The main function of agricultural extension is putting latest agricultural information and technical research into practice by motivating farming community (both male and female) through educational procedures in order to raise the per acre yield of crops (Safdar and Pervaiz, 2020). The farming community should be effectively convinced of the utility of these techniques, which will ultimately lead to the adoption of the same by farmers. This can be achieved through an effective and organized extension department comprising of honest, devoted and well trained works, equipped with fundamental facilities required for satisfactory functioning (Qamar, 2006; Nazari and Hassan, 2011;Sanaullah and Pervaiz, 2019).

Gender biasness restrict women in availing resources and opportunities (Safdar *et al.*, 2021). Proper policies and legislation for the ownership of land and property by the women should be developed and must be acknowledge and secured and communicated to the people through rising awareness among the people (Mollel *et al.*, 2000). Women farmers' access to financial services is prevented by cultural values, norms and legal policies and they cannot develop enterprises or start business and increase production by their own (Safdar and Pervaiz, 2020).

Equitable sharing of the resources between men and women is vital for obtaining better agriculture production but in most of the development projects launched for small farmers, women's opportunity to the resources is usually ignored (Quisumbing and Pandolfelli, 2010). Farmer's accessibility to productive inputs increase their potential to utilize the modern technology in the best possible way. Participation of men and women in agricultural activities is noteworthy but their access to and control over the resources varies (Deere and Doss, 2006).Women's accessibility to resources and opportunities needed for better production is minimum in developing countries due to which agricultural production is not according to the standard (Othman and Martin, 2001; Safdar and Pervaiz, 2020). Low agricultural production, economic growth and food security is badly affected by gender gap in the society. Women contribution in the economic development of any country cannot be ignored (Pervaiz *et al.*, 2012). They work as labor, farmers and entrepreneurs, so for increasing agriculture production it is important to promote gender equality (Mulema *et al.*, 2019). Women's role varies across regions and countries they can enhance production, helps in increasing food security, economic growth and social well-being when given the opportunity to education, financial services, livestock and rural employment (Mollel *et al.*, 2000; Nazir *et al.*, 2013). Their roles are varied and varying quickly, so generalization should be made vigilantly but the common fact in most countries is that women have less access to capital, services and employment as compared to men (Dillon and Quinones, 2010). Gender differences in the society hinder the accomplishment of large financial and social

development objectives (Mugede, 2013). This also has an effect on the contribution and production capacity of women in the farming sector (Dillon and Quinones, 2010). Women mostly do the labor work by themselves as they do not have enough financial resources to hire labors. Main problems faced by women are the specific land and property rights (World Bank, 2018).

Women in Pakistan are contributing in every walk of life like agriculture, livestock, education, health care etc. besides their basic responsibilities of household but the existing class structure and gender biasness keeps them ignored and unrecognized (Safdar and Pervaiz, 2020). They have less opportunity to education, health and nutrition as compared to men (Nazir *et al., 2013*). Domestic and gender based violence are very common in our society (Santra and Kundu, 2001). Lack of financial resources force them to work on least amount of weges and keeps them away from learning and skill enhancement opportunities (Safdar *et al.*, 2021). They are actively performing in all agricultural practices from sowing to harvesting and marketing. In the field of livestock, major burden goes on the shoulders of women. But unfortunately, their efforts and hard work are not recognized and their contributions to the livelihood of family are not being acknowledged (Safdar and Pervaiz, 2020). They lack the opportunity to pursue higher and better education, they can't take part in decision making in spite of their education and economic contribution to the income of the family. Our cultural and traditional norms further make the situation worse and hinder them to work within the four walls of a house (Pervaiz *et al., 2012)*. Women are typically neglected by the extension workers because of their less access to resources (Nazir *et al., 2013*; Safdar and Pervaiz, 2020).

Therefore this study has been designed to take an in-depth view of the above situation and make some policy recommendation for the uplift and empowerment of women, with the objectives to find out gender gap in extension-farmer contact, and the role of extension department in creating awareness among women farmers in the study area.

