

## ROLE OF AGRICULTURAL EXTENSION SERVICES IN ENHANCING KITCHEN GARDENING IN DISTRICT PESHAWAR

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### ABSTRACT

This study was conducted to investigate the role of agricultural extension services in enhancing kitchen gardening in District Peshawar. The study was conducted to assess the existing situation of female regarding kitchen gardening in the study area, to analyze the role of extension workers in enhancing kitchen gardening and to find out different problems faced by female farmers in the adoption of kitchen gardening. A multistage sampling technique was used in the current study. For this purpose, five union councils namely, Tehkal bala, Sufaid Dheri, Malkander, Palosi and Regi were selected purposively, as a female, it was easy for the researcher to collect data from the selected villages. From each union council one village was selected purposively. All the females who grew kitchen gardening were selected as respondents from these five selected villages. In this way, a total of 105 respondents were selected for collection of data. An interview schedule was developed for data collection and the data were presented in simple percentages and frequencies; to find association among variables, Chi-square test was conducted. The data showed that 43.8% respondents were in the age group of 36-45years, where maximum (64%) respondents were illiterate. Majority (87%) respondents described no visit of male and female extension workers. About trainings, 44% respondents attended kitchen gardening training. Results showed that literacy status had non-significant association with earning from kitchen gardening, while major profession of respondents had significant association with reasons for opted kitchen gardening practices. It is concluded that majority of the respondents were found unsatisfied with the extension services in the study area because of unavailability of female extension staff. It was also concluded that maximum respondents were illiterate that's why they don't have knowledge

about agricultural extension department. Furthermore, Kitchen gardening is a source of healthy, organic and fresh vegetables. The study recommended that agriculture extension department should make frequent and regular visits to the kitchen gardeners. A separate female extension division should be established to serve females of the study area. Modern techniques regarding kitchen gardening should be disseminated to interested people in the study area.

**Key words:** Role of agricultural, extension services, enhancing kitchen gardening and district Peshawar

## INTRODUCTION

After the independence of Pakistan, the agriculture sector has served as the backbone of its economy. Due to the adverse political, social and environmental conditions, the output from agricultural sector has gradually gone down making it the second largest sector, which was previously thought to be the dominant sector in Pakistan (Mehmood et al., 2018; Ayub et al., 2018; Raza *et al.*, 2012).

Agricultural sector is an essential component of Pakistan's economy. It contributes about 19.8% to the GDP of the total economy of Pakistan (GoP, 2020). The key priority of the agricultural sector is to deliver food security to the people by increasing the output (Mehmood et al., 2020; Khan et al., 2020; Ayub et al., 2020; Shahzad et al., 2020). It not only provides living but also forms an interconnection throughout the country. Out of the 70% of the total rural population of Pakistan, 45% are employed in agricultural sector. In order to increase the production of agriculture sector, the provincial governments are making arrangements on emergency basis. The agriculture sector is the vital source to provide raw materials to the downstream industries for production (Shah et al., 2021; Ayub et al., 2021; Mehmood et al., 2021). Its key contribution is to reduce poverty and to increase employment opportunities. The prime objective of the agriculture sector is to expand it from being a self-sufficient sector to a profitable one (Khan et al., 2022; Rehman et al., 2022; Usman, 2016).

Gross Domestic product (GDP) is one of the well-built indicators to measure the growth pattern of the economy. It notifies the aggregate value of all final goods and services produced within a country over the specific time. GDP is an important indicator of a country's economic power. In 2020, Pakistan's gross domestic product amounted to around 262.8 billion U.S. dollars (GOP, 2020).

### Agricultural Extension

Agricultural extension provides guidance, assisting farmers to examine an issue and recognize opportunities, exchanging information, encouraging them to form groups and facilitating team work. Conventional extension services focused on the provision of information and new technologies to enhance production. Majority is unsuccessful to achieve their goals and, in some cases, the results are vague to understand if it has made any difference or not (Manig, 1991). Some of the reasons of the disarmament of the extension in several low-income countries are less education and insufficient training opportunities for the extension workers themselves. Staff is bloated, undertrained, immobile, and therefore, not proactive (FAO, 2001). Quality education and appropriate training is vital for an extension representative to alter the farmer's behavior from conventional farming techniques towards modern modes of farming. In conventional extension systems, the extension agents had insufficient education, inadequate communication skills and training potential was not enough to perform the required tasks, therefore, failed to effectively convey the information and results of research to the target farmers (Jan *et al.*, 2008).

