

## FARMERS' ATTITUDE TOWARDS AGROFORESTRY IN DISTRICT FAISALABAD

Wasif Nouman, Ghulam Sarwar Khan, Muhammad Tahir Siddiqui and \*Atif Riaz  
Department of Forestry, Range Management and Wildlife, University of Agriculture, Faisalabad  
\*Institute of Horticultural Sciences, University of Agriculture, Faisalabad

Concept of agroforestry envisages the practice of forestry on cultivated lands for achieving numerous objectives for the benefits of rural and urban communities. Many research studies have been carried out to compare the economic returns achieved by growing agricultural crops under monocultural system and in combination with trees. The main objective of this study was to investigate and analyze the reasons for non-adoption of agroforestry by farmers and the problems being faced by them in district Faisalabad. A sample of 125 respondents from five randomly selected rural union councils from tehsil Faisalabad were interviewed through a structured interview schedule in person and the data were analyzed by using suitable computer software (SPSS) to draw conclusions. It was concluded that the farmers were not adopting agroforestry mainly due to their lack of awareness about the tree benefits. They considered that the trees compete with agricultural crops for water and nutrients uptake and degrade their farmlands etc. The government should initiate the projects to build the capacity of the farmers through training and orientation workshops. She should also provide technical guidance to the farmers about suitable tree species grown on agricultural land that are less competitive to agricultural crops in water and nutrients uptake.

**Keywords:** Adoption, agricultural crops, agroforestry, constraints, Faisalabad, farm trees

### INTRODUCTION

Agriculture is the hub of economic activity in Pakistan. It lays down foundation for economic development and growth of the economy. The agricultural cropped area covers 22.51 million hectares with its present contribution to GDP at 22 percent. Agriculture accounts for 44.8 percent of the total employed force of Pakistan (Govt. of Pakistan, 2005a). Major proportion of the population depends, wholly or partially, on the earnings from agriculture. Thus it is the mainstay of Pakistan's economy.

Pakistan, being forest deficient country with only 0.03 ha per capita as compared to world average of 1 ha (Govt. of Pakistan, 1992), is facing timber and fire wood shortage of about 29 million cubic meters (Government of Pakistan, 2005a). In a study it has also been estimated that this shortage of 29 million cubic meters will become 52.6 million cubic meters up to 2018. Thus increasing future needs for wood will be increased by 23 million cubic meters (Wani, 2003).

Forest area per capita in the country is declining with growing population at 1.90% annually (Govt. of Pakistan, 2005b). According to FAO (2000) the world's forest cover amounts to 3.9 billion hectares, which is about 30% of total land area, while in Pakistan it comprises only 3.1%. Pakistan is loosing forest cover with the rate of 2.1% per year. As a result, only 2.5% forest area was left in 2005, which is very low as compared to other Asian countries.

The area under public forest cannot be further expanded to keep pace with rapidly growing population and increasing demands for food and fiber along with forest products. The only available option is to increase wood production on private areas or farmlands to meet pulp and paper demand locally and reduce import bill and save foreign exchange. The tree cover on farmlands can be expanded up to 10% without harming agricultural crops, which will be a great contribution to justify the needs of rural and urban people (Qureshi, 1998).

The key factor in promoting the agroforestry is the farmer. Some efforts have been made to assess the farmers' participation in agroforestry but no formal and moral effort was made in the past to find out the reasons for non-adoption of agroforestry in Faisalabad district. Hence this study was taken to provide the baseline information in this regard. The main objective of this research study was to highlight the reasons for non-adoption of agroforestry and to suggest remedial measures to overcome the constraints and problems faced by the farmers in agroforestry adoption.

### MATERIALS AND METHODS

According to Kerlinger (1986), survey research methodology is most appropriate in determining the behaviour, expectations, perceptions and interests of the respondents. This study was conducted in district Faisalabad, which consists of five tehsils. Tehsil Faisalabad was selected through purposive sampling

technique. Out of total 58 rural union councils, five were selected through simple random sampling technique. From each selected union council, one village was selected randomly and from each selected village, 25 farm families were selected at random. From each selected farm family, one farmer who was actively engaged in farming activities was interviewed. Thus 125 respondents were interviewed. The information regarding the reasons for not planting trees on farmlands by farmers, advantages and disadvantages in comparison with agricultural crops and constraints faced by the farmers in practicing agroforestry were obtained with the help of an interview schedule in person. The results collected were analyzed by using suitable computer software (SPSS) to draw conclusions and suggest measures for convincing for adopting agroforestry.

