FEASIBILITY STUDY ON MARKETING OF CULTIVATED MEDICINAL AND AROMATIC PLANTS AS LIVELIHOOD FOR FARMERS IN HARDA AND DEWAS DISTRICTS OF MADHYA PRADESH, INDIA

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Introduction

The Medicinal and Aromatic Plants (MAPs) sector has traditionally occupied an important position in the socio-cultural, spiritual and medical arena of rural and tribal lives of India. The global context suggests tremendous opportunities in both pharmaceutical material and know-how for India, a country unrivaled in terms of diversity of medicinal systems and practices, in addition to being a major storehouse of biological diversity with two of the 14 mega-biodiversity areas of the world located within its borders. Moreover, medicinal plants are one of the most important components of the Non Timber Forest Products (NTFP) sector which supplies over 80% of India's net annual forest export earnings.

The nature and dynamics of domestic trade of MAPs involves central and regional markets through a number of private dealers and agencies, government or government controlled corporations and co-operatives all having upstream linkages with numerous local and "road-head" markets, which in turn have myriad middlemen, petty shopkeepers and agents feeding them with primary supplies. This complex web of transactions makes the exercise of a consolidated regional or country level assessment of domestic cultural diversity. Projections of a consolidated picture of domestic trade have thus per force been a matter of intelligent estimates only rather than through rigorous data collection and analysis.

Study area

'Eklavya', an NGO in Bhopal (Madhya Pradesh) is trying to introduce medicinal plants cultivation in the two blocks, viz Khategaon and Khirkiyan in Dewas and Harda districts, respectively. The goal of the study is to test feasibility of introducing medicinal plants cultivation and marketing as a livelihood for farmers in the proposed area. The farmers have limited set of agricultural skills and lack ability to take risk.

Objectives of present study

The objectives of the study were :

- To identify the suitable species that can be successfully grown in the area.
- To identify the inputs required.
- To identify the cultivation practices prevalent in the area.
- To identify the training inputs required.

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- To identify the possibility of processing/value addition of the produce.
- To gather the market related information.
- To assess the socio-economic and environmental impacts.

Methods

The study emphasized on the collection of quantitative and qualitative information with an aim to meet the set of objectives. In order to get a complete picture of the existing scenario, Institutes working in the field were visited, literature review was done and primary data were collected from traditional farmers, people in the trade and cultivation of MAPs.

Financial and statistical tools were employed to draw conclusion from the data obtained. On the basis of crops suggested by experts, certain crops were identified and out of these eight MAPs were shortlisted as per technical suitability. These were compared with the traditional crops and cultivation of MAPs was found to be a profitable preposition. On comparison of the scores of the different species for the three criteria, i.e., Economic feasibility, Market feasibility and Environment/Resource Management feasibility, four medicinal plants were selected to be grown in the proposed area. These can effectively utilize the waste and fallow lands and can become a source of additional livelihoods. The following four MAPs have been suggested to be taken up for cultivation by the farmers of the study area :

- Ashwagandha *(Withania somnifera)*
- Senna *(Cassia angustifolia)*
- Isabgol *(Plantago ovata)*
- Lemon grass *(Cymbopogon flexuosus)*

Observations and Results

Technical Analysis

From the standpoint of technical suitability of MAPs, the following observations could be drawn :

- Both the study areas, Khirkiyan and Khategaon, have relatively same impacts on the cultivation of the eight shortlisted MAPs species, viz. Ashwagandha (*Withania somnifera*), Isabgol (*Plantago ovata*), Kalmegh (*Andrographis paniculata*), Lemon grass (*Cymbopogon nardus*), Mentha (*Mentha arvensis*), Safed Musli (*Chlorophytum tuberosum*), Satawar (*Asparagus racemosus*), Senna (*Cassia angustifolia*). So both these areas can be taken together and can be considered as one for the further comparisons.
- Almost all the species listed, except Mentha and Satawar, are technically suitable and favourable plants. Mentha needs intensive and repeated irrigation, which is not possible in the proposed area due to its arid nature, high cost of irrigation and low capacity and income of the farmers. So Mentha can be eliminated from the list. Though, Mentha is highly ranked on economic front, but the technical aspect supersedes the economic aspect.
- For Satawar, sandy loamy soil is more suitable as their tuberous roots can be dug out from this type of soil without any harm to it. The deep black soil has high water retention capacity and also holds the roots tightly, which

can possibly damage the tubers. But Satawar as observed by the researchers, is being grown in the proposed area, so this crop can be considered for further comparison and analysis.

