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Farmers' Perceptions on Production and Marketing of Medicinal and Aromatic Plants in Kullu District of Himachal Pradesh-India

Gaurav, Pankaj Thakur*, Krishan Kumar and Piyush Mehta
Department of Business Management, Dr. Y. S. Parmar University of Horticulture and Forestry, Nauni-Solan, Himachal Pradesh (173230), India
*Corresponding Author E-mail: pankajthakur.js@gmail.com
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ABSTRACT

Medicinal and Aromatic Plants played a significant role in the subsistence economy of the people of Himachal Pradesh, especially those living in the rugged and impoverished hills, mountains and rural interiors. The collection, simple processing and trading of medicinal plants contribute significantly to the cash income of the poor and women in this region. There is a growing demand for M&APs at the global level. The export of M&APs brings nominal money to the farmers at the local level. Fair benefit from the trade has not been initiated yet. The challenging problem prospecting is not only to make a comprehensive inventory of M&APs, but also to address the social, economic and environmental issues in an integrated approach. A proper study of the market and up-to-date market information can make the trade a highly profitable option while increasing the livelihood options and diversifying the portfolio of products. For this research, sample size of 60 farmers of Kullu District of Himachal Pradesh was taken. A structured questionnaire was prepared for the present study. Findings revealed that the level of awareness on production and marketing of medicinal and aromatic plants among the farmers was moderate. Even for the moderate usage, respondents were enjoying some benefits like better income and better market information. This highlights the scope of production and marketing of medicinal and aromatic plants highly useful in the coming future.

Key words: *Medicinal, Aromatic, Production and Marketing*

INTRODUCTION

Indian subcontinent is among the World's 12 leading Biodiversity Centre's, encompassing 16 different agro-climatic zones, 10 vegetation zones, 25 biotic provinces and about 426 habitats of specific species. It has a gift of over 45,000 plant species (nearly 20% of the global species) of which 3,500 species of both higher and lower plant groups are of medicinal values with its diverse resource base of medicinal plants on one hand and its ancient knowledge on Ayurveda medicine on the other hand has a great potential in the field of Medicinal and Aromatic Plants (M&APs). There is a growing demand for plant-based medicines, health products, pharmaceuticals, food supplements and cosmetics in the international market[1].

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The Ministry of Environment and Forests Government of India had identified and documented over 9,500 plant species considering their importance in the pharmaceutical industry. Out of these, 65 plants have large and consistent demand in world trade. In terms of market share in production value, India holds the 6th place with 7 per cent share. India, with its vast biodiversity and potential for commercial cultivation of medicinal plants, could become a world leader in the supply of raw material for medicinal plant sector. The M&APs are the major source of income generation for many local poor communities in India, Nepal, Peru and the Central Himalayas[2]. Some species are used for medicine, some for aromatic purposes, and many for both medicinal and aromatic purposes[3]. There is a growing demand for M&APs at the global level[4]. The export of M&APs brings nominal money to the farmers at the local level and often doesn't cover their labor cost. Fair benefit from the trade has not been initiated yet. The challenging problem prospecting is not only to make a comprehensive inventory of M&APs, but also to address the social, economic and environmental issues in an integrated approach. A proper study of the market and up-to-date market information can make the trade a highly profitable option while increasing the livelihood options and diversifying the portfolio of products[5]. M&AP's played a significant role in the subsistence economy of the people, especially those living in the rugged and impoverished hills, mountains and rural interiors. The collection, simple processing and trading of medicinal plants contribute significantly to the cash income of the poor and women in these regions[6]. In the Great Himalayan National Park of Himachal Pradesh, almost all the local people are dependent on medicinal plants collection for their livelihoods and earn good profit through collection and sales. Therefore, by sustainably using and growing economically remunerative M&APs, there is an ample scope to maintain both the rural livelihoods and environmental sustainability. M&AP-based local micro-enterprises can also bridge the gap between rural poor and relatively well-off urban rich and promote social harmonization and sound environment conservation. Realizing the importance of M&AP's the State Government is providing impetus to the cultivation of medicinal plants to make Himachal, 'Herbal State' of the country. To make headway in this direction, State Government launched ambitious *'Jan-Jan Sanjeevani Abhiyan'* scheme[11]. As a result of those initiatives, the cultivation of M&APs is picking up in the state. The persuasion of the local people has started bearing results and now people are carrying out this trial with zeal. The *Picrorhiza kurroa* (Karu or Kutki), *Aconitum heterophyllum* (Patish or Atish), *Origanum vulgare (*Ban Tulsi), *Valeriana jatamansi* (Nihanu), Aloe vera (*Aloe barbedensis*), Stevia (*Stevia rebaudiana*), Lemon grass (*Cymbopogon citratus*) and Safed musli (*Chlorophytum borivillianum*) are such plantations which are being cultivated. This novel initiative will not only bring larger areas under green cover and medicinal plants but at the same time open up an effective means of livelihood to the rural people reeling under problems of shrinking land holdings. Keeping in view the investigation was carried out on "Farmers' Perceptions on Production and Marketing of Medicinal and Aromatic Plants in Kullu District of Himachal Pradesh-India