## RESULTS AND DISCUSSION

### Socio-economic characteristics of the respondents

The biographical characteristics include age, education and source of income. Different studies revealed that the socio-economic characteristics had much influence on the adoption behavior regarding new practices (Jamal, 2005). FAO (1989) reported that the innovators and early adopters were those who were higher in their socio-economic status than those who were lower in their socio-economic status.

Table-1 indicated a majority of the respondents (51.2%) were illiterate and 48.8% were literate. Out of literate respondents, 38.4% were from primary to middle while only 10.4% were up to matriculation and above. This study also revealed that 47.2% respondents reported that they earned their income mainly from crop sector while 8.8% from trees grown for commercial purposes and 10.4% from crops along with trees (agroforestry).

This study showed that illiteracy was also the main reason for non-adoption of agroforestry by farmers. The farmers considered this practice harmful for their agricultural crops due to lack of education and awareness. Amir (2003) also reported that education was the main and vital weapon for bringing a positive change in the behavior of individual farmer, which develops knowledge and other desirable qualities of mind and general competence. It was confirmed through many research studies that the education played a significant role in the adoption process of recommended agricultural practices. Hence the illiteracy among the farmers is much influencing their behaviour to adopt agroforestry practices. It is one of the main hindrances because it creates ignorance and unawareness among the individuals.

**Table 1. Distribution of the respondents according to their socio-economic characteristics**

Characteristic	Frequency	Percentage
<b>Age (Years)</b>		
Up to 30	32	25.6
31-40	54	43.2
Above 40	39	31.2
<b>Educational Level</b>		
Illiterate	64	51.2
Primary to Middle	48	38.4
Up to Matric and above	13	10.4
<b>Source of Income</b>		
Livestock	16	16.8
Crops	49	47.2
Poultry	13	10.4
Trees for commercial purposes	21	8.8
Crops + Trees	18	10.4
Crops + Livestock	8	6.4

The sources of income and the occupations also determine the social standing of the individuals and these material circumstances also affect the adoption behaviour of the people. The results depicted in Table-1 showed that only a small number of farmers (8.8%) were actively engaged in agroforestry and 91.2% were not practicing it. The farmers who were planting trees on their farmlands were also confronted with major problems like timber and fuelwood marketing. So these farmers mainly utilized these tree species as fodder sources for their livestock. Thus these farmland trees affected their income generation and saved their money.

### Reasons for not planting trees on farmlands

The total number of respondents was more than actual number mentioned in Table-2 because the respondents mentioned more than one reasons for not planting trees on their farmlands.

The data given in Table-2 indicated that a majority of the respondents i.e., 68.8% were not willing to grow trees due to competition of trees grown on farmland along with agricultural crops for water and nutrients uptake and degradation of land. A majority of the respondents (63.2% and 58.4%) were not able to plant trees due to their small size of land holding and least economic returns respectively. They have not sufficient capital resources such as land and water to make this practice viable. Many research studies have proved that when the crops were grown under monocultural system, the soil resources could not be utilized in their full extent. While by making a combination of

**Table 2. Distribution of respondents with regard to reasons for not planting trees on farmlands**

Reasons for not planting trees	Frequency	Percentage
No interest in trees	28	22.4
Not enough land/area to make it viable for tree planting	79	63.2
Land/soil degradation due to trees	22	17.6
Insufficient rainfall	39	31.2
Least economic return from trees	73	58.4
Requires long span for tree growth & associated management problems	33	26.4
No guaranteed markets for wood dispersal	53	42.4
Competition between trees & crops for water and nutrients uptake	86	68.8

agricultural crops with trees, the farmers can get better soil fertility and economic returns (Nair, 1996). Marketing is also one of the main reasons for not adopting agroforestry. Out of 125 respondents, 42.4% reasoned that the marketing of timber and other agroforest products was not ensured. The farmers will be more eager to plant trees on their farmlands due to better economic returns if marketing is ensured. Jamil (2003) also concluded in his study that a majority of the respondents (66%) were hesitating to grow trees on their farmlands because they hindered the agricultural crops. According to HESS's (Household Energy Strategy Study) demand survey, the main reasons for farmers not to plant trees were lack of water (35%), not enough land (13%), bad for crops (12%) and the farmers' lack of interest in trees (15%).

The farmers must be informed by tree planting campaigns that some trees are leguminous in nature as *Acacia nilotica* that have nodules in their roots,

market value but the markets are distant away from their villages and they cannot bear transport expenses. Primary and secondary marketing points near to villages should be established to facilitate the farmers who want to promote agroforestry.

#### **Advantages and disadvantages in comparison with agricultural crops**

There is a general identification of the multiple benefits of agroforestry including revenue from sale of wood products and environmental outcomes particularly. The farmers generally believe that the trees planted along with agricultural crops damage the crop production and affect the economic returns. Henceforth, the farmers were asked about their awareness about advantages and disadvantages being got from trees comparing with agricultural crops for analyzing the difference to suggest remedial measures.