- The disease/insect proneness is 'high' for Mentha and Isabgol. Cases of disease attack on Mentha in the proposed area have been reported but no such disease attacks on Isabgol have been reported in the study area.
- The training needs of the cultivators can be met by the institutional interventions and support.

So at the end of technical suitability analysis one can shortlist the seven MAPs, viz., Ashwagandha, Isabgol, Kalmegh, Lemon grass, Safed Musli, Satawar and Senna.

Economic Analysis

Results of comparison of the seven short-listed MAPs made on the basis cost/ acre, Income/acre/year, Incomes as % of cost are shown in Table 1.

On the basis of this comparison one can assign these MAPs scores on the basis of 7 point scale, with the highest ranked score 7 and the lowest ranked score 1. These scores for individual species has been multiplied by weightage 3 as the economics of MAPs is the most vital point for the farmers having very poor socio-economic conditions.

Economic, Market, Environment/ Resource Management Results and their comparison for different products

Seven MAPs have been compared on the basis of three broad criteria, i.e., Economy, Market and Environment/ Resource Management in Table 2.

From Table 2, the following indisputable first three choices can be obtained :

1. Ashwagandha
2. Senna
3. Isabgol.

Table 1

Comparison of the short-listed MAPs on the Economic Parameters

Species	Cost/ Acre*	Income/ Acre/Year**	Income as % of Cost**	Total	Rank	Score#	Score x Weight 3
Ashwagandha	1	4	4	9	I	7	21
Isabgol	4	2	5	11	II	6	18
Kalmegh	3	6	6	15	IV	4	12
Lemon grass	6	5	1	12	III	5	15
Safed Musli	7	1	7	15	IV	4	12
Satawar	5	3	3	11	II	6	18
Senna	2	7	2	11	II	6	18

*The lowest cost is ranked 1 **The highest income is ranked 1
#The lowest total for each species is ranked highest

Table 2

Comparison of the Scores of the different species

Species	Criteria			Total	Rank*
	Economy	Market	Environment/ Resource Management		
Ashwagandha	21	18	9	48	I
Isabgol	18	17	8	43	III
Kalmegh	12	13	9	34	V
Lemon Grass	15	18	8	41	IV
Safed Musli	12	12	9	33	VI
Satawar	18	15	8	41	IV
Senna	18	18	11	47	II

*Here, Rank I means the best recommended and the rank VI means the least recommended on a relative comparative scale.
The scores for criterion 'Economy' are taken from the Table 1.

Table 3

Comparison between Lemon grass and Satawar

Criteria	Lemon grass	Satawar
Time	100 Days- low (F)	540 days- Very High (U)
Harvesting process	Easy (F)	Difficult (U)
Processing Cost	Capital Intensive-Costly (U)	Lower Costs (F)
Perishability	Less (F)	More (U)
Disease/Insects Proneness	Moderate (U)	Negligible (F)
Soil Suitability	More (F)	Less (U)
Weeding Needs	Less (F)	More (U)
Grazing Problems	Nil (F)	Slight (U)

(F)= Favourable; (U)=Unfavourable

Satawar and Lemon grass needs some further comparisons to ascertain the fourth choice, which is dealt in Table 3.

The criteria of Table 3, except the time factor, were not previously used to rank or score the species. So one can now use these criteria for the above comparison. Also, the time factor becomes an important criterion, due to the huge difference, being 540 days for Satawar and 100 days for Lemon grass.

From the above comparison, one can see that Lemon grass has 6 favourable (F)

points while Satawar has 2 favourable (F) points.