Materials and Methods

The present study was conducted in Khyber Pakhtunkhwa, Pakistan where three districts (Bannu, Swabi and Swat) were randomly selected using multi-stage sampling technique (Sanaullah and Pervaiz, 2019). For collecting the cross sectional data, the sample size was collected adopting the formula given below.

$$N = \frac{Z^2 V^2}{D^2} \quad \text{..... (1)}$$

Where

N = Total size of sample

D = Estimate acceptable margins (5%)

Z = Error of the confidence level limit or Normal variation (95%) and constant for this value is 1.96

V = Assumption of variability with regard of farmer's locality which is (50%)

N= $(1.96)^2 \times (50)^2 / (5)^2 = 384$

Sample size

Total number of 384 women respondents were selected from the three districts by applying the above formula. These 384 respondents were divided equally on each district i.e 384/3 = 128. So from each district 128 women respondents were taken. It is pertinent to note that these Union Councils do not have formal data regarding women employment, the selection of sample was based on the selection of every 3rd house randomly. From each selected union council, those women (who were directly or indirectly involved in farming and/or livestock) were selected for data collection. If a woman was not involved in farming and/or livestock, that house was excluded and the next was selected.

Extension staff of the public sector

The entire men and women extension staff of the public sector in three districts were selected for this research study. Thus, the total number of extension staff in the three selected districts was 80.

Data collection tools and analysis

The researcher herself being female collected the primary data from the sampled respondents. A well-designed interview schedule was formulated for obtaining cross sectional data (Cho, 2002; Wingenbach *et al*., 2003).

For analyzing the gathered data, SPSS v.20 was applied. The collected data were put in Excel sheet and the analyzed obtained results were presented in frequencies and percentages. In order to identify the association among different attributes, Chi-Square test was applied having the following formula.

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

This test under the null hypothesis (H_o) follows a χ^2-distribution with $(r-1)(c-1)$ degrees of freedom, in equation (2), O_{ij} indicates the observed frequency and e_{ij} shows the expected frequency.

Ranked Based Quotient

Ranked Based Quotient (RBQ) technique was used to quantify the data collected by Preferential Ranking Technique. The following formula is given by Sabarathnam (1988).

$$RBQ = \frac{\sum f_{i\,(n+1-i)}}{N \times n} \times 100 \ldots\ldots (3)$$

Where,

f_i = Number of respondents reporting the i^{th} rank

N = Number of respondents

i = Number of rank

n = Number of constraints identified

Results and Discussion

Trainings attended by female farmers

The main component of agriculture extension department is dissemination of technical knowledge and information and capacity building of the farming community

regarding latest techniques (Pervaiz *et al*., 2020). These latest technologies were mostly unknown to the farmers so it was important to transfer these latest information to them. Data about the training of women were given in Table 1.

Table 1 Frequency distribution of female farmers regarding trainings attained from extension or other agencies

District	Trainings attended		Total
	Yes	No	
Bannu	0(0.0)	128 (33.3)	128
Swabi	23(6.0)	105 (27.3)	128
Swat	32(8.3)	96(25.0)	128
Total	55(14.3)	329 (85.7)	384

Note: Values in parenthesis are percentages

Table 1 shows that all the women interviewed were asked about trainings. Out of the total respondents, only 14.3% women got trainings. The trainings provided to them were mostly in field of crop production, livestock and poultry and post-harvest activities. These trainings were provided by various NGOs and private organizations. Those women who got trainings were more updated than those did not attend or had no access to trainings. But the present situation is very alarming shows the negligence of extension department, supporting gender discrimination in extension-farming contact. .

Female extension worker

Agricultural extension is termed as information delivery system aimed to transfer new findings of agricultural research to farming community. Well-organized and efficient communication is pre-requisite in any extension work (Yahaya, 2001). Access to information is a due right of both men and women farmers, but unfortunately in Pakistan, men's access and control over the resources makes their roles and responsibilities different than women (Sadaf *et al.,* 2006). Women cannot respond to new opportunities due to lack of access to resources as compared to men because of gender biasness (Nazir *et al., 2013*; Santra and Kundu, 2001).

Data in Table 2 show information about female extension worker in the three selected districts of Khyber Pakhtunkhwa. The study outputs revealed that all of the study respondents reported no female agriculture/livestock extension worker was available in their area. It means that female extension worker position does not exist in agricultural extension department in the province of Khyber Pakhtunkhwa.

