

## **ROLE OF TRAININGS ON FARMERS' PROFITABILITY OF MEDICINAL AND AROMATIC PLANTS IN MOUNTAINOUS AREAS OF DISTRICT SWAT, KHYBER PUKHTUNKHWA**

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**ABSTRACT:-** The study was conducted in District Swat, Khyber Pakhtunkhwa to show the impact of training on farmers' profitability in medicinal and aromatic plants (MAPs) in mountainous areas of district Swat. A convenient sample of 100 respondents, engaged in MAPs in Chail Valley Madyan was taken. Information about revenue from MAPs, marketing, prices and quantities was collected through a structured questionnaire. The respondents were given training under Swiss Development Cooperation Project at the time of collection, harvesting, cleaning, drying, packing and marketing of MAPs. The overall findings revealed that the training had positive impact on farmers' revenue. If standardized, the MAPs collected, they can get fair prices for their products. The study recommends that the government and non-governmental organization should arrange such type of trainings in other regions of the country which will not only increase the trade volume of the MAPs but would also improve the livelihood of the local community.

*Key Words: Medicinal Plants; Aromatic Plants; Training; Mountainous Areas; Pakistan.*

### **INTRODUCTION**

According to the World Health Organization, 80% of the people in developing countries rely on traditional natural medicines and 85% of the traditional medicines involve the use of plant extracts (Farnsworth et al., 1985). The demand of medicinal and aromatic plants (MAPs) increased all over the world, as 70% of the plant species are used in the preparation of medicines, cosmetic and other plant related products (Leaman, 2008). Almost 1.6 billion people of the world partially and 350 million entirely depend on forests for their survival and income (Hamilton, 2004; Smith and Larsen, 2003; World Bank, 2002) Medicinal and aromatic plants pro-

vide critical livelihood support as well as affordable and culturally relevant sources for health care to a large number of South Asian's poor. The dependence of tribal and marginalized population to seek out their livelihoods based on the income drawn from these and other related plants is more pronounced in the uplands of South Asia than other parts of the region. At present, 90% of medicinal plants are collected from the wild, generating about 40 million man-days employment (Tiwari et al., 2013). Almost 2000 medicinal plants species exist in Pakistan. However, very few of them are wasted and 90% of country's medicinal herbs are imported. Around 50% of the population in Pakistan, being cure

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using traditional medicines by more than 40,000 traditional herbal practitioners (IMHSC, 2003-04). Malakand region in northern Pakistan shares a rich diversity of temperate flora. These plants provide a precious economic resource to the people living in the remote mountainous region. Improper collection and post collection process however, pose a great threat to the sustainability of MAPs species, besides giving low returns to collectors.

Different studies have been focused in the role of training on farmers' profitability in mountains of the world and as well as in Pakistan. Singh and Ghose (1993) found that MAPs improve the profitability of the cropping system in India. Some of the researchers highlighted its significance from trade perspective and found that it has good market and can further be enhanced (Olsen, 1998; Olsen and Helles, 1997). However, some farmers changed their cropping pattern and shifted to the cultivation of MAPs due to higher profitability (Dagar et al., 2004; Huang et al., 2008; Kilpatrick, 1996; Rajendran et al., 2008). Wattoo et al. (2010) found that arable land have important natural resources for the people of the mountain areas. While farming and livestock are the subsistence oriented livelihood strategies for the people living in the mountain areas of Northwest Pakistan. Qureshi et al. (2007) further added that the medicinal plants face major threats of extinction in Bagh, Azad Kashmir which can be conserved with the help of local community. Shinwari and Khan (2000) found that the inhabitants of the Margalla Hills National Park in Pakistan use the medicinal herbs for different diseases and these

plants support their livelihood.