There is also a proposal to install an aromatic plants oil extraction plant in Harangaon village of the Khategaon block by the Forest Department. Many other oil-extraction plants already exist in the proposed area. Thus it is expected that farmers are not going to face any problem in getting oil extracted.

Following four MAPs can be taken up for the cultivation in the proposed area.

1. Ashwagandha *(Withania somnifera)*
2. Senna *(Cassia angustifolia)*
3. Isabgol *(Plantago ovata)*
4. Lemon grass *(Cymbopogon flexuosus)*

However, Satawar and Kalmegh may also be taken up for the cultivation as these crops are satisfying most of the cultivation requirements and these crops have also been observed being cultivated in the proposed area.

Safed Musli can also be grown in the proposed area as it is very well satisfying the technical suitability, but considering the socio-economic conditions of the target group, this crop is not recommended for the following reasons :

- Initial investment (Rs. 250000/acre) is very high and not affordable by the target group.
- Possibility of fungal infestation if the roots are not properly processed after harvesting.
- Due to its highly capital-intensive nature, it also bears a high risk.

The results indicate that medicinal plants can be grown in the proposed area, which can also effectively utilize the waste, and fallow lands and can become a source of additional livelihoods for the farmers.

Based on the regression analysis of available data and information following four MAPs are selected that can be taken up for the cultivation in the proposed area :

- Ashwagandha (*Withania somnifera*)
- Senna (*Cassia angustifolia*)
- Isabgol *(Plantago ovata)*
- Lemon grass (*Cymbopogon flexuosus*)

Marketing Analysis

Area Specific Marketing Model : The nature and dynamics of the domestic trade in MAPs India, and in most other developing countries as well, is far from simple as it is made out to be. It involves central and regional markets through a number of private dealers and agencies, government or government controlled corporations and cooperatives all having upstream linkages with numerous local and "road-head" markets, which in turn have myriad middlemen, petty shopkeepers and agents feeding them with primary supplies. There are cases where some industries procure raw materials (at least partly) directly from local collectors or even cultivate them on their own land.

However in order to implement the project regarding cultivation of MAPs successfully in the proposed area, it is necessary to understand the complex web of these transaction and there should be some mechanism to assess the domestic trade. This will be of great help to the persons involved, at any level in the trade cycle of MAPs.

In the following section an effort is

made to identify the suitable marketing channel, which may minimize the losses, due to exploitation by clever traders, to the farmers of the Khirkiyan and Khategaon blocks.

Fig. 1 shows the approach adopted in developing the marketing model and to take decision on marketing channel.