MATERIAL AND METHODS

The descriptive research design was adopted for the concerned research study. A Multi Stage Random Sampling design technique was used for the present study. The selection of the research area in the Kullu District of Himachal Pradesh was made purposively. In the present study the total number of respondents for the collection of primary data in Kullu district was 60 reported from 6 panchayats. The primary data for the present study was collected with the help of questionnaire. The secondary data for the present study was collected from journals, magazines, research articles, newspapers, and website. Simple mathematical

and statistical tools, including Arithmetic mean, and Total Weightage Score method were used for satisfying the objectives with a view of keeping the analysis simple and easy to understand. The arithmetic mean has been applied to study the opinion of the sample respondents on 5-point scale for different statements. Total weightage score method in which we have to provide different Weights according to their importance and multiply the values of the items (X) by the weights (W) as provided. Then add all the values to obtain the total weights of all the items and the one which get highest score will get the first rank and the one which get the lowest score will get the lowest rank. Likert scaling (bipolar scaling method), measuring dual inclined responses in terms of positive or negative response to a statement. The concerned research paper was initiated with the key objectives to analyse the importance of medicinal and aromatic plants for rural people in the study area, to study the constraints in the adoption of cultivation of medicinal and aromatic plants by farmers, to study the perceptions of farmers for production and marketing of medicinal and aromatic plants.

RESULTS AND DISCUSSION

3.1: Education status of the respondents

Education is an important ingredient in the development process. This is true in the field of farming as well, because the literate persons in general, are better placed to perceive and adopt new technologies than illiterates. In this regard analysis of general educational status of the family gains importance. It was with this importance in mind the educational status of sampled farm families were analyzed and results are presented in Table 3.1 it can be seen that most of respondents in the Kullu district were study up to matric level 46.7 per cent followed by 28.3 per cent Intermediate, graduate comprised of 18.3 per cent whereas Post graduate and above were 6.7 per cent.

Table 3.1 Education status of the Respondents

Education	No. of Respondents	Frequency
Matric	28	46.7
Intermediate	17	28.3
Graduation	11	18.3
Post Gradu. or Above	4	6.7
Total	**60**	**100**

3.2: Land status of the respondents

It is observed from the table 4.6 that largely sample respondents farmable land holding status (hectare) from 0.41-1 hectare was 46.67 per cent followed by 1-2 hectare land holding was 25 per cent, wheras land holding less than 0.41 hectare was 20 per cent and the least per cent is 8.33 per cent with land holding more than 2 hectare. It has been noted that that most of the respondents were 0.41-1 hectare of land holding. The data above clearly shows that most of the respondents are marginal farmers in the study area.

Table 3.2: Land status of the respondents

Land status	No. of Respondents	Percentage
Less than 0.41 hectare	28	46.67
0.41-1 hectare	15	25
1-2 hectare	12	20
More than 2 hectare	5	8.33
Total	**60**	**100**

3.3: Types of Medicinal Plants Cultivated by Farmers'

The respondents were asked to indicate their medicinal plant production status in accordance with the varieties and it was illustrated from table 3.3 that the majority of the medicinal plants cultivators grow *Picrorhiza kurroa* (Karu or Kutki) (58 per cent) there after the ones who grow only *Aconitum heterophyllum* (Patish or Atish) (33.3 per cent) followed by the medicinal plants cultivators who grow *Origanum vulgare (*Ban Tulsi) (6.67 per cent and last being cultivation of only *Valeriana jatamansi* (Nihanu) (1.67 per cent) on seasonal basis.

