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Promotion of Rural Livelihood through Medicinal and Aromatic Plants Based Cottage Industries for Upliftment of Rural Economy of Assam Rat

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Abstract

Medicinal and Aromatic Plants (MAP) based livelihood systems are often mediated by the market forces, and/or related directly to employment/income of the poor. Proper and optimum utilization of those resources will help in employment generation and economic development of the rural poor of the region. With continued increasing demand of natural products such as Pharmaceutical, Dye, Naturopatty, Flavour and Perfumery & Cosmetic industries; cultivation of MAP species have now become a popular and economically viable commodity. But this requires semi-processing unit and hence, micro-level/cottage industries may be a suitable option for the local level entrepreneurs and social entrepreneurs. These small scale industries are mostly proposed by the local artisans, who are operating through their own convenient yardstick in homes. However, power supply and machineries are required to a limited extent. The products are made to satisfy the local demands. Such types of cottage industries are more suitable for the local entrepreneurs, rather than factory-based industrialists. These are unique in nature, with distinctive for its usage. Producers in this sector often face numerous problems while competing with the factory-based businessman. Cottage industry is not only important for under-developed countries, but its importance has been equally felt in developed economies, as well [1]. The present paper is an attempt to endow with the scenario of rural MAP based cottage industries of the state of Assam.

Keywords: Medicinal and aromatic plants; Livelihood; Cottage industry; Employment and rural poor

Introduction

In North East India, particularly in the state of Assam, thousands of small and rural household industries are operated by the village communities who are belonging to different tribes and castes. These micro industries are sustained due to the supply of local resources with traditional skilled human resources. These capacities are available very much with the rural people in this region. The importance of cottage industry has also been felt in under developed countries, as has been mentioned by Khan et al. [1] in his study. This can play a pivotal role in the economic development of a country. However, to determine the estimate of products of MAP plants straight way is difficult. Nevertheless, the market demands of the herbal products are gradually increasing; the industries are also growing day by day to meet such demands. This industrialization helps in establishing one's own economic stability for those who are solely dependent on such products.

The 'productive employment potential' in rural and backward areas on such activities is quite high. Small scale industries, traditional village industries, including modern small enterprises have been given an important place in the region's economic planning to a large extent. Therefore, small scale, cottage and tiny industries play a vital role in the region's economy, despite phenomenal growth in the large-scale sector, as well. It is no denying the fact that this contribute significantly in the national economy, which are considered to be the engine of growth in the current era.

Despite providing economic stability to the rural poor, the livelihoods are being best supported by these cottage industries, mainly in the rural sectors of the state. Moreover, rural household industries have been acting as a sustainable livelihood for the rural poor of this region. A rural livelihood may be through farming alone, or any occupation practiced by the people in this region.

IDRC supported research in South Asia, has found that MAP and other biodiversity based livelihood activities cannot be considered as poverty reducing factor, but they can also be made socially equitable and gender balanced. However, the interventions have to be carefully designed to enhance and diversified livelihood strategies, with a focus on strengthening existing biodiversity-based livelihoods.

Assam being a forerunner in the production of Medicinal and Aromatic plants has favourable environment for the growth and development of allied industries, as the state is having one of the richest repositories of MAP species in the world, where more than 50 species of commercially important medicinal plants are existing in the state. However, the state needs a scientific approach for the exploration, conservation and value addition in the field of MAP industries. This offers a huge business opportunity for investors.

These plants are used at the household level in a self-help mode by the rural community of Assam, mainly for their health care purposes. They consume many of such plants, as nutritional diet like *Bacopa monneri* (L.) Penn., *Centella asiatica* (L) Urban, *Discorea bulbifera* L., *Emblica officinalis* Gaerth, *Eryngium foetidum* L., *Terminalia chebula*

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Retz., *T. bellirica*, *T. arjuna*, *Murraya koengii, Nyctanthus arbor tristis, Zanthoxylum alatum* Roxb. These plants based medicines are consumed by all section of the rural communities of this region.