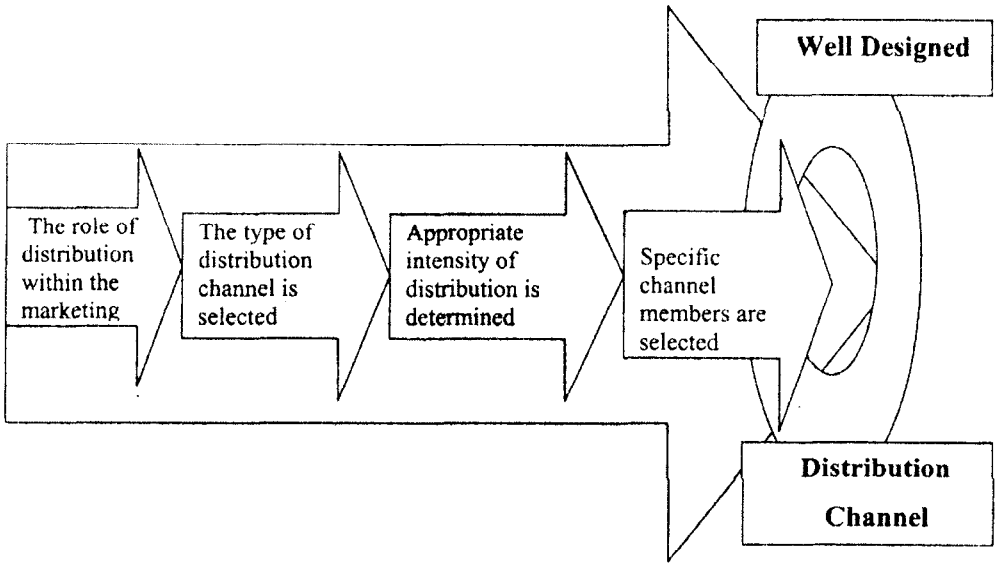
Marketing Mix

Product : The target group, that is farmers of the study area should place themselves as producers of environmental and people-friendly MAPs. Efforts should be taken to raise the crops by organic manure and green fertilizers, bio-insecticides, bio-fungicides and bio-pesticides to fetch higher prices and for creating "market differentiation". Chemical fertilizers and other inorganic chemicals should be avoided.

Price : Cultivators can obtain higher price from the processor/manufacturer, although, they also had to factor in additional costs, such as storage, packing, transportation and management. The demand of the well packed, certified and tested, pure, eco-friendly MAPs raised with organic manure was compared to those untested and uncertified MAPs cultivated by using chemical fertilizers. Though it is difficult to distinguish between the two types of MAPs even by proper testing, it was found that traders had a very sound knowledge of these MAPs and that they could easily distinguish between the two categories of MAPs described above. Their expertise might have come from a long experience in the field of MAPs.

Place of Distribution : The assessment that whether the cultivators could take over some of the functions of the intermediary agents in order to increase their share of

Fig. 1



Steps in Developing the Marketing Model

profits was done. The conclusion was drawn that it would be possible only if the cultivators could obtain more up-to-date market information, could gain more control over the prices.

Therefore their marketing strategy should involve components :

- Training and sending members of the groups to collect information on a regular basis.
- Develop a communication arrangement with partners living close to markets for the produce.
- Keep themselves up-to-date with the Marketing Information System (MIS) of MP Minor Forest Produce Federation, Bhopal; MIS based "Van-Dhan" of SFRI, Jabalpur; and 'Traffic', New Delhi for the national and international level marketing information.
- These strategies will definitely need the support of institutions or NGOs, like Eklavya.

People : The target groups should be assisted in identifying the interests and needs of the prospective buyers of their produce. A visit to manufacturer's factory for obtaining information from the buyer about the demand, quality and other preferences which the traders might not share with them.

Promotion : The means of promotion available to the MAPs cultivators were reviewed and it was found that this sector got very little product differentiation and, hence, there is limited scope for promotion.

However, if the cultivators can project their produce as 'producing clean MAPs free of chemicals', as a promotion tool for gaining a very good place and share in the market. The importance of better packaging, storage, as well as the Life Cycle Analysis (LCA) of the product should also be taught to the farmers with the help of institutional support.

Marketing Channels Available

For commercial cultivation of MAPs on a large scale it would be beneficial that the produce goes for the end-use, i.e., for the manufacturing of Drugs and other products from MAPs. The available channels for this are depicted in Fig. 2.

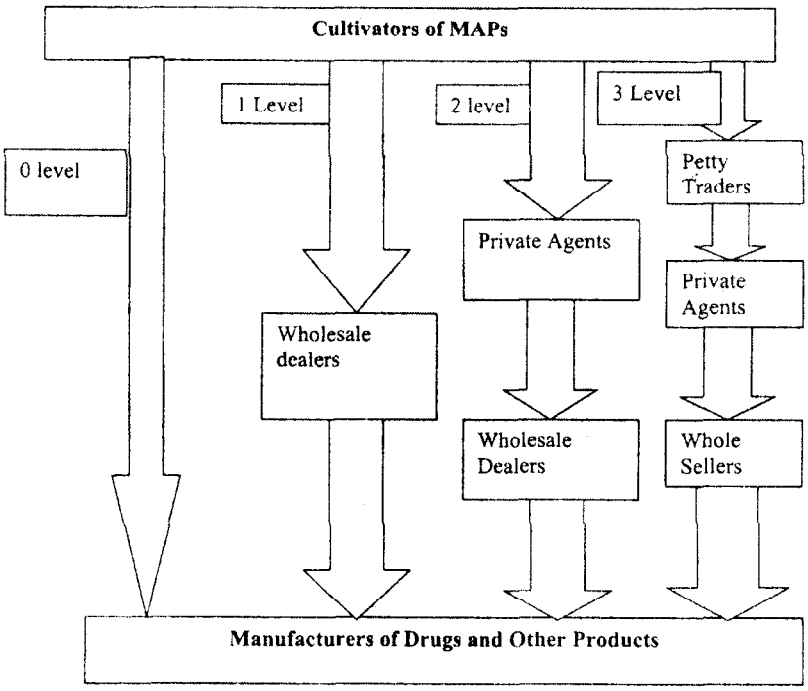
It was observed that cultivators also follow the channels in which the produce goes to the consumers in the unprocessed form but this route is generally applied by the collectors of the medicinal plants rather than the established cultivators.