Table 3.3: Types of Medicinal Plants Cultivated by Farmers'

Types of Medicinal Plants Cultivated	No. of Respndents	Frequency
Aconitum heterophyllum (Patish or Atish)	20	33.3
Valeriana jatamansi (Nihanu)	1	1.7
Picrorhiza kurroa (Karu or Kutki)	35	58.3
*Origanum vulgare (*Ban Tulsi)	4	6.7
Total	**60**	**100**

3.4: Source of information on medicinal plants production and marketing

It can be seen from table 3.4 that 43.3 per cent says training programs on cultivation of medicinal and aromatic plants provide sufficient information to the farmers, 23.4 per cent Forest department, 11.7 per cent says Agriculture and Horticulture department are also engaged in providing information to the farmers, 8.3 per cent farmers also get information on growing medicinal plants from their friends /relatives, and different 3.3 per cent TV programs.

Table 3.4: Source of information on medicinal plants production and marketing

Particulars	No. of Respondents	Frequency
Training programmes	26	43.3
University	6	10
Agri/horti deptt	7	11.7
Forest deptt	14	23.4
Friends	5	8.3
TV	2	3.3
Total	**60**	**100**

3.5: Problems in the production and marketing of medicinal plants

It can be examined from the table 3.5 that respondents faced various challenges during medicinal and aromatic plants production. Major challenge faced by respondents waslack of transportation in the area it is 28.3 per cent and 20 per cent farmers say low income levels from medicinal and aromatic plants production which are responsible for less adoption of medicinal and aromatic plants cultivation practices. Another challenge which are faced by medicinal plants growers are 16.7 per cent lack of resources, 15 per cent poor information and 6.7 per cent lack of motivation.

Table 3.5: Problems in the production and marketing of medicinal plants

Particulars	No. of Respondents	Frequency
Lack of resources	10	16.7
Lack of transport	17	28.3
low income	12	20
Too much work	8	13.3
Poor information	9	15
Lack of motivation	4	6.7
Total	**60**	**100**

3.6: Marketing intermediaries for marketing of medicinal and Aromatic plants

It can be seen from table 3.6 that 51.7 per cent farmers say that local traders are the major marketing intermediaries of medicinal and aromatic plants produce followed by wholesaler / regional traders 16.7 per cent, 13.3 per cent middle man agents, 11.7 per cent processors, and 6.6 per cent pharmaceutical units.

Table 3.6 Marketing intermediaries for marketing of medicinal and Aromatic plants

Particulars	No. of Respondents	Frequency
Local traders	31	51.7
wholesale/regional traders	10	16.7
middleman agents	8	13.3
Processors	7	11.7
Pharmaceuticals units	4	6.6
Total	**60**	**100**

3.7: Farmers awareness about production and marketing of medicinal and aromatic plants

It can be concluded from the table 3.7 more than 50 per cent that is 56.7 per cent farmers agreed upon their awareness about production and marketing of medicinal and aromatic plants and 43.3 per cent farmers are not aware about production and marketing of medicinal and aromatic plants.

Table 3.7: Farmers awareness about production and marketing of medicinal and aromatic plants

Particulars	No. of Respondents	Frequency
Agree	34	56.7
Disagree	26	43.3
Total	**60**	**100**

3.8 Farmers' responses showing the perception of farmers on production of medicinal and aromatic plants

In order to understand the farmers' perception on production of medicinal and aromatic plants, Table 3.8 has demonstrated an analytical view of farmers' perspective. Further a total weightage score analysis have been taken up followed by rank. It can be observed that 64 per cent of respondents placed at Ist rank with the highest TWS i.e. 266 which shows the strongly agreeableness among respondents regarding higher financial benefits of cultivating medicinal and aromatic plants. It can also be observed that the lowest TWS i.e. 104 given the IXth rank, which shows the strongly disagreeableness of 53 per cent respondents towards absence of provision of subsidy for cultivation of medicinal and aromatic plants. This finding was found to be similar with the study of Dhanakumar and Nendran[8]. So the first two rank obtained through Total Weighted Score are intensively discussed below for having better understanding.