Medicinal herbs and plants of Assam

With its vast tract of hills and forests, Assam is the homeland of wonderful and precious medicinal herbs and plants such as Sarpagandha (*Rauvolfia serpentina* Benth.ex.Kur), Pippali (*Piper longum* Linn), Amlakhi (*Emblica officinalis* Gaertn), Hilikha (*Terminalia chebula* Retz.), Bhomora (*Terminalia belerica*), Arjuna (*Terminalia arjuna* Wight & Arn.).

About 900 types of such plants are known to exist in abundance in the forest area of the state, with the Brahmaputra valley itself, having 50 species of such plants is being of commercial value.

It is estimated that only about 5-10% of the plants and herbs are currently utilized, and the rest hold a vast potential which are yet to be explored.

Methodology

Collection of secondary data

For understanding the existing (particularly medicinal plant based) cottage industries/SSI units registered under the Govt. of the State, various forest produces known for higher market value have been studied. For the collection of secondary data on existing cottage industry/SSI units, official information was collected from the Department of Industries, Council of Science and Technology, Department of Rural Development, Department of Textiles and Handicrafts, Department of Trade and Commerce, Information and Statistical Office, State Medicinal Plant Board, Circle Office and DFO Office of the districts, etc.

Sl. No.	Industrial Products	Name of plants
1.	Ajmaline	Sarpagandha (*Rauvolfia serpentina*)
2.	Ajmalicine	Nayantora (*Catharanthus roseus*), Sarpagandha
3.	Atropine	Dhatura (*Datura stramonium*)
4.	Caffeine	Chahgoch (*Camellia sinensis*)
5.	Citronella	Java citronella or Ganbirina (*Cymbopogon winterianus*)
6.	Citronellol	Java citronella or Ganbirina
7.	Colchicine	Agnisikha or Uluchandan (*Gloriosa superba*)
8.	Cucurmin	Haldhi (*Curcuma longa*)
9.	Dimethyloctane	Java citronella
10.	Eugenol	Dalchini, Tejpat etc. (*Cinnamomum* spp.)
11.	L-Dopa	Bandar kekoa (*Mucuna prurita*)
12.	Linalool	Podina (*Mentha citrata*)
13.	Linalyl acetate	Podina
14.	Marsilin	Pani tengeshi (*Marselia minuta*)
15.	Menthol	Podina (*Mentha arvensis*.)
16.	Papain	Omita (*Carica papaya*)
17.	Rescinnamine	*Rauvolfia serpentina*
18.	Reserpine	*Rauvolfia serpentina*
19.	Strychnine	Mekuri Kendu (*Strychnos nux-vomica*)
20.	Theobromine	*Camellia sinensis*
21.	Theophylline	*Camellia sinensis*
22.	Vetiverol	Birina (*Vetiveria zizanioides*)
23.	Vetiveryl acetate	Birina (*Vetiveria zizanioides*)
24.	Vinblastin	Nayantora or Periwinkle (*Chtharanthus roseus*)
25.	Vinristine	Nayantora or Periwinkle (*Chtharanthus roseus*)

Table 1: Industrial product of a few medicinal plants in Assam.

Collection of primary data

Field survey (including village and market survey) has been done in few forested districts of the state, including the different geographical zones and tribal communities. These districts have a good marketing channel with commercial markets of Assam, and are easily accessible by roads. Questionnaires were prepared based on the objective of the study, and respondents were requested to fill the forms accordingly. Local market of the visited areas was surveyed and plant samples were collected with necessary market information, including market demand, local preferences, etc. Based on this information, highly valuable plant species are identified and documented.

Medicinal and aromatic plant (map) as a cottage industry

MAP-based livelihoods can be easily streamlined with other components to enhance human welfare, especially among the poor and marginalized communities. The mountain region of NE, for example, has in abundance a diverse range of herbs, shrubs, trees and vines that have significant and potential medicinal value, whose healing properties are known to the local healers and traditional doctors for centuries, but are currently threatened due to lack of concerted conservation efforts. In this regard, recent study of Tiwari [2] in the state of Meghalaya is of great importance, where in it has been shown that the annual trade of Cinnamon leaf alone from one district is about 2800 tons, valued at close to a million dollar.