When both Figures 2 and 3 are analysed, the following options available to the cultivators of MAPs to sell their produce can be seen :

- Consumers directly
- Retailers
- Manufacturers of drugs and other products
- Wholesale dealers
- Agents
- Petty traders

It was observed that the MAPs cultivators generally sell their produce to the agents who in turn sell it to the wholesale dealers. The MAPs cultivators also sell their produce to another cultivators as the planting material. The wholesale dealer or the big trader may either sell it to the manufacturers of the medicinal drugs or other products or they also sometimes sells the MAPs to the retailers in raw/unprocessed form. This

Fig. 2



Marketing Channels available for the cultivators when the produce goes to manufacturers

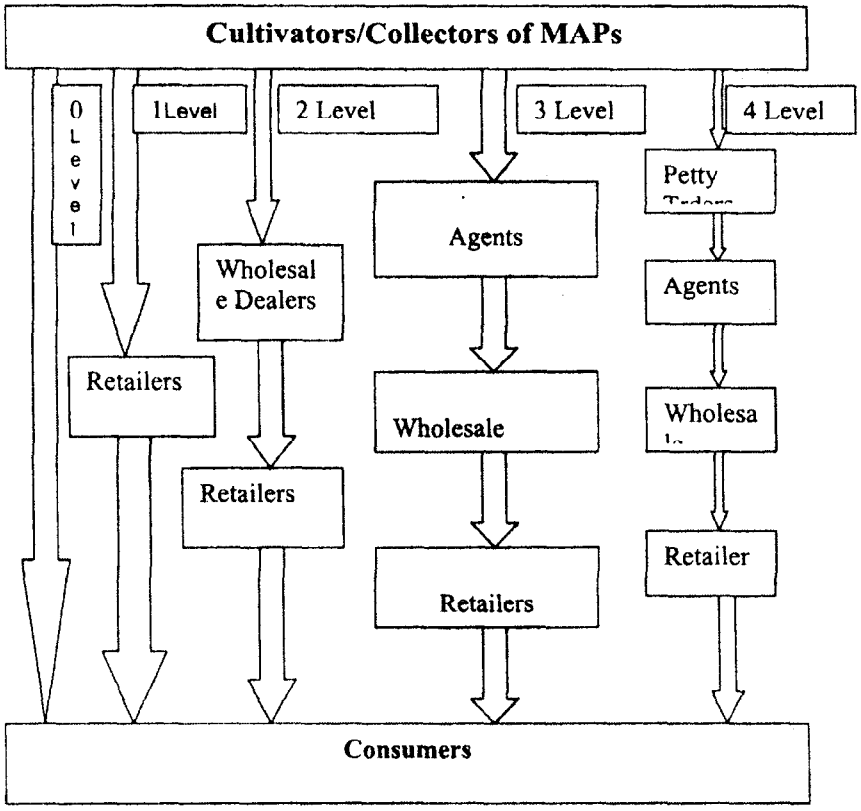
channel is depicted in Fig. 4.