The extension services in Khyber Pakhtunkhwa (KP), like other provinces of Pakistan are a public-sector domain. Besides, some non-government organizations, commercial companies, mass media organizations, and farmer's groups are also providing these services. The agricultural extension wing of provincial agriculture department of KP, is the key provider of extension services. The extension services are managed and supervised by the Director General of Agriculture Extension. Field assistants and field workers are positioned at the lower end of the hierarchy and are directly connected to the farmers. Agriculture Training institutes and other extension departments of KP are responsible for training of extension agents to alter the farmers' behavior in embracing modern agricultural technologies. The extension organization acquires information from agricultural research, agricultural policy decisions, and from social and psychological research. A network of extension agents further delivers this information to the farmers. The provision of such knowledge is more likely to bring reforms in managing and practicing conventional farming. In this system information flows in two ways, scientific information is conveyed to the farmers and a feedback in the form of problems goes back to the scientific institutions for solution (Jan *et al.*, 2008).

Agriculture extension has a key role in the development of agriculture. The definite objective of extension is to boost the spiritual, mental and social growth of farmers and their families. An understanding about modern technologies has been developed among rural

communities of KP through the efforts of extension department and NGOs. Sarhad Rural Support Program (SRSP) is busy alongside with agriculture extension to help rural people in poverty alleviation (Ahmad *et al.*, 2007).

Kitchen gardening is a technology which allows us to produce safe food/vegetables at home by using empty tins, old utensils and clay pots. This activity can not only save our money and time but also can make available a healthy, beneficial and environment friendly hobby for whole family. To preserve health and prevent malnutrition; we should develop a kitchen garden, grow fresh and clean vegetables and make them a part of our daily diet (Qaiser *et al.*, 2013).

Vegetables production is one of the human basic skills. The level of achievement and efficiency of vegetables production depend on the local climate and season and the range of species cultivated. Also, successful vegetables production is very much dependent upon supply of reasonable seeds. The purpose of vegetables production differs from extensive farm initiatives to private home-based gardening, where vegetables are important elements to supplement their foods and income. Some people grow vegetables for physical reformation or as hobby (Ahmad *et al.*, 2007).

Kitchen gardening contributes to domestic food security by providing direct access to food that can be harvested, prepared and fed to family members, often daily. Even very poor, landless people practice gardening on small areas of homestead land, vacant plots, roadsides or edges of a field, or in containers. Gardening may be practiced with virtually no economic resources, using locally available planting resources, green composts and indigenous approaches of pest control. Thus, home gardening at some level is a production system that the poor can easily enter (Marsh and Talukder, 1994).

Kitchen gardening may be a means to give the budget of growing food at home that then need to be purchased at a grocery store. Usually the most expensive year for the kitchen garden is the first one, when things like soil or different things may need to be purchased and thereafter, food produced in a kitchen garden usually does save money and tends to taste better than grocery store purchased fruits and vegetables (Christensen, 2011).

### **Purpose of the study**

- To assess the existing situation of female farmers regarding kitchen gardening in the study area.

- To investigate the role of extension workers in enhancing kitchen gardening.
- Identify the challenges faced by females in the adoption of kitchen gardening.
- To suggest recommendations for the promotion of kitchen gardening.

## MATERIALS AND METHODS

The present study was conducted in district Peshawar Khyber Pakhtunkhwa-Pakistan. District Peshawar consists of large number of villages. Where five villages were selected purposively, as a female it was easy for the researcher to collect data from the selected villages to collect data from the selected villages namely, Tehkal Bala, Sufaid Dheri, Regi, Malkandher and Palosi.

All those females who got trainings from Pakistan Academy for Rural Development (PARD) and Agriculture Training Institute (ATI) provincial now Agricultural Services Academy were selected as respondents from the selected villages. In this way, a total of 105 respondents were selected for data collection. Research was based on both primary and secondary data. Primary data were collected from female respondents and secondary data were gathered from Agriculture Extension Department and various published and unpublished sources. Statistical Package for Social Sciences was used for statistical analysis. The primary data were analyzed on SPSS v.20. The collected data were entered in to the software and Chi-square test was applied on the data to get the required results. All the presented results were in terms of counts and percentages. To investigate the categorical association of variable, such as education level, age, income, earning and source of income, Chi-square test was applied in this study. Statistics defines Chi-square test in equation.

