

KNOWLEDGE OF MODERN AGRICULTURAL TECHNIQUES IN TEHSIL MURREE, DISTRICT RAWALPINDI (A CASE STUDY)

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ABSTRACT: *This study was conducted in tehsil Murree area of District Rawalpindi. Data was collected from around 450 participants in order to know about the knowledge about modern agricultural techniques among the local farmers and people of the area. The results showed that only 12 % of respondents are primarily depending on agriculture as a source of livelihood. Agriculture is contributing only 24.8% in total household income of local people. 78% of the respondents, on an average, are of view that decline of agriculture is due to higher input cost of agriculture, lack of agricultural knowledge, unavailability of water, unavailability of quality inputs like seeds, pesticides and fertilizer, lack of government interests and migration. The results showed that around 92% of the respondents are unaware of hybrid seeds, 87.6% do not know about the proper usage of fertilizer and pesticides in the fields, 85.3% have no idea about how to control the pesticides and weedicides. Similarly about drip irrigation, tunnel farming and tillers and harvesters that are used in the mountain areas, approximately 93 % of the respondents are unaware of these available technologies and practices. People are willing to learn about the modern agricultural practices. The mountain area agriculture is important for the food security of local residents as well as it is very important to achieve our national development goals. As a result of this decline in agricultural activities in mountain areas, the migration rate has been increased in past few years, which will ultimately lead to abandoned mountains situation and food insecurity in Pakistan. The Government and private sector should come up with some effective planning's to revive the family farming in the area.*

Keywords: Mountain Agriculture, Tehsil Murree, Agricultural Knowledge

INTRODUCTION

Murree is Pakistan's most prominent hill station in the northern belt of Pakistan. Murree is approximately 50-55 kilometers from the capital territory Islamabad. It is at an elevation of 7500 feet around 73 26 east and 33 54' 30" north scope longitude. Right now it is spread over a region of 434 Sq kilometer. Murree is divided into 15 Union Councils, including one city cantonment area. The literacy rate in the area is higher than many other regions of the country. In the last census report the literacy rate at Murree was around 69%. Agriculture in Murree is through traditional practices and it lacks modern infrastructure and technologies. Family farming was common in the area which is rarely been seen now. The traditional practices of farming are not enough to meet up the input- output ratio. This is resulting in decline of agriculture and family farming in mountain areas of Murree. Family farming in mountain areas is the best way of eradicating poverty. Worldwide importance to family farming is being recognized and their contribution in eradication of food insecurity. General Assembly of the United Nations declared 2014 as the International Year of Family Farming to recognize and support the contribution of family farms to food security, poverty eradication and achieving the Millennium Development Goals. According to FAO, 2.6 billion People or 30% population of the world is linked with family farming, and it has special importance for developing countries. In order to get maximum out of mountain agriculture, communities living in the mountain areas should be strengthened. Moreover, environment for farming should be in favor of mountain societies. This includes the availability of quality seeds and best farming practices, techniques for management of crops and loan schemes to

meet their financial requirements. Local people will keep on migrating unless their livelihood is not improved. The loss of traditional landowners could leave mountain areas to those who will not have the same knowledge or commitment to use the land in a sustainable way.

Due to adoption of modern production and management techniques, poverty in the Asian region has fallen down and the absolute number of poor has declined in spite of continuous population growth. Poverty level has decreased from 680 million to 258 million in China and South-East Asia and from 470 million to 449 million in South Asia [1, 2]. Despite this progress, hundreds of millions of rural people in less-favored have obtained very little advantage of this growth. Rate of poverty is very high in those regions because of low productivity [3], describes the mountain areas as dispersed patches of usable land at different altitudes with different climatic condition with their own natural landscape and less space for mechanization. The agriculture in the area is not for generating income, but mainly it is consumed at household level. In [4], the authors explained the mountain areas phenomenon by dividing it into favored and less favored areas. *Less-favoured areas (mountain areas) are limited in potential for agricultural production due to biophysical constraints such as uncertain rainfall, steep slopes, or poor soils or that face socioeconomic constraints such as poor access to markets and infrastructure (or both).* The investment in mountain areas is very crucial for the development of the local communities as well as for the nation in large. Work done by Fan and colleagues has shown that through investing in marginal areas, especially focusing on agriculture, poverty ration has significantly reduced in China and India. They also compared the impact of

investment in favored and less favored areas and concludes that the return in shape of poverty reduction was much higher for less favored areas. [5, 6, 7]

MATERIALS AND METHODS

The study sought to understand the local farmers' perception towards new techniques for agricultural productivity in Tehsil Murree. Furthermore, the study was conducted to know about the impacts of observed climate changes on agricultural productivity in the area and is there any awareness about modern agricultural technologies among the local farmers of

the area.