Selection of Type of Distribution Channel

To maximize the profit, the cultivators can jump some of the levels of the channels. But for this, it is very necessary to consider the role, stakes, typical activities and services provided by the middlemen and other stakeholders of each level as their aid to the distribution process. Here, the agents are considered as the 'middlemen'. The typical activities of the middlemen in the MAPs sector are summarized in Table 4.

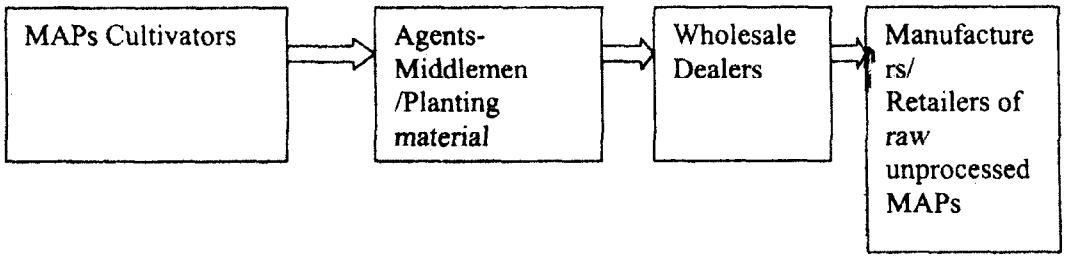
As most of these roles/sales services of the middlemen could be provided by the implementing agency, Eklavya, the levels of agents and petty traders in the marketing channel can be foregone. It is not possible to sell the produce directly to the 4 manufacturers in the initial stage. It is also not advisable to sell the produce to the retailers or consumers because their demand needs and prices are very fluctuating and volatile as so many local factors influence the demands and prices of the local retailers and consumers. It would also not help in capacity building of the cultivators and establishing market presence as well as the contacts with the big traders and manufacturers. When the MAPs would be cultivated in the large scale, then it would be beneficial, for the reasons cited above, if the produce goes to the end-use, i.e., for the manufacturing of

Fig. 3



Available channels when the product goes to the consumers in raw/unfinished form

Fig. 4



The most common channel followed by the MAPs cultivators

the drugs and other products. It would also help in strengthening and the establishing the formal market for the particular species.

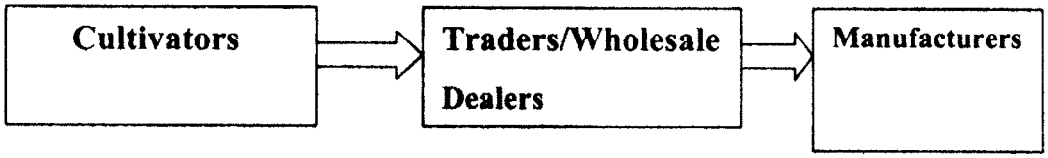
There is a need to identify the traders/wholesale dealers in the nearby/neighbourhood big markets and sell the collective produce of the

Table 4

Typical Activities of a Middleman

Sales Specialists for Producers		Purchasing Agents for Buyers
• Provide market information		• Anticipate wants
• Interpret consumer wants		• Subdivide large quantities of a product
• Promote producers' products		• Store products
• Create assortments	←— —→	• Transport products
• Store products		• Create assortments
• Negotiate with customers		• Provide financing
• Provide financing		• Make products readily available
• Own products		• Guarantee products
• Share risks		• Share risks

Fig. 5



Proposed Marketing Channel

whole village together to them.

Based on the above discussions, the proposed marketing channel is depicted in Fig 5.

Stakes of the Middleman

It was seen that the players in the higher level of the marketing channel exploits players of each lower level of the channel. It should also not be forgotten that in a particular area many so-called middlemen exist who also compete with each other.

It was also understood that their stake could not be neglected abruptly. Their capacity should also be built, side by side, so that they can get better bargains with the traders and other higher level players and in the due course of time they should be able negotiate directly with manufacturers. This will increase the margins of profitability of both the cultivators and middlemen.