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

Where,

O<sub>ij</sub> = observed frequency

E<sub>ij</sub> = expected frequency

x<sup>2</sup> = Chi-square value

## RESULTS AND DISCUSSION

### Age of Respondents

Age of the respondents is considered a main factor in any research study. Learning and exposure to knowledge and skills vary with different age groups. Generally, young people are considered more innovative, prone to taking risks. The age has strong relation with the adoption of agricultural innovations (Agwu *et al.*, 2008). Young people adopt new technologies very quickly; whereas, the elderly people display an orthodox attitude, resisting change. All these different qualities and characteristics of different age groups, if utilized efficiently, may give greater output in adoption of new agricultural practices. Keeping in view the importance of age, a question about the age of the respondents was also included in the interview. The age of respondents was divided into four categories of years--i.e. up to 25 years, 26-35, 36-45 and above 45 year.

**Table 1** Distribution of respondents on the basis of their age

Villages	Age of respondents (years)				Total
	Up to 25	26 to 35	36 to 45	Above 45	
Tehkal Bala	3 (2.9)	2 (1.9)	17 (16.2)	3 (2.9)	25
Sufaid dheri	1 (1.0)	9 (8.6)	14 (13.3)	1 (1.0)	25
Malkandher	1 (1.0)	9 (8.6)	3 (2.9)	5 (4.8)	18
Palosi	0 (0.0)	16 (15.2)	4 (3.8)	2 (1.9)	22
Regi	2 (1.9)	1(1.0)	8 (7.6)	4 (3.8)	15
Total	7 (6.7)	37 (35.2)	46 (43.8)	15 (14.3)	105

Source: Field survey, 2017; Note: Values in parenthesis are percentages

Data in Table 1 display that most of the respondents 43.8% were found in the age group of 36 to 45 years followed by 35.2% that belonged to age group of 26 to 35 years. In the age group of up to 25 years, there were 6.7% respondents and 14.3% were in the age group of above 45 years. There is similarity of findings with Akram *et al.* (2011) who investigated that maximum of the

respondents (38%) were from the age group of 36 to 45 years in the study area. It is clear from the results that people of all ages were practicing kitchen gardening with a little variation of numbers.

### Literacy Status

Literacy status of the respondents assists in judging the quality of human resources, developing stages of society, and maturation of the community's vision. Human performance is affected by education directly or indirectly. Most of the literate people are likely to have more favorable attitude towards agricultural skills and technologies adaptation, knowledge and information as judge against the uneducated ones (Iqbal and Nawab, 2013).

**Table 2** Distribution of respondents on the basis of literacy status

Villages	Literacy Status					Total
	Illiterate	Primary	Middle	Matric	Above Matric	
Tehkal Bala	15(14.3)	2 (1.9)	4 (3.8)	1 (1.0)	3 (2.9)	25
Sufaid Dheri	20 (19.0)	1 (1.0)	3 (2.9)	1 (1.0)	0 (0.0)	25
Malkandher	11 (10.5)	1 (1.0)	3 (2.9)	1 (1.0)	2 (1.9)	18
Palosi	13(12.4)	4 (3.8)	2 (1.9)	0 (0.0)	3 (2.9)	22
Regi	8 (7.6)	3 (2.9)	4 (3.8)	0 (0.0)	0 (0.0)	15
Total	67 (63.8)	11 (10.5)	16 (15.2)	3 (2.9)	8 (7.6)	105

Source: Field survey, 2017; Note: Values in parenthesis are percentages

### Females' perception about extension workers' role in the improvement of kitchen gardening

Women now a day play a vital role in promoting kitchen gardening activity. From kitchen gardening, people can also control their financial expenditures and they can get fresh and healthy vegetables and fruits from their own gardens. In such a way kitchen gardening gives financial support as well. There is need of basic training to promote this activity. Kitchen gardening is now strongly recommended on a large scale. Rehman *et al.* (2013) concluded in his research findings that a project should be designed which requires systematic efforts to engage with women and

assess their circumstances. There is a need of especial institutes which give the training of kitchen gardening.