Table 2 Availability of female extension worker and their need

District	Female extension worker available		Need rank for female extension worker
	Yes	No	
Bannu	0 (0)	128 (33.3)	4.56
Swabi	0 (0)	128 (33.3)	4.40
Swat	0 (0)	128 (33.3)	3.98
Total	0 (0)	384(100)	12.94 (4.31 average)

Note: Values in parenthesis are percentages

In the light of this field observation, there is dire need to establish female extension staff and ensure active participation of female farmers in field activities. For this reason second question was asked from respondents about their need for these female extension field staff. A five point likert scale (denoting from strongly disagree to strongly agree where 1: strongly disagree, 2: disagree, 3: undecided, 4: agree, 5: strongly agree) was used to identify the eagerness for this demand. In district Bannu the average likert scale value was 4.56 which is near to 5 (strongly agree), so means that women in Bannu were more enthusiastic towards female extension workers' need in the area. District Bannu had the highest likert scale value and it might be due to the reason that district Bannu is more conservative hard remote area in Khyber Pakhtunkhwa, where it is more likely for women to work under female extension worker instead of male. The overall average likert scale calculated was 4.31 which mean that almost all of the study respondents showed strong willingness for the need of female extension staff.

Sources of information (female farmers)

For the acceptance and adoption of new and modern technologies, awareness and information about these technologies is vital. According to (Kassie *et al.*, 2009) availability of information about the new technology is significantly important for raising awareness and attitudes towards technology adoption. Table 3 represent data regarding awareness and use of different information sources by women respondents in their respective districts. Respondents were asked questions in dummy whether they get information from the mentioned source or not and their responses were recorded below.

Table 3 Distribution of female farmers on the basis of their source of information

District	Source of information													
	Local farmers		Friends/relatives		Radio		Print materials		TV		Government extension workers		Non-governmental organization (NGOs)	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Bannu	99(25.8)	29(7.6)	88(22.9)	40(10.4)	23(6.0)	105(27.3)	3(0.8)	125(32.6)	2(0.5)	126(32.8)	0 (0)	128 (33.3)	0 (0)	128 (38.9)
Swabi	73(19.0)	55(14.3)	59(15.4)	69(18.0)	21(5.5)	107(27.9)	29(7.6)	99(25.8)	7(1.8)	121(31.5)	0 (0)	128 (33.3)	23 (6.0)	105 (31.9)
Swat	103(26.8)	25(6.5)	74(19.3)	54(14.1)	30(7.8)	98(25.5)	36(9.4)	92(24.0)	3(0.8)	125(32.6	0 (0)	128 (33.3)	32 (8.3)	96 (29.2)
Total	275(71.6)	109(28.4)	221(57.6)	163(42.4)	74(19.3)	310(80.7)	68(17.7)	316(82.3)	12(3.1)	372(96.9)	0 (0)	384 (100)	55(14.3)	329 (100)

Note: Values in parenthesis are percentages

It is observed that majority 71.6% of the respondents reported that they acquired the necessary agriculture and livestock information from their fellow farmers. Usually when they meet each other in the fields, condolence or other family gatherings in the village, they exchange information with each other. It therefore is necessary for the extension staff to pass information to the village elders and other literate farmers who are liberal and honest to pass on this information to other farmers of the village and nearby areas. This result resembles with that of Khan and Akram (2012) where the information source for most (68%) of the respondents was their fellow farmers. The latest sources of information dissemination as reported by Adolwa *et al*. (2012) are farmer unions, research stations, extension services and various mass media that influence the adoption process.

It is concluded form the results that the role of extension department in creating awareness among women farmers is very poor. Women farmers are deprived of their due right to access of information; as a result they are hindered from obtaining new opportunities.

Demographic characteristics of extension staff

Saleem (2010) reported that age of an individual is a vital factor that considerably effect thinking and maturity but can't be mentioned with guarantee that the effect will always be significant. In this respect past study has shown a positive significant effect of age on the capabilities of extension staff (Okwoche *et al.*, 2011). On the other hand, studies done by some (AL-Subaiee *et al*., 2005; Omoregbee and Ajayi, 2009) have reported a non-significant effect of age on the skills of extension worker. Efficiency and job performance is usually higher in young and fresh people because they are more energetic then elderly people (Ladele *et al.*, 2015). Therefore, it was necessary to obtain data regarding the age of respondents.