Channel Conflicts

Channel conflicts exist when one channel member perceives other channel member to be acting in a way that prevents the first member from achieving its distribution objectives. It is difficult to neglect or forego of any players or stakeholders in the MAPs marketing channel due to the possibility of this channel conflicts.

Who Controls Channels?

Channel power is the ability to influence or determine the behavior of another channel member. There are various sources of powers in the context of channels. They include:

- *Expertise* (for example, possessing vital technical knowledge about the product- in MAPs sector the traders enjoys this power),
- *Rewards* (providing financial benefits to cooperative channel members- can be enjoyed by the MAPs cultivators and middlemen), and
- *Sanctions* (removing uncooperative members from the channel –like the agents in the MAPs marketing channel).

A Channel Viewed as a Partnership

- Instead of looking at the channel as a fragmented collection of independent competing firms, suppliers and middlemen should think channel as partnership aimed at satisfying the end users' needs.
- Its time for cultivators to give due importance to channel management as they give importance to the cultivation.

Legal Considerations in Managing Channels : Attempts to control distribution are subject to legal considerations such as :

- Exclusive dealing
- Tying contracts
- Refusal to deal
- Exclusive-territory policy

Recommendations

It is recommended that the medicinal and aromatic plants, Ashwagandha, Senna, Isabgol and Lemon Grass can be cultivated in the proposed area with the following suggestions :

1. Cultivation of medicinal plants is a bit difficult owing to the fact that there is a lack of standard agronomic practices for most species and unavailability of sources of quality planting materials and technical guidance, hence the following steps may be undertaken to overcome the above problem :

- Exposure visits to farms where medicinal plants are already being cultivated.
- Government Institutions like SFRI, Jabalpur may be contacted for quality planting material.
- Proper technical training should be arranged for the people who are going for the cultivation of MAPs. Technical know-how on plant cultivation should be imparted to the target group.
- The relevant information and literature related to the MAPs should be collected and should be used to educate to educate the field workers of the organisation who can further train the target group.
- Purchasers should be contacted in advance to get reasonable price for the produce and to ascertain the market of the particular crop beforehand.

2. The low prices for traditional commodities, special purpose crops like MAPs offer cultivators an additional source of income and greater profitability. However, the risks associated with these crops can be substantial, and without accurate information, the producers can find these new crops as financially devastating. Thus it is strongly

recommended that the first and foremost step should be aimed towards educating the target group about the merits of going for the cultivation of medicinal plants along with the risks associated with it.

- In view of the risks associated with the cultivation of MAPs should be initially taken up in a small scale. For example, the cultivation of Ashwagandha should be taken up on more than one acre of land for each farmer.
- Possibilities of intercropping should be utilized to get additional returns and diversify the risks. Aonla grows very well in our proposed area. Its demand is constantly increasing and it also fetches good price in the market, so it can also be planted around the farmlands.
- Eklavya is expected to play an important role to establish networking among the key institutes in the region and the target group, to strengthen information exchange, technology transfer, and development of region specific cultivation technique and propagation method.

3. It has been observed that most of the farmers engaged in the cultivation of MAPs are financially strong and have good educational background, which has helped them to keep themselves updated with the information regarding MAPs. On the other hand, the target group is financially weak with poor educational background. Thus some extension programmes should be organized to educate and motivate the farmers about the cultivation of MAPs.

4. It may not be possible for the poor farmers to bear the initial expenses occurring in the cultivation of MAPs as they are relatively higher those incurred by them on the cultivation of traditional crops. Thus Government schemes should be availed for the benefits of farmers. Some are:

- Medicinal Plants Board of India, New Delhi, that provides subsidies and other incentives to farmers going for cultivation of MAPs,
- Khadi Gram Udyog that provides subsidies for establishing processing units like extraction plants under Margin Money Scheme.
- SGSY Scheme.
- Some funding agencies like SPWD.

The possibility of developing linkage of Micro-finance with the MAPs cultivation should also be explored.