**Table 3** Distribution of respondents on the basis of their perception regarding extension workers' role in the improvement of kitchen gardening

Village	Extension workers' role in the improvement /development of kitchen gardening		Total
	Yes	No	
Tehkal Bala	20 (19.1)	5 (4.8)	25
Sufaid Dheri	20 (19.1)	5 (4.8)	25
Malkandher	14 (13.3)	4 (3.8)	18
Palosi	17 (16.2)	5 (4.8)	22
Regi	12 (11.5)	3 (2.9)	15
Total	83 (79)	22 (21.0)	105

Source: Field survey, 2017; Note: Values in parenthesis are percentages

The data presented in Table 3 show that maximum (79%) respondents replied that extension workers can play an important role in promoting and improving kitchen gardening activity. While the remaining (21%) respondents replied that there is no role of extension workers in the improvement of kitchen gardening.

### Source of training for kitchen gardening

One of the main constraint in the adoption of kitchen gardening is lack of awareness in the females. Agriculture Training Institute comes first in this regard to provide awareness about new practices. Bajwa *et al.* (2015) observed that assessment after training showed that the women who participated in the training were more aware of growing vegetables timely and with proper management for higher production.



**Table 4** Distribution of respondents regarding sources of training for kitchen gardening.

Villages	Sources of training regarding kitchen gardening			Total
	Pakistan Academy for Rural Development (PARD)	Agriculture Training Institute	NGOs	
Tehkal Bala	1 (2.3)	9 (20.5)	4 (9.1)	14
Sufaid dheri	2 (4.5)	6 (13.6)	3 (6.8)	11
Malkandher	1 (2.3)	4 (9.1)	3 (6.8)	8
Palosi	0 (0.0)	4 (9.1)	2 (4.5)	6
Regi	1 (2.3)	3 (6.8)	1 (2.3)	5
Total	5 (11.4)	26 (59.1)	13 (29.5)	44

Source: Field survey, 2017; Note: Values in parenthesis are percentages

The data presented in Table 4 clearly indicate that 59.1% of the respondents reported that Agriculture Training Institute (ATI) as a main source of training regarding kitchen gardening followed by 29.5% of the respondents reported NGOs as sources of training regarding kitchen gardening while the remaining 11.4% of the respondents reported Pakistan Academy for Rural Development (PARD) as source of training regarding kitchen gardening. Our research findings are in similarity with Bajwa *et al.*, (2015) where he studied that training also has the positive impact on social and economic life of the women community by increasing their income.

### Problems regarding Kitchen Gardening

Mostly people do not carry on the kitchen gardening activity due to their financial constraints, and lack of knowledge about them and majority adopt it as a hobby and did not know about complete information about kitchen gardening. They face many problems while growing the vegetables in their Gardens (Rehman *et al.*, 2013).

**Table 5** Distribution of respondents on the basis of problems regarding kitchen gardening.

Villages	Problems regarding kitchen gardening					Total
	Less area for kitchen gardening	Unavailability of female extension staff	Non-availability of pesticides	Lack of technical information	Lack of awareness about kitchen gardening	
Tehkal Bala	8 (7.6)	12 (11.4)	0 (0.0)	2 (1.9)	3 (2.9)	25
Sufaid Dheri	3(2.9)	10 (9.5)	1 (1.0)	6 (5.7)	5 (4.8)	25
Malkandher	5 (4.8)	7 (6.7)	1 (1.0)	2 (1.9)	3 (2.9)	18
Palosi	4 (3.8)	15 (14.3)	0 (0.0)	2 (1.9)	1 (1.0)	22
Regi	2 (1.9)	5 (4.8)	2 (1.9)	1 (1.0)	5 (4.8)	15
Total	22 (21.0)	49 (47)	4 (4)	13 (12)	17 (16)	105

Source: Field survey, 2017; Note: Values in parenthesis are percentages

The data presented in Table 5 show that 47% of the respondents replied that unavailability of female extension staff is the main problem in the dissemination of information regarding kitchen gardening, followed by 21% respondents who have less area for kitchen gardening. The 16% respondents faced problem lack of awareness about kitchen gardening while the remaining 12% and 4% respondents faced problem of lack of technical information regarding kitchen gardening and non-availability of pesticides respectively.