The study was conducted in Tehsil Murree that is on the northern mountain start of the country from capital territory. It has 15 Union Councils (UCs) or administrative units that comprise of small villages. Data was collected from all 15 UCs in order to achieve the broadest spatial coverage. Other considerations included the geographical differences of the UCs including the availability of water sources. The selected UCs for the study were Dewal, Ghoraghal, Murree, Trait, Angoori, Numble, Musyari, Saharbagla, Phugwari, Gail, Rawat, Dryagalli, Potha Shareef, Charhaan, Bun.



Fig. 1 Map showing the location of Tehsil Murree

The study employed primary data collection through structured questionnaires. The questionnaire was pre-tested and some changes to questions and content were made before field implementation. A total of 450 structured survey questionnaires were administered to four hundred fifty households across fifteen UCs of Tehsil Murree. Thirty (30) households were sampled from each UC. Systematic random sampling was used to select individual households. The objective of the household questionnaires was to understand that how individual households experience the impacts of climate change on agricultural productivity and do they have knowledge of new agricultural techniques to enhance agricultural productivity. These questionnaires were ideally targeted at household heads who are also household decision makers on livelihoods issues. However, in cases where they were not present other responsible people acted as respondents for the household. Data was analyzed by using SPSS model.

RESULTS

House Hold Information:

The descriptive analysis shows that participant's age on average was around 43.9 years with minimum age of 24 and maximum 82 years. Table 1. below shows the average

education of the respondents was 10th class (9.29 accurately). Total family members on average in a household were calculated to be 6.57 with no of children per household were 3.68. Average land area in the tehsil is lower and on average each household has an area of 5.20 Kanals (less than 1 acre).

Agriculture as Source of Income:

The results show that only 12 % of the respondents have their source of income coming primarily from agriculture sector, while 88% of the people have non- agricultural source of income. For the percentage contribution of agriculture in the total households income. The study area showed around 24.8% of contribution coming from the agricultural (Table 2). This includes the cultivation of crops like wheat, maize and potatoes, vegetables like cucumber, pumpkins, tomatoes, bringals, chilies and ladyfinger. Along with that people also have household livestock like buffalo, cow, goats and poultry.

Reasons of Declining Agriculture:

Approximately 78% of the respondents (Table 3) on an average are of view that decline of agriculture is due to higher input cost of agriculture, lack of agricultural knowledge, unavailability of water, of quality inputs like seeds, pesticides and fertilizer, lack of government interests and migration. Some of the other reasons for that decline,

according to the respondents, are poor road networks within villages, lack of interest of the people and changing weather conditions.

proper usage of fertilizer and pesticides in the fields, 85.3% have no idea about how to control the pesticides and weedicides. Similarly about drip irrigation, tunnel farming and tillers and harvesters that are used in the mountain areas, approximately 93 % of the respondents are unaware of these available technologies and practices.

Knowledge about Modern Agricultural Practices

As shown in Table 4. below around 92% of the respondents are unaware of hybrid seeds, 87.6% do not know about the

Table 1. Households Information

	N	Minimum	Maximum	Mean	Std. Deviation
Participants Age	450	24	82	43.81	13.186
Participant Education Level	450	0	21	9.29	4.154
Total Family Members in a Household	450	0	22	6.57	2.634
No of Children of the Respondent of Family Head	450	0	13	3.68	2.324
Land Area (Kanal)	450	0	100	5.20	9.910

Table 2. Agriculture as Source of Income

Name	Response	Frequency	Percent
Agriculture as a Primary Source of Income	No	391	88
	yes	54	12
% Contribution of Agriculture in Total Income	No Cont.	337	74.9
	Others		24.8