5. Introduction of buy-back schemes and similar measure to boost farmers' confidence and ensure the proper price for farmers is recommended. Buy-back guarantee, such as, that provide by National Remedies Industry to Karnataka farmers to grow Kalmegh must be extended to other threatened species through Government intervention.

6. It is recommended that proper market support should be provided to farmers, specially, in the initial phase, as it may be difficult for them to market their produce and get desired returns.

7. The market of MAPs is prone to price fluctuations. The price of a particular species may certainly go down in case of surplus and overproduction. But farmers should not worry about this, as even the minimum price of MAPs would fetch higher profitability than the traditional crops.

8. Ensure high quality scientific and

technical backup to the cultivators both in the fields of cultivation and marketing.

9. It was observed that the big drug manufacturers and export agents prefer the tested MAPs and give stress on its certification for the required chemical constituents of the MAPs. Hence, there is a need to work in this direction.

10. MAPs raised without using any inorganic chemical fertilisers fetch more price in the market so these fertilisers should be avoided and green manure and bio-fertilisers should be used in its place.

11. The names of the MAPs species being cultivated should be registered with the local Government authority as there is a legal need to distinguish the cultivated crop with those growing in the forest to get transit pass (TP) from the Forest Department. This will also help the cultivators in getting the subsidies and loans.

Issues requiring further Study

- Possibility of intercropping of MAPs with other produce and plantations.
- All relevant stakeholders can be linked to work together in a coordinated and responsive manner.
- If some oversight body can be set up which will have overall responsibility to ensure contract farming is beneficial for the both side of parties, i.e. seller and buyer sides.
- Effect of land holding on the productivity of the MAPs.
- Quality of plantation material available from institutions and farmers.
- Marketing Information system.
- Certification, testing and grading of medicinal plants.
- Linkage of Micro-finance with MAPs cultivation.

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Authors acknowledge with thanks the Eklavya, Bhopal and Indian Institute of Forest Management (IIFM), Bhopal for giving the opportunity to carry out this project of which the study forms a part.

SUMMARY

The paper examines in detail various issues and factors influencing the marketing of the important cultivated medicinal and aromatic plants, viz Ashwagandha (*Withania somnifera*), Isabgol (*Plantago ovata*), Kalmegh (*Andrographis paniculata*), Lemon grass (*Cymbopogon nardus*), Mentha (*Mentha arvensis*), Safed Musli (*Chlorophytum tuberosum*), Satawar (*Asparagus racemosus*), Senna (*Cassia angustifolia*) in Madhya Pradesh. The paper also highlights the existing and potential marketing channels and the feasibility of effective marketing for these species inside and outside Madhya Pradesh.

मध्य प्रदेश, भारत के हरदा और देवास जिलों के किसानों द्वारा आजीविका कमाने स्वरूप कृषिगत औषध और सौरभिक पादपों के विपणन की शक्यता सम्बधी अध्ययन

ए०के० भट्टाचार्य, कुणाल शेखर व योगेश कुमार

सारांश

इस अभिपत्र में मध्यप्रदेश के कुछ महत्वपूर्ण कृषिकृत औषध और सौरभिक पादपों अर्थात् अश्वगंधा (*विदैनिया*

सोम्निफेरा), इसबगोल (*प्लाण्टागो ओवेटा*), कालमेध (*एण्ड्रोग्राफिस पैनिकुलाटा*), निम्बु घास (*सिम्बोपोगोन नार्डस*) पुदीना (*मेन्था आर्वेसिस*), सफेद मूसली (*क्लोरोफ़ायटम ट्यूबेरोसम*), शतावर (*एस्पेरगस रेसीमोसा*), सिन्ना (*केसिया अंगुस्टिफोलिया*) का विपणन करने से सम्बन्धित कुछ सम्स्याओं और उसे प्रभावित करने वाले कारकों का विस्तार से परीक्षण किया गया है । अभिपत्र में वर्तमान और भावी विपणन धाराओं पर भी प्रकाश डाला गया है और मध्यप्रदेश में और उससे बाहर इन पादपजातियों के प्रभावशाली विपणन करने की शक्यता पर विचार किया गया है ।

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