There are various factors which affect the product of medicinal and aromatic plants. Cavaliere (2009) found that climate change affects the MAPs at global level. Billore (2000) studied that over use of natural resources and change in environment brought reduction in forest as well as in medicinal plants in Rajasthan (India). In some parts of the world, agricultural and forest activities are mainly performed by women. The development in their skills will definitely add to their produce. But unfortunately, in many developing countries they are not trained (DANIDA, 2004). Ampaire and Rothschild (2010) studied the effects of training and supporting farmers for livestock development. They selected the performance of three farmer groups after certain observations. The first group received training and support from a development programme, the second received less training and support from the programme while the third group received nothing. The results showed that although the training and support helped the farmers but some other factors such as the farmer's resources were limiting their development.

Their training and education both are equally important for increasing the productivity of the agricultural sector (Alam et al., 2009; Evenson, 2001). Serin et al. (2009) studied the effect of education, household size, land size, land ownership, sale period, processing, consulting, marketing, membership to occupational associations and geographical regions on farmer's income in Turkey. He found that education has positive impact on productivity and income of

farmers. Similar findings were also supported by Weir and Knight (2000), Alene and Manyong (2007) and Jamison and Moock (1984). Asadullah and Rahman (2009) studied the role of education in farmers' productivity and efficiency in Bangladesh, surveying 141 villages and found that education has positive effect on farmer's efficiency and productivity. Similar findings were also supported by Lockheed et al. (1980), Feder et al. (2003) and Godtland et al. (2004). The agricultural productivity can further be enhanced through giving training to the farmers. The training may be relevant to use of inputs (Huang et al., 2012), management of farm resources and marketing of agricultural products (Bingen et al., 2003). The farmers utilize these information which help them in increasing their revenues (Akobundu et al., 2004).

There are various forms of training which are given to the farmers. Salazar (1983) developed a manual which included farm water management and its various methods to guide and train the farmers. Kilpatrick (2000) found that education and training both improved the farm management practices in Australia. Some trainings focus on the application of appropriate fertilizer to improve the agriculture productivity (Kilpatrick, 2000). After getting the training, the farmers, properly manage the farms and ultimately support their livelihood security.

District Swat in Khyber Pakhtunkhwa province not only has good potential in producing MAPs but also provide seasonal employment to the local community. Furthermore, the various MAPs are offered both for national and international market (Ali et al., 2012).

However, majority of the local community is still unaware about its value addition in the markets. They produce their products in the markets in bulk without any gradation or standardization and do not get fair prices for their products. To this end, the Innovation for Poverty Reduction Project (IPRP) launched a training programme for the local community to improve their livelihood. The training included the MAPs collection time and the pre- and post harvest best practices. This project is a Swiss Development Cooperation Project, established in January 2003 to reduce poverty and improve the livelihood and income level of the remote areas of Khyber Pakhtunkhwa through better management of natural resources. The present study assess whether the given training was helpful for the farmers in managing their production of MAPs. As similar study, has not been undertaken on the issue under consideration so this study bridges this gap.

## MATERIALS AND METHOD

This study is based on primary data. A sample of 100 respondents was used and the selected respondents selected were those who were engaged in MAPs in Chail valley Madyan in district Swat. Information about collection, marketing, prices and quantities of MAPs were collected through structured questionnaire. The information was obtained from the respondents before and after the training given to them. The training given by IPRP to the farmers included tips about collection time, harvesting, cleaning, drying, packing and marketing of MAPs. To check the effectiveness of the training, the

following "student t paired" test has been used. In other words, the test statistic.

$$t = \frac{\bar{d}}{\sqrt{S^2/n}}$$

where,

$n$  = Number of pairs

$\bar{d}$  = Mean difference between the two sample observations given by:

$$\bar{d} = \frac{\sum d_i}{n}$$

The difference was estimated between the prices of the MAPs before and after the training given to the farmers. Similarly, the difference was estimated between the average

quantity of MAPs before and after the training.