Table 3. Reasons of Declining Agriculture

Name	Response	Frequency	Percent
Agri. decline due to Higher Input Cost of Agriculture Produce	No	110	24.4
	yes	340	75.6
Agri. decline due to Lack of Agri. Knowledge	No	91	20.2
	yes	359	79.8
Agri. decline due to Unavailability of Water	No	125	27.8
	yes	325	72.2
Agri. decline due to Lack of Quality Seed	No	114	25.3
	yes	336	74.7
Agri. decline due to Govt. Lack of Interest	No	80	17.8
	yes	369	82
Agri. decline due to Migration to other cities	No	84	18.7
	yes	365	81.1

Table 4. Knowledge about Modern Agricultural Practices

Name	Response	Frequency	Percent
Knowledge about Hybrid Seed	No	415	92.2
	yes	33	7.3
Knowledge about Fertilizer and usage	No	394	87.6
	yes	56	12.4
Knowledge about Pests and Weeds	No	384	85.3
	yes	66	14.7
Knowledge about Drip Irrigation Technology	No	416	92.4
	yes	34	7.6
Knowledge about Tillers and harvesters	No	373	82.9
	yes	77	17.1
Knowledge about Tunnel farming Practices	No	424	94.2
	yes	26	5.8

Name	Response	Frequency	Percent
Received any Govt. support for Agriculture	No	413	91.8
	yes	37	8.2
Received any Private Sector or NGO Support	No	426	94.7
	yes	24	5.3
Received any Past Trainings in Village	No	420	93.3
	yes	30	6.7
Desire for Agri. Training by the villagers	No	103	22.9
	yes	347	77.1

Trainings and Support on Agriculture:

On an average around 93 % of the respondents said that they had never received any assistance from government and private organizations relating to agriculture, this includes training on agricultural practices, incentives, knowledge transfer workshops or any other facility relating to development of agriculture in the area (Table 5). However, the people want to learn about the modern practices of agriculture and they want to have training and workshops in their area in order to learn new things. Around 77% of the respondents on an average wants to have trainings on agriculture.

DISCUSSION

Agriculture is not the primary source of income for the people of Murree area and therefore, have shifted to off farm activities. Land is mostly terraced and cultivated area even reduces further due to hedges and steps. Due to a small land area in the mountainous parts and because of unawareness about modern agricultural practices the people of the areas are going away from farming activities. Due to large family size, harsh climate and lack of agricultural infrastructure in the area, very few people depend on agriculture as a primary source of income. The people living throughout that year in the village relate to some of these activities and utilization of these crops, vegetables and livestock are contributing in total household expenditure. The trend of agriculture is declining in the area as compared to the past. The reason to that decline is attributed to some of the explanations as mentioned above. But there are also some more reasons to that which are more directly linked to this decline. The knowledge of the households towards modern agricultural practice was important to analyze. Household survey was conducted to access the knowledge of the residents about modern agricultural practices, such as hybrid seeds, tunnel farming, proper usage of fertilizer and pesticides, drip irrigation, tunnel farming and new machineries like tillers and small scale harvester. The results showed a total unawareness about these technologies and practices. Along with other factors the failure of agriculture in the area is also due to lack of government and developmen organizations support towards agriculture in Tehsil Murree.

CONCLUSION

This study has shown that ignorance from farming system, out migration from the area, impacts of climate change in terms of increasing temperatures and decreasing precipitation are altering the natural environment leading to the disappearance of natural habitat, flora and fauna which has critical implications on rural livelihoods. Traditional and indigenous fruits are disappearing due to unawareness about farming system among the communities and reduced precipitation & increasing temperatures. This has led to the destruction of important food supplements for local communities making them vulnerable to food insecurity. This is aggravated by the fact that growing crops is no longer viable as agricultural seasons often fail due to unfavorable weather conditions. Understanding of local people towards declined agricultural productivity is limited due to limited knowledge. The survey showed that most farmers were unaware of the new agricultural technologies. We conclude that urgent steps are required to educate local farmers about the new trends in agricultural development, notion of climate change and possible pathways to adaptation. Urgent strategies must be driven by key stakeholders including governments and the NGO sector to ensure the food security in Pakistan.

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