Table 3.8: Farmers' responses showing the perception of farmers on production of medicinal and aromatic plants

Statements	Farmers' Response						
	5 SA	**4 A**	**3 Neutral**	**2 DA**	**1 SDA**	**TWS**	**RANK**
Encouragement for production of medicinal and aromatic plants by social worker /neighbour/Govt. official /Non Government officials through various schemes	2 (3)	6 (10)	12 (20)	14 (23)	26 (44)	124	**IV**
Support from any Organization for the cultivation of Medicinal and Aromatic plants	0 (0)	5 (8)	7 (12)	18 (30)	30 (50)	109	**VII**
Different Government Department provide training for cultivation of medicinal and aromatic plants	2 (3)	3 (5)	9 (15)	12 (20)	34 (57)	107	**VIII**
Trend of medicinal plant cultivation increased in the last five years	5 (8)	20 (34)	5 (8)	18 (30)	12 (20)	168	**II**
The information on the production of medicinal and aromatic plants is relevant and useful	2 (3)	5 (8)	13 (22)	15 (25)	25 (42)	124	**IV**
Adopted the standardized cultivation method	6 (10)	6 (10)	5 (8)	13 (22)	30 (50)	125	**III**
Subsidy is provided for cultivation of medicinal and aromatic plants	1 (2)	5 (8)	3 (5)	19 (32)	32 (53)	104	**IX**
Cultivated material match with the quality and quantity standards for industrial purpose	3 (5)	7 (12)	9 (15)	12 (20)	29 (48)	123	**V**
Financial benefits of cultivating medicinal and aromatic plants are high	38 (64)	16 (27)	2 (3)	2 (3)	2 (3)	266	**I**
Output of medicinal and aromatic plants is easily saleable	4 (7)	5 (8)	2 (3)	15 (25)	34 (57)	110	**VI**

3.9: Farmers' responses showing the perception of farmers on marketing of medicinal and aromatic plants

A perusal of the data from the table 3.9 represents the agreeableness of farmers on marketing of medicinal and aromatic plants depending upon certain statements in the form of total weighted score (TWS) and their respective ranks. It can be observed that 66 per cent of respondents placed at Ist rank with the highest TWS i.e. 270 which shows the strongly agreeableness among respondents regarding lacking of marketing knowledge . It can also be observed that the lowest TWS i.e. 90given the XIIth rank, which shows the strongly disagreeableness of 59 per cent respondents towards absence of provision of government schemes for marketing of medicinal and aromatic plants produce. Similar result were found by Powar and Hange[9]. The first two rank obtained through Total Weighted Score are intensively discussed below for having better understanding.

Table 3.9: Farmers' responses showing the perception of farmers on marketing of medicinal and aromatic plants

Statements	Farmers' Response						
	5 SA	**4 A**	**3 Neutral**	**2 DA**	**1 SDA**	**TWS**	**RANK**
Lack of marketing knowledge	40 (66)	15 (25)	1 (2)	3 (5)	1 (2)	270	**I**
Provision of efficient market information to farmer by government	0 (0)	3 (5)	9 (15)	17 (28)	31 (52)	104	**XI**
Lack of current market and price information	40 (67)	9 (15)	1 (2)	6 (10)	4 (6)	255	**II**
Provision of government schemes	0 (0)	0 (0)	5 (8)	20 (33)	35 (59)	90	**XII**
Finance	2 (2)	4 (6)	6 (10)	24 (40)	26 (42)	118	**VII**
Labour	2 (3)	2 (3)	3 (5)	28 (46)	25 (42)	108	**X**
Grading	2 (3)	4 (7)	2 (3)	27 (45)	25 (42)	111	**IX**
Packaging	4 (6)	2 (3)	7 (12)	19 (32)	28 (47)	115	**VIII**
Storage	2 (3)	15 (25)	13 (22)	25 (42)	5 (8)	164	**V**
Transportation	16 (26)	25 (42)	7 (12)	6 (10)	6 (10)	219	**III**
Marketing intelligence	2 (3)	4 (7)	6 (10)	23 (38)	25 (42)	115	**VIII**
Mal practices	7 (12)	14 (23)	5 (8)	24 (40)	10 (17)	164	**V**
No help through cooperative agencies	10 (16)	24 (40)	7 (12)	10 (17)	9 (15)	196	**IV**
Market regulated prices	2 (3)	5 (8)	9 (15)	26 (44)	18 (30)	127	**VI**