Table 4 ***Demographic characteristics of extension staff***

Characteristic	Category	Frequency (%)
Age	Up to 35 years	15 (18.8)
	36-45 years	51 (63.8)
	46-60 years	14 (17.5)
	Total	80(100)
Designation	Subject Matter Specialist (SMS)	3 (3.8)
	Agriculture Officer	6 (7.5)
	Agriculture Supervisor	10(12.5)
	Field Assistant	61(76.3)
	Total	80(100)
Job Experience	Up to 5 years	20 (25.0)
	6-10years	39 (48.8)
	11 and above	21 (26.3)
	Total	80(100)
Dissemination Frequency	Monthly	0(0)
	Quarterly	7(8.8)
	Annually	47(58.8)
	Total	54
Dissemination of latest technology to women	Yes	0(0)
	No	80(100)
	Total	80(100)
Provision of trainings Demonstrations, trainings, workshops arranged	Yes	35(43.8)
	No	45(56.3)
	Total	80(100)

Table 4 represents data regarding distribution of the extension field staff on the basis of their age. Age is categorized into 3 groups i.e. up to 35, 36-45, 46 and above years. Of the total 80 respondents, maximum 63.8% falls in the age group of 36-45 years.

Designation matters a lot in any job position to deliver effectively. Data regarding designation of extension worker is presented in Table 4, show that out of the total 80 respondents in the selected districts, 76.3% of the respondents were field assistants, followed by 12.5% agriculture supervisor, 7.5% Agriculture officer and 3.8% Subject

Matter Specialist (SMS). Field assistants mostly work in the field with agriculture officers and SMS, while agriculture supervisors had the responsibility of managing agricultural equipment and materials inside agriculture extension directorate /office.

Job experience is define as the duration of time extension field staff has spent on the job and it measures how much capable and efficient he is on the job. Data representing job experience show that, majority i.e. 48.8% were those who had 6-10 years of job experience after holding public office. Our results are in contrast with Khan (2012) who reported that majority of the extension staff were experienced in the study area.

Technology dissemination to women is really important as women are the main stakeholder in traditional system of farming. Rural women are actively involved in field/livestock operations and use their conventional ways of farming and rearing livestock and poultry. Table 4 shows distribution of extension field staff regarding their view point on dissemination of agricultural technology to women in their respective districts. The presented data revealed that no such programs were available for women to transfer them latest agricultural technologies. Women in rural areas are facing many problems in getting farming information from extension department due to various reasons. Cultural barriers may cause them not getting the required farming practices. Therefore, it is utmost need to arrange separate trainings and female staff to deliver them the required necessary information.

Extension trainings, workshops and practical field demonstrations are the key approaches used by extension staff for the diffusion of farming practices to target audience. Without adequate knowledge of the field situations and improved farming practices, it is difficult to grow better crop for getting more yield (Sanaullah *et al.*, 2020: Pervaiz *et al.*, 2012). Therefore timely and relevant information delivery through trainings, demonstrations and workshops is required to update the existing knowledge level of the farming community. In this regards, need assessment is the pre-requisite in order to exactly know the field situations and problems of the farmers. Results in Table 4 also show that majority 56.3% of the respondents reported that they are unable to arrange trainings, workshops for farmers due to less available resources and finance. Out of the total 80 respondents, 43.8% of them were providing such facilities in their respective domains only to male farmers. It is concluded that field staff in extension directorate face problems regarding their finance and resources needed for efficient staff performance. Therefore government should equip them enabling them to perform better.

Qualification of extension staff

Level of education increases the learning capability of an individual. Educational qualification has an essential role for extension staff regarding diffusing knowledge, providing trainings/information, suggesting recommended farming practices, understanding the target community and convincing them to use modern technologies (NG and Feldman, 2009; Okwoche *et al.*, 2011).