#### Source of solving problems regarding kitchen gardening

Home gardeners indicate that their neighbors and other farmers are the most important source of information for their home gardening activities (Galhena, 2012). The results regarding source of solving problems related kitchen gardening presented in Table 6.

**Table 6** Distribution of respondents on the basis of sources of solving problems regarding kitchen gardening.

Villages	Sources of solving problems				Total
	Agricultural Extension Department	Male family members contact pesticides dealer	Own experience	Fellow Farmers	
Tehkal Bala	5 (4.8)	9 (8.6)	4 (3.8)	7 (6.7)	25
Sufaid Dheri	4 (3.8)	6 (5.7)	5 (4.8)	10 (9.5)	25
Malkandher	3 (2.9)	5 (4.8)	4 (3.8)	6 (5.7)	18
Palosi	3 (2.9)	6 (5.7)	5 (4.8)	8 (7.6)	22
Regi	2 (1.9)	5 (4.8)	2 (1.9)	6 (5.7)	15
Total	17 (16.2)	31 (29.5)	20 (19.1)	37 (35.2)	105

Source: Field survey, 2017; Note: Values in parenthesis are percentages

The data presented in Table 6 show that 35.2% of the respondents replied that they solve their problems with the help of their fellow farmers followed by the respondents 29.5% who found that their male family members contact with pesticides dealers who solve their problems. About 19.1% of the respondents replied that they trying to solve their problems through their own experience and 16.2% contact with Agriculture Extension Department for solving their problems.

### Reasons for opted kitchen gardening technology and practices

Kitchen gardening is a technology which enables us to grow disease free vegetables at home, providing a good use of empty tins, old utensils and clay flower pots. Kitchen gardening technology is helpful to grow toxic free organic vegetables like tomato, bitter gourd, spanich, mint, garlic, pepper and onion etc. at a little space in kitchen, rooms, lawn and roof top (Rehman *et al.*, 2013).

**Table 7** Distribution of respondents on the basis of reasons for opting kitchen gardening technology and practices

Villages	Reasons for opting kitchen gardening technology and practices					Total
	Fresh vegetables for self-consumption	Saving cost	Land utilization purpose	Earning	Hobby	
Tehkal Bala	8 (7.6)	6 (5.7)	2 (1.9)	3 (2.9)	6 (5.7)	25
Sufaid Dheri	11 (10.5)	8 (7.6)	3 (2.9)	2(1.9)	1 (1.0)	25
Malkandher	3 (2.9)	2 (1.9)	1 (1.0)	8 (7.6)	4 (3.8)	18
Palosi	5 (4.8)	4 (3.8)	1 (1.0)	7 (6.7)	5(4.8)	22
Regi	7 (6.7)	1 (1.0)	3 (2.9)	3 (2.9)	1 (1.0)	15
Total	34 (32.4)	21 (20.0)	10 (9.5)	23 (21.9)	17 (16.2)	105

Source: Field survey, 2017;Note: Values in parenthesis are percentages

The data presented in Table 7 show that most of the respondents (32.4%) opted kitchen gardening technology to grow fresh and healthy vegetables for them, followed by 21.9% grow vegetables for earning purpose whereas 20% grow vegetables to save cost of buying vegetables and herbs from market and 16.2% opted kitchen gardening technology as a hobby followed by the respondents 9.5% who utilize land around their houses for productive purpose.

### Income from Kitchen Gardening

Kitchen gardening is considered an invariable source of net income for small land holders of rural areas. It can play an important role in alleviating poverty in the rural areas of Pakistan.

**Table 8** Distribution of respondents on the basis of their income from kitchen gardening in Rupees

Villages	Respondent's income from kitchen gardening			Total
	3000-5000 per season	5001-10,000 per season	10001-15,000 per season	
Tehkal Bala	2 (8.7)	0 (0.0)	0 (0.0)	2
Sufaid dheri	2 (8.7)	1 (4.3)	2 (8.7)	5
Malkandher	2 (8.7)	2 (8.7)	0 (0.0)	4
Palosi	3 (13.0)	5 (21.7)	0 (0.0)	8
Regi	0 (0.0)	4 (17.4)	0 (0.0)	4
Total	9 (39.1)	12 (52.2)	2 (8.7)	23

Source: Field survey, 2017; Note: Values in parenthesis are percentages

The data presented in Table 8 show that majority of the respondents (52.2%) earn 5001-10000 rupees per season followed by the respondents (39.1%) who earn 3000-5000 rupees per season. The remaining (8.7%) respondents earn 10001-15000 rupees per season.