$S^2$  = Sample variance and can be obtained as:

$$S^2 = \frac{\sum (d_i - \bar{d})^2}{n-1}$$

where,

$d_i$  = Difference between the two sample observations in the  $i^{\text{th}}$  pair:

## RESULTS AND DISCUSSION

The farmers in the study area usually sell their produce in bulk without proper weight and they sell these MAPs in the market through middlemen. This concern was taken on priority in the training given by the

**Table 1. Status of collection and price of MAPs before and after training**

Local and botanical name of the plants	Average collection of MAPs before training (kg)	Average collection of MAPs after training (kg)	% change in quantity of MAPs after training	Price of MAPs before training (Rs.)	Price of MAPs after training (Rs.)	% change in price of MAPs after training
<i>Sumbal</i>	247.0	270	08	91	142	36
<i>Gogi (morles)</i>	28.5	130	78	30	100	70
<i>Makandpath</i>	77.0	467	84	15	36	58
<i>Kanees (Dioscorea deltoidea wall)</i>	10.0	132	92	71	150	52
<i>Mamekh (Paeonia emodi wall)</i>	29.0	148	80	24	127	81
<i>Kakora (Podophyllum emodi wall)</i>	16.0	117	86	27	145	81
<i>Shershamay (Saussurea lappadcne)</i>	48.0	160	70	30	90	66
<i>Mushkebala (Valeriana jatamansi viola)</i>	28.0	131	79	91	120	24
<i>Banafsha (Pilosa blume)</i>	41.0	145	72	40	120	66
<i>Anjabar (Bistorta amplexicaulis greene)</i>	47.0	110	57	93	100	07
<i>Zahar Mora (Acontum violaceum staf)</i>	5.0	115	95	51	166	69
<i>Ziad Gully</i>	8.0	125	94	51	140	64

Source: Field survey (2014)

IPRP. After getting the training, the quantity increased and the farmers also charged fair prices for their products. Because, the farmers started to properly collect the MAPs and then dried and graded which added the value to the produce in the market. These guidelines were given to the farmers in the training. After the training, the quantity of MAPs and its prices increased (Table 1). The results are also supported by the statistical test, indicating that the training given to the farmers has significant impact on the quantity and prices of the MAPs of the farmers (Table 2). Similar results were also found by Ampaire and Rothschild (2010) and Shahbaz et al. (2010). The increased prices charged by the farmers is because before the training they were not grading their MAPs for marketing while after the training all the farmers in the sample started to properly grade their produce.

Majority of the farmers in the study area sell their MAPs through middlemen who purchase these products from the farmers in bulk and then they resell in the city markets. The motive of the training was that the farmers should do this activity personally which would help them to get fair prices without involving the commission agents. In the sampled respondents, 100% of the respondents used to sell their produce in the market through

**Table 2. Descriptive statistics of the MAPs collection and prices**

Statistics	Average collection of MAPs	Price of MAPs (Rs.)
Mean	122	68.5
Difference		
Variance	7902	1313.8
t	4.76	6.5

**Table 3. Descriptive statistics of the MAPs collection and prices**

Market demand channel	Before training (%)	After training (%)
Through middlemen	100	20
Personally	0	80

middlemen before the training while after training, only 20% of the farmers used to perform this activity through middlemen and 80% of the farmers used to sell their MAPs personally which increased their revenue (Table 3). The respondents were also asked about their satisfaction on the training given to them. Almost all the farmers (100%) were found satisfied with the training given to them.

**CONCLUSION AND RECOMMENDATIONS**

The results concluded that the training given to the farmers remained successful in increasing value addition of the MAPs in the study area. The training was also found statistically significant. The study recommends that the government and non-governmental organization should arrange such type of trainings in other regions of the country which will not only increase the trade volume of the MAPs but would also improve the livelihood of the local community.

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### **AUTHORSHIP AND CONTRIBUTION DECLARATION**

S. No	Author Name	Contribution to the paper
1.	Dr. Anwar Hussain	Conceived the idea, Wrote abstract, Methodology, Technical input at every step, Result and discussion
2.	Mr. Muhammad Rahman	Did SPSS analysis, Conclusion, Overall management of the article, Data collection, Data entry in SPSS and analysis, Introduction, References

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