3.10: Farmers' responses showing barriers /problems in the adoption of cultivation of medicinal and aromatic plants

In reference to farmers responses about barriers /problem in the adoption of cultivation of medicinal and aromatic plants depending upon certain statements in the form of total weighted score (TWS) and their respective ranks in tabulated illustration 3.10, it is clearly revealed that 42 per cent of respondents placed at Ist rank with the highest TWS i.e. 225 which shows the agreeableness among respondents regarding lacking of well-planned marketing infrastructure for medicinal plants . It can also be observed that the lowest TWS i.e. 132 given the Xth rank, which shows the strongly disagreeableness of 50 per cent respondents towards too much involvement of local traders and wholesalers in the supply chain of medicinal and aromatic plants to

pharmaceutical industries. These results are in conformity with the findings of Singh *et al*.[11], The first two rank obtained through Total Weighted Score are intensively discussed below for having better understanding.

Table 3.10: Farmers' responses showing barriers /problems in the adoption of cultivation of medicinal and aromatic plants

Statements	Farmers' Response						
	5 SA	4 A	3 Neutral	2 DA	1 SDA	TWS	**RANK**
Lack of information about improved technologies and practices of cultivation of medicinal and aromatic plants	16 (27)	23 (38)	4 (7)	5 (8)	12 (20)	206	**II**
Decline in the traditional knowledge on many less known medicinal plant species	15 (25)	17 (28)	6 (10)	10 (17)	12 (20)	193	**VII**
Lack of legislative and policy support for cultivation and harvesting schemes	10 (16)	28 (47)	4 (7)	9 (15)	9 (15)	201	**V**
Inadequate transportation facilities	9 (15)	19 (32)	5 (8)	16 (27)	11 (18)	179	**IX**
Non availability of storage space for the harvest of medicinal and aromatic plants	9 (15)	12 (20)	9 (15)	21 (35)	9 (15)	189	**VIII**
Irrigation problems in the area	18 (30)	15 (25)	3 (5)	13 (22)	11 (18)	196	**IV**
Too much involvement of local traders and wholesalers in the supply chain of medicinal and aromatic plants to pharmaceutical industries.	9 (15)	6 (10)	3 (5)	12 (20)	30 (50)	132	**X**
Improper sharing of benefits due to lack of awareness among farmers on the real prices of medicinal plant.	15 (25)	21 (35)	5 (8)	10 (17)	9 (15)	203	**III**
Lacking of well-planned marketing infrastructure for medicinal plants.	20 (33)	25 (42)	2 (3)	6 (10)	7 (12)	225	**I**
Decline in the traditional knowledge on many less known medicinal plant species	11 (18)	28 (47)	1 (2)	12 (20)	8 (13)	202	**IV**

3.11: Farmers' responses according to Total weighted score showing importance of medicinal and aromatic plants for rural people

Table 3.11 represents the agreeableness of farmers about importance of medicinal and aromatic plants for rural people depending upon certain statements in the form of total weighted score (TWS) and their respective ranks. It can be observed that 38 per cent of respondents placed at Ist rank with the highest TWS i.e. 239 which shows the strongly agreeableness among respondents regarding increased demand for medicinal and aromatic plants by pharmaceutical industries. It can also be observed that the lowest TWS i.e. 142 given the IXth rank, which shows the disagreeableness of 53 per cent respondents

towards encouragement for the large scale cultivation of the medicinal and aromatic plants. The present results concerning the farmers' responses showing importance of medicinal and aromatic plants for rural people are in those obtained by Kala *et., al.*[10], The first two rank obtained through Total Weighted Score are intensively discussed below for having better understanding.