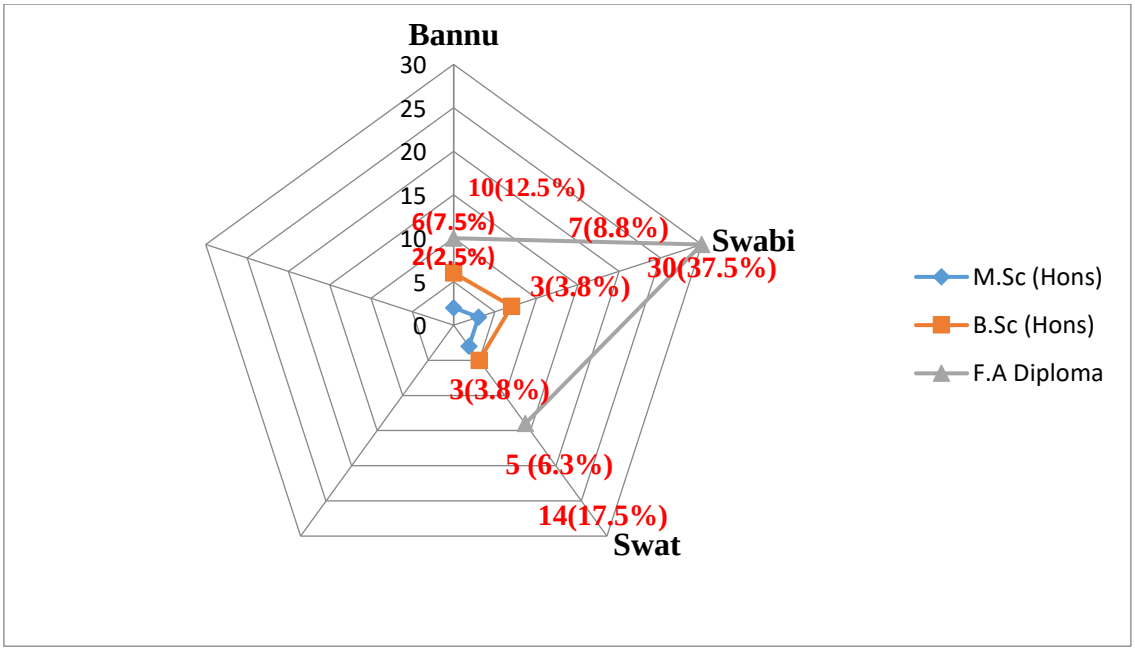

Fig 1: Radar representation of field staff on the basis of their Qualification

As all of the field staff was educated, so further investigation was done to know their qualification level. Figure 1 shows that 67.5% of the extension staff were FA Diploma holders, followed by 22.5% B.Sc. (Hons) graduate and only 10% M.Sc. (Hons) graduate. Field workers were having FA Diploma while SMS and Agriculture Officers had M.Sc. (Hons) degrees their highest qualification. Higher qualification is utmost necessity for better information delivery system in agricultural extension.

Gap between extension and farmers and its causes

Data regarding the communication gap between extension department and farmers were collected and presented in Table 5. Likewise, causes of this gap were also estimated and recorded on the basis of the view point of extension staff. The results show that all of the extension staff acknowledged that there is extension-farmer gap in agricultural extension system as it is true in the prevailing extension system in our country.

Table 5 Distribution of Extension field staff regarding their view point on gap between extension and farmers and its causes

Districts	Gap between ext. and farmers		If yes then causes		Total
	No	Yes	Lack of financial resources	lack of interest on part of both ext. dpt. & farmers	
Bannu	0 (0)	18(22.5)	12(15)	6(7.5)	18
Swabi	0 (0)	40(50.5)	21(26.3)	19(23.8)	40
Swat	0 (0)	22(27.5)	13(16.3)	9(13.3)	22
Total	0 (0)	80(100)	46(57.3)	34(42.5)	80

Note: Values in parentheses are percentages.

Right side of the table shows two main causes of extension –farmer gap. Out of the total 80 respondents, 57.3% of the respondents reported lack of financial resources as the basic cause, while the remaining 42.5% respondents were of the view that lack of interest on part of extension and farmers was the major cause for establishing this gap.