**Table 3. Distribution of respondents with regard to advantages and disadvantages of trees comparing with agricultural crops**

Advantages or disadvantages	Frequency	Percentage
Advantages are more than disadvantages	46	36.8
Advantages are equal to disadvantages	16	12.8
Advantages are less than disadvantages	63	50.4
Total	125	100.0

which balance the atmospheric nitrogen to improve soil fertility and enhance microbial activities. Thus these trees make the land fertile by nitrogen fixation. The farmers must be aware about all these research studies and experiments to plant trees along with crops. Training workshops must be conducted at farmers' level to equip them with tree growth and management practices.

*Dalbergia sissoo* has best market value grown in irrigated areas. Mostly the farmers use its wood for their combustion purposes. They know its timber

The data analyzed in Table-3 indicated that 36.8% respondents considered that advantages obtained from trees as compared to agricultural crops were more than disadvantages, while 12.8% respondents gave their opinion that advantages and disadvantages gaining from trees were equal but 50.4% respondents were found of the opinion that advantages are less than disadvantages. These results concluded that a majority of the farmers were not willing to plant trees with their crops because they thought that trees were bad for their crop production. Abbas (1993) also

reported that the advantages got from trees were less than disadvantages, so that they all preferred to grow agricultural crops without trees.

Many research studies revealed that the trees grown along with crops could give better economic returns as compared to agricultural crops. Chaudhry *et al.* (2003) conducted a study to find out physio-chemical characteristics of wheat variety Inqalab-91 intercropped with poplar (*Populus deltoides*) at various densities, during 7<sup>th</sup> and 8<sup>th</sup> years of its age showed a positive relationship between crops and trees. They concluded that the net income received from this intercropping system was more than crops. They also discussed the growth and yield of poplar trees under intercropping agroforestry system and found that agroforestry was superior as compared to monoculture farming system. Such field demonstrations must be displayed to aware the farmers about intercropping culture of trees and agricultural crops. Some other research studies also support these results.

#### Constraints Faced by the Farmers in the adoption of agroforestry

The respondents were asked to report about the problems, being faced by them in the adoption of agroforestry. Their responses are given in Table-4, which indicated that all the respondents reported unawareness, lack of education, technical skills, capital, technical assistance, interest, marketing and transportation facilities as the main hindrances in the adoption of agroforestry. These all constraints can be easily overcome by launching awareness campaigns, training workshops, providing technical assistance and establishing marketing points.

**Table 4. Problems and constraints faced by respondents in the adoption of agroforestry**

Problems	Frequency	Percentage
Lack of education	102	81.6
Lack of technical skills	69	55.2
Lack of capital	116	92.8
Unawareness	103	82.4
Lack of technical assistance	77	61.6
Lack of interest	28	22.4
Lack of marketing facilities	53	42.4
Lack of transportation facilities	48	38.4

Several studies have also examined such constraints i.e., marketing and transportation facilities confronting the farmers in practicing agroforestry (Franzel 1999; Pattanayak *et al.* 2003; Montambault and Alavapati 2005; Mecer 2004; Franzel *et al.* 2004). The majority of these studies have concentrated on classical factors such as land tenure systems, farm size, education, income generation activities, extension, etc. These studies also concluded that the basic issue in marketing the forest products was the transportation. The transportation of logs from the field to a mill or wood to a market was costly and the greater the distance from a market the greater the transport costs and the greater the effect on the bottom-line.

#### CONCLUSIONS

This study concludes that the farmers were not adopting agroforestry mainly due to lack of awareness about the tree benefits and their concern with the comparison of trees and agricultural crops. A majority of the farmers were not educated; therefore they considered that the trees compete with agricultural crops and degrade the land by taking up all water and nutrients. No formal projects were running here to increase the knowledge of farmers to change their farming attitude towards agroforestry. The marketing and transportation system of tree logs was not suitable with the prevailing socio-economic conditions of the farmers. The extension staff was not paying much attention and consideration to new farming practices. Hence it was essential that awareness and objective oriented information regarding the ecological and economic benefits of the trees should be disseminated widely to farmers through media and press. The government institutions and non-government organizations (NGOs) should make the farmers aware about the land degradation issues and its solutions by launching educational and counseling programs to facilitate the farmers in land development and farm management issues. The government should initiate such projects especially in the rural areas for the capacity building of the farmers and equip them with the new farming techniques through training and orientation workshops. She should provide technical guidance to the farmers about suitable tree species grown on agricultural land with agricultural crops, their silvicultural operations and tree management practices along with free supply of seeds and seedlings and loan schemes for the promotion of agroforestry.