Table 3.11: Farmers' responses according to Total weighted score showing importance of medicinal and aromatic plants for rural people

Statements	Farmers' Response						
	5 SA	4 A	3 Neutral	2 DA	1 SDA	TWS	**Rank**
Traditional medicinal contributions to primary health care	10 (17)	25 (42)	4 (6)	13 (22)	8 (13)	196	**IV**
Source of income generation for rural people through cultivation and harvesting of medicinal and aromatic plants.	9 (15)	24 (40)	2 (3)	13 (22)	12 (20)	185	**VI**
Encouragement for the large scale cultivation of the medicinal and aromatic plants	5 (9)	8 (13)	3 (5)	32 (53)	12 (20)	142	**IX**
Public domestication and cultivation program helping in the conservation of the medicinal and aromatic plants	12 (20)	15 (25)	10 (17)	14 (23)	9 (15)	187	**V**
Increased demand for medicinal and aromatic plants by pharmaceutical industries	23 (38)	25 (42)	5 (9)	2 (3)	5 (8)	239	**I**
Introduction of contract farming concept enhancing the farm income of the rural people	5 (9)	8 (13)	2 (3)	35 (58)	10 (17)	143	**VIII**
Identification of the medicinal and aromatic plant species of large commercial value by the rural people	15 (25)	25 (42)	5 (9)	8 (13)	7 (11)	213	**II**
Development and action plans for the conservation as well as herbal drug industry in the rural area for providing self-employment opportunities and improving and uplifting the life, economy and social status of rural populations	9 (15)	8 (13)	4 (7)	25 (42)	14 (23)	153	**VII**
Introduction of medicinal and aromatic plants in farms leading to crop diversification	10 (17)	30 (50)	2 (3)	10 (17)	8 (13)	204	**III**

Suggestions

The study has brought into focus many problems relating to the cultivation and marketing of M&APs in the study areas. In order to meet the growing requirements of medicinal and aromatic plants, emphasis is needed on their marketing potential. Relying only on natural production sites will pose serious problems in sustainable management of M&APs. Moreover, present system of extraction from the wild is also adding to the problems of extinction of some of the species. State government is trying to promote medicinal plant cultivation. Some of the suggestions emerged from the present study are discussed as below.

There is a need to train local people in cultivation of the medicinal and aromatic plants.

Detailed information on the resource potential of different medicinal and aromatic plants is lacking and there is a need to take appropriate steps in this regard. Information on market potential, their prices and market intelligence is required to be collected through regular market surveys; so that proper marketing strategies could be formulated. A sound data base of production potentials of

different species along with their potential needs to be created.

For better disposal of M&APs produce, the producer- industry linkages needs to develop model of contract farming should be developed to ensure better marketing for their harvest.

CONCLUSION

Medicinal and Aromatic Plants (M&APs) not only contribute to local health care systems but also play a significant role in the subsistence economy of the people, especially those living in the hills, mountains and rural interiors. Realizing the importance of M&APs the State Government is providing impetus to the cultivation of medicinal plants to make Himachal, 'Herbal State' of the country. As a result of those initiatives, the cultivation of M&APs is picking up in the state. The *Picrorhiza kurroa* (Karu or Kutki), *Aconitum heterophyllum* (Patish or Atish), *Origanum vulgare (*Ban Tulsi) and *Valeriana jatamansi* (Nihanu) are such crops which are being cultivated. However, in spite of the economic prominence, systematic emphasis regarding the cultivation and marketing of these medicinal plants, most of the herbal plants are collected in unscientific manner only for commercial benefits. This has resulted in the extinction of many herbs. Moreover, this unorganized trading results into a loss to the growers. Training programme on cultivation of medicinal and aromatic plants provide sufficient information to the farmers. Medicinal plant growers face various challenges during medicinal and aromatic plants production. Major challenge faced by respondents was lack of transportation, low income levels from medicinal and aromatic plants production which was responsible for less adoption of medicinal and aromatic plants cultivation practices. Other challenges which are faced by growers were lack of resources, poor information and lack of motivation. High prices of the quality planting material, lack of technical know-how, lack of availability of the planting material, were some of the production problems faced by the farmers in the study areas. Lack of processing facilities, absence of minimum support price, lack of regulated markets, lack of technical knowledge about grading and that of high cost of transportation were found to be the major problems in the marketing of M&APs. Poor access to good credit facilities due to lot of formalities involved in obtaining subsidies and in institutional finance and lack of poor extension activities were some of the other constraints in the cultivation of M&AP's that are hindering the farmers to do better in this.

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