In all the states of North East Region, MAPs play 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, processing and trading of medicinal plants, thus contribute significantly to the cash income of the rural poor in this region.

Pharmaceutical export as a percent of India's total export was nearly 0.55 during 1970-71, which has significantly increased, where in the year 2000, it was 4.07. Sarpangadha (*Rauvolfia serpentina*) is one of the promising species of Assam, but over-exploitation of the species from wild habitat has obstructed the popularization of the species as commercially cultivable crop. Difficulties are faced due to some industrial demand oriented medicinal and aromatic plants like Gandhkochu (*Homalomena aromatica*), Kalmegh (*Andrographis paniculata*), etc.

Despite such difficulties, it has been found that farming of some selected MAP with long, medium and short duration life span in the same plot of land may be a good approach for harvesting profitable yield. Tree like *Bixa orellana*, with creeper like Pipoli and Vanilla, and herbs like Patchouli, Sarpaghanda in the interspaces, may be such a useful model of farming. Similar model with some other crops may also be practices for farming of MAP. Patchouli cultivation yielded Rs.50,000/- per annum per hectare of land. Out of that, the essentiality of post harvest processing unit for value addition is very much required in this region. A list of fractionated compounds of some common MAPs having industrial demand is given in the table 1. Technology of extraction of these value added product is also available in some CSIR or ICAR Institutes, may be in a patented way (Table 1).

Findings

After extensive survey in the market, as well as the concerned departments of the state, the survey enlisted a total 26 species which have high potential for medicinal plant based cottage industries in the region. Using large scale herbal products for health care uses these days has created interest among the entrepreneurs, for setting up of

MAP based Cottage Industries in the state. The important MAP plants products in the state of Assam are mentioned below (Table 2). However, the industry's success depends on the market of these products, where the market demand is required to be ascertained through proper market survey on the selected plant species.

Besides, the above mentioned species, many more species are also surveyed in the region for commercialization. Therefore, the Government and Research institutes are required to play a vital role for updating commercially important MAP species. Hence, it is suggested that Government or other allied agency must help Research Institutes in finding out the proper market first, prior to initiate a Cottage Industry for those crops.

Many traditional healers and proprietors based on MAP have been running MAP-based health care system to earn their livelihoods, which are a type of cottage Industry in Assam (Table 3).

Apart from these, there are also Government run Institutes or Institutions which are privately owned, dealing in processing of MAPs for its own consumption or for value addition. These are listed below:

1. Government Ayurvedic College, Jalukbari, Guwahati–781014, Assam, India.
2. Assam Small Scale Industries, Bamunimaidam, Guwahati–781021, Assam, India.
3. SKM Ayurvedic Institute, Geetanagar, Guwahati–781024, Assam, India.

These industries helps in preserving the traditional medical knowledge and provide easily adaptable enterprising opportunities for unemployed youth and rural poor, who can learn the trade from their older generation and peers and earn their livelihood, and in turn, contribute to the society as well.

Contribution to livelihood of the rural poor

Medicinal and Aromatic Plants based Cottage Industries would form an integral part of the rural communities' economic life and the standard of living. These industries play a vital role, which is a holistic approach to health and well being of the community. This is an important source of income, specifically for the poor people living in the hilly terrain, which depend largely on the sale of medicinal plants for their livelihood. Further, some of the species are consumed as vegetables on regular basis for their sustenance, which form an important part of local health care for many of the ailments.

Conclusions

Despite the wealth of Forest resources available, the sector has not developed in the absence of suitable standardisation, Government schemes, and efficacy of drugs. It has yet to maintain and integrate the development of such sectors from production to marketing, to boost rural economy of this region. Forest resources of Assam comprise a great share of natural resources. Medicinal plants obtained from the forest region have the efficiency to yield final products for healing many diseases like bleeding from nose, fever, malarial fever, asthma, tuberculosis, calculi, stones in kidney, gallbladder, urinary troubles, hypertension, diabetes, stomach-ache, stomach ulcer, dysentery, diarrhoea, jaundice, hepatomegaly, fracture of bone, gyneic disorder and snake bite, which are prevalent in this region.