Distribution of extension field staff regarding their satisfaction level from various extension field activities

Various questions were asked form extension field staff in three selected districts and their responses were recorded in likert scale with rank and overall score. In district Bannu extension staff availability was ranked on top with overall score of 80, followed by farm/home visits, increase in production, field days etc. with rank score of 70, 60 and 53 respectively. Result demonstration and personal meeting with farmers were categorized on lowest level of satisfaction in district Bannu with rank score of 40 and 38 respectively. Similarly, the same pattern of questions was asked from extension field staff in district Swabi and their responses are presented in Table 6. Out of the total asked questions, increase in production was ranked 1st with rank score of 88, followed by extension staff availability, farm/home visits and pamphlets ranked 2nd, 3rd and 4th with rank score of 87, 84 and 76 respectively. Likewise, extension staff in district Swat also pointed out their viewpoints indicating satisfactory level from various extension activities. Extension staff availability was ranked 1st with rank score of 89, followed by increase in production, availability of inputs and field days as ranked 2nd, 3rd and 4th with rank score of 83, 80 and 76 respectively.

Table 6 Distribution of Extension field staff on the basis of their satisfaction level regarding various extension activities

Bannu			Swabi			Swat		
Activity Rank	**Extension activities**	**Score**	**Activity Rank**	**Extension activities**	**Score**	**Activity Rank**	**Extension activities**	**Score**
1	Extension staff availability	82	1	Increase in production	88	1	Extension staff availability	89
2	Farm/home visit	70	2	Extension staff availability	87	2	Increase in production	83
3	Increase in production	60	3	Farm/home visit	84	3	Availability of inputs	80
4	Farmers field days	53	4	Pamphlets/Journals	76	4	Farmers field Days	76
5	Radio Programs	50	5	Availability of inputs	71	5	Pamphlets/Journals	74
6	Pamphlets/Journals	48	6	Radio Programs	65	6	Personal meetings	68
7	Availability of inputs	47	7	Farmers field Days	62	7	Farm/home visit	62
8	Exhibitions	45	8	TV Programs	53	8	TV Programs	56
9	TV Programs	43	9	Result Demonstration	49	9	Result Demonstration	53
10	Method Demonstration	42	10	Personal meetings	48	10	Radio Program	48
11	Result Demonstration	40	11	Exhibitions	46	11	Method Demonstration	47
12	Personal meetings	38	12	Method Demonstration	43	12	Exhibitions	44

Note: Calculated by author

Association of extension gap with dissemination of information

Table 7 shows the association of extension gap with dissemination of information. To find this association, Chi-square test was performed and the computed results were depicted in the given table. As the p-value is 0.004 that is < 0.01, which shows a highly significant association between extension gap and dissemination of information.

Table 7 Association of extension gap with dissemination of information

Gap between extension and farmers	Dissemination of information		Total
	Increases	Decreases	
Lower gap	14(17.5)	8 (10.0)	22
Higher gap	40 (50.0)	18(22.5)	58
Total	54(67.5)	26(32.5)	80
$\chi^2 = 22.76$ P= 0.004***			

Source: Calculated by Author

Note: Values in parentheses are percentages

χ^2 = chi square value ** *shows probability at 1% significance level

A highly significant negative association was estimated between extension gap and information dissemination. The negative coefficient was obtained which indicated that both tested variables had inverse significant relationship. It means that lower gap leads to more dissemination and vice versa.

Conclusions

The study concluded that female extension worker (FA) position does not exist in agricultural extension department in Khyber Pakhtunkhwa. Female trainings were very uncommon and the role of extension department in creating awareness among women farmers is very poor in the study area. Women farmers are deprived of their due right of access to information; as a result they are hindered from obtaining new opportunities.

It is concluded that with increasing gap between farmers and extension, extension activities were less effective and vice versa. In this way, extension department is supposed to play its role in strengthening its bond with farmers especially female.

Recommendations

Based on the conclusions of the study it is recommended that:

1. Public sector Agriculture Extension department should play a leading role in minimizing the gap between the Extension Officials and farmers specially women farmers. They should provide first-hand information at the door step of the women farmers with required skills of communication.
2. The Extension department should work on their employees' capacity development and trainings not only on the technical aspects but also on the social aspect that is how to deal with the women farming community of any area, what are their social norms and cultural values. This will make easy the acceptance of the Extension

personnel by the women farming community and will build trust and understanding among each other.

3. It is recommended that Government must provide separate female training opportunities. This could be possible by hiring local female extension officers and female field staff that will know the local traditions and customs to avoid any inconvenience to them.
4. Due to cultural sensitivity in Khyber Pakhtunkhwa, women mostly work with in the four walls of a house so Extension and other line departments should provide intensive trainings in the field of kitchen gardening, post-harvest activities, livestock and poultry management.

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