#### **Association between literacy status and earning from kitchen gardening**

To find out the association between literacy status and earning from kitchen gardening, Chi-square test was used and its results are presented in Table 9. Which show non-significant ( $P > 0.05$ ) association between literacy status and earning from kitchen gardening which is given clear from its p-value that is 0.489. It means that irrespective of literacy status, respondents have earning from kitchen gardening in the study area.

**Table 9 Association between literacy status and earning from kitchen gardening**

Variables	Categories	Earning from kitchen gardening		Total
		Yes	No	
Literacy Status	Primary	1	10	11
	Middle	3	13	16
	Matric	0	3	3
	Above Matric	1	7	8
	Illiterate	18	49	67
	Total	23	82	105
	$\chi^2 = 3.368$		P = 0.498 NS	

Source: Field survey, 2017; Note: Values in parenthesis are percentages

NS = non-significant

### **Association between major profession of respondents and reasons for opted kitchen gardening technology and practice**

To find out the association between major profession of the respondents and reasons for opting kitchen gardening practice, Chi-square test are applied and its results were presented in table 10. The results obtained shown a highly significant association between major profession of respondents and reasons for opting kitchen gardening practice. Which is clear from its P-value that is 0.000.

**Table 10 Association between major profession of respondents and reasons for opted kitchen gardening technology and practice**

Variable	Categories	Reasons for opted kitchen gardening practice					Total
		fresh vegetables for self-consumption	Saving cost	Land utilization purpose	earning	Hobby	
Major profession of respondents	House wife	25	20	5	12	4	66
	Agriculture	6	1	3	10	5	25
	Government employee	3	0	2	1	8	14
		34	21	10	23	17	105
$\chi^2 = 36.394$		$P = 0.000^{***}$					

Source: Field survey, 2017; Note: Values in parenthesis are percentages

## Conclusions and Recommendations

It is concluded from the study that kitchen gardening is a healthy and beneficial activity. People can get fresh and healthy food from kitchen gardening. Mostly people like to eat organic food thus kitchen gardening is one of the source of organic food. People, can also control their financial expenditures through kitchen gardening activity. Thus, in such a way kitchen gardening gives financial support as well. Growing vegetables for supplementing diets as well as income is an important activity that women of the rural area perform kitchen gardening practice and to develop nation. Mostly women of the study area were involved in vegetables production. Respondents were found unsatisfied because of unavailability of female extension workers. Agriculture Training Institute was the main source of getting training regarding kitchen gardening. It is also concluded that maximum respondents were illiterate that's why they don't have knowledge about Agricultural Extension Department. It is found that majority of the respondents were unsatisfied with the extension services in the study area.

Women can do a better job of vegetables production if they are provided proper training, suitable technological packages and proper inputs. This will empower them to enhance their efficiency in vegetables production and income and it will lead them to alleviate poverty.

Following recommendations were based on conclusions extracted from the research study:

- Agriculture Extension Department should arrange frequent and regular visits of their staff to the Kitchen gardening growers
- Agriculture extension department should conduct different trainings, workshops, demonstrations and demonstrations plots to encourage female farmers for kitchen gardening.
- Different problems like lack of technical information, non-availability of pesticides, less area for kitchen gardening and non-co-operation of extension staff could be solved if agriculture extension department involves other line departments, NGOs along with other public/private agencies in this matter.
- Government should provide inputs either on subsidized rates or free of cost and create awareness about kitchen gardening among females.
- Female Extension Staff should be appointed in each union council to guide females of the area regarding kitchen gardening.
- Modern techniques regarding kitchen gardening should be disseminated to interested respondents in the study area by the extension workers of the area.

### **Novelty Statement**

Women play an important role in supporting their household and communities for achieving food and nutrition security, creating income, and improving livelihoods and overall well-being with having fewer opportunities to education, health and nutrition as compare to men. In this regard, an attempt was made to investigate the existing situation of women farmers and identify the constraints faced by them in accessing agricultural extension services in rural areas of Pakistan.

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