## REFERENCES

- Abbas, S.S. 1993. Socio-economic impact of forest plantation on the adjoining farmers in district Faisalabad. M.Sc. (Hons) Thesis, Dept. of Rural Sociology, Univ. of Agri., Faisalabad, Pakistan.
- Amir, J. 2003. An investigation into the adoption of boiler production/management practices by poultry farmers in tehsil Samundri. M.Sc. (Hons) Thesis, Dept. of Agri. Ext., Univ. of Agri., Faisalabad.
- Chaudhry, A.K., G.S. Khan, M.T. Siddiqui, M. Akhtar and Z. Aslam. 2003. Physico-chemical characteristics of wheat variety inqalab-91 under poplar (*Populus deltoids*) based agro-forestry system. Pak. J. Agri. Sci. 40 (1-2): 77-81.
- FAO. 2000. Global Forest Resources Assessment 2000 and UNEP Global Biodiversity Outlook 2001, Food and Agriculture Organization of United Nations, Rome, Italy [Online] <http://www.safnet.org/aboutforestry/world.cfm>, Accessed on July 06, 2006.
- FAO. 1989. Agricultural extension a reference manual, Food and Agriculture Organization of United Nations, Rome, Italy.
- Franzel, S. 1999. Socioeconomic factors affecting the adoption potential of improved tree fallows in Africa, Agroforest. Syst. 47 (1-3):305–321, [Online] <http://www.springerlink.com>, Accessed on December 27, 2006.
- Franzel, S., G.L. Denning, J.P.B. Lilles and A.R. Mercado. 2004. Scaling up the impact of agroforestry: lessons from three sites in Africa and Asia, Agroforest. Syst. 61-62(1-3):329–344, [Online] <http://www.springerlink.com>, Accessed on December 26, 2006.
- Govt. of Pakistan. 2005-2006a. Economic Survey of Pakistan, Economic Advisor's Wing, Finance Division, Islamabad, Pakistan: 11-26, [Online] <http://www.finance.gov.pk>, Accessed on January 04, 2007.
- Govt. of Pakistan. 2005-2006b. Economic Survey of Pakistan, Economic Advisor's Wing, Finance Division, Islamabad, Pakistan: 189, [Online] <http://www.finance.gov.pk>, Accessed on January 04, 2007.
- Govt. of Pakistan. 1992. Forestry Sector Master Plan, Ministry of Planning and Development in Collaboration with Asian development Bank and United Nations Development Program: I-III, [Online] <http://www.pakistan.gov.pk>, Accessed on September 26, 2006.
- Jamal, N. 2005. An investigation into the adoption of recommended livestock production practices by rural women in district Faisalabad. M.Sc. (Hons) Thesis, University of Agriculture, Faisalabad-Pakistan.
- Jamil, M. 2003. Farmers Attitude towards Tree Plantation in District Attock. M.Sc. (Hons) Thesis, Pakistan Forest Institute, Peshawar.
- Kerlinger, F.N. 1986. Foundation of Behavioral Research, Fort Worth, TX: Holt, Renihart and Winston, Inc.
- Mercer, D.E. 2004. Adoption of agroforestry innovations in the tropics. A review, Agroforest. Syst. 61-62(1-3):311–328, [Online] <http://www.springerlink.com>, Accessed on January 02, 2007.
- Montambault, J.R. and J.R.R. Alavalapati. 2005. Socioeconomic research in agroforestry: A decade in review, Agroforest. Syst. 65(2):151–161, [Online] <http://www.springerlink.com>, Accessed on December 29, 2006.
- Nair, P.K.R. 1996. Agroforestry directions and literature trends. In: McDonald P. and Lassoie J. (eds). The Literature of Forestry and Agroforestry, Cornell University Press, Ithaca, NY, USA: 74-95.
- Pattanayak, S.K., D.E., Mercer, S. Erin, Y. and Jui-Chen. 2003. Taking stock of agroforestry adoption studies, Agroforest. Syst. 57(3):173–186, [Online] <http://www.springerlink.com>, Accessed on January 04, 2007.
- Qureshi, M.A.A. 1998. Basics of Forestry and Allied Sciences, Vol. 1, A-One Publishers, Lahore, Pakistan: 86-92.
- Wani, B.A. 2003. National Report to the Third Session of the United Nations Forum on Forests (UNFF): 1-7, [Online] [www.un.org/esa/forests/pdf/national\\_reports/unff3/pakistan.pdf](http://www.un.org/esa/forests/pdf/national_reports/unff3/pakistan.pdf), Accessed on January 06, 2006.