While the demand for MAP products is growing in the rural areas, but only a few of their products are being locally produced by the cottage industries of this region. For meeting the future needs, more of such industries need to be developed by involving rural people of the state, it is a felt need. Over-exploitation of medicinal plants for meeting the need of national and international demand is a serious cause of concerned. The loss of these valuable plant species may have

Sl. No.	Botanical Name	Quantity Traded (MT)		Local Price (Rs./Kg.) (Collectors' price)
		2010	2011	
1.	*Aquillaria malaccensis*	60	40	20-100/-
2.	*Embelica officinalis*	375	380	5-7/-
3.	*Terminalia arjuna*	150	130	3-5/-
4.	*Acorus calamus*	245	300	10-15/-
5.	*Litsea glutinosa*	80	135	8-10/-
6.	*Adhatoda vasica*	340	435	5-6/-
7.	*Mucuna pruriens*	70	55	25-30/-
8.	*Aegle marmelos*	150	175	8-10/-
9.	*Tinospora cordifolia*	40	25	8-10/-
10.	*Asparagus racemosus*	200	130	10-15/-
11.	*Cinnamomum tamala*	325	250	8-10/-
12.	*Oroxylum indicum*	35	60	12-15/-
13.	*Terminalia belerica*	250	340	5-7/-
14.	*Centella asiatica*	285	320	10-15/-
15.	*Smilax glabra*	1800	2300	50-60/-
16.	*Hydnocarpus kurzii*	80	40	15-20/-
17.	*Cinnamomum verum*	150	200	15-20/-
18.	*Homalomena aromatica*	1250	1600	20-25/-
19.	*Terminalia chebula*	200	375	8-10/-
20.	*Andrographis paniculata*	110	180	10-12/-
21.	*Curcuma zedoaria*	800	1650	2-3/-
22.	*Chrozophora prostrata*	80	45	6-7/-
23.	*Sapindus mukorossi*	75	110	15-20/-
24.	*Dillenia indica*	500	850	2-3/-
25.	*Piper longum*	50	90	30-35/-
26.	*Rauvolfia serpentina*	125	180	50-60/-

Table 2: Important map species having huge market potential that can be used in cottage industries of Assam.

Sl. No.	Name & Designation	Organization & Address
1.	Ajmal Group of Companies	Hojai, District-Nagaon, Assam, Pin-782435
2.	Shri Umar Ali Proprietor	P.O-Phukukota, District-Nagaon Assam, Pin-782432
3.	Shri Ranjit Kr. Bora Proprietor B.V. Aromatics ranjitpatchouli@gmail.com	C/o B.V. Aromatics Kuwaritol, Nagaon Assam, Pin-782137
4.	NEDFi R&D Centre	Khetri, District-Kamrup Assam, Pin-782403
5.	Shri Gunaram Khonikor Proprietor	District–Golaghat Assam, Pin-785601
6.	Shri Bhupen Gogoi Proprietor, Chapala Flower	C/o Chapata Flowers Bordoloi Nagar, Sector-I Tinsukia, Assam
7.	Dr. Hazrat Ali Manufacturer of Homoeo Medicine and cultivate Medicinal Plants. dr.hazratali@yoo.com	Spice Homoeo Laboratory Kalahbhanga, Barpeta Road Dist.-Barpeta, Assam Pin-781315
8.	Shri Ghanashyam Medhi Proprietor: Assam Pariyavan Udyog	Makhibaha, Tihu District–Nalbari Assam
9.	Santi Sadhana Ashram	Basistha, Guwahati Assam, Pin-781029

Table 3: List of some industries/farm/companies relevant to herbal products in Assam of North East region.

far-reaching implications, especially the rural poor who are often dependent upon these for their health and economic benefits, based on their traditional and commercial collection and use. The need of the hour is to harness the State Government Agencies and Central Government Schemes to find solutions for setting up such sectors, so that these MAP resources can be harvested and used sustainably in the region. However, these attempts have often been isolated, and sometimes not based on systematic analyses of the conditions needed for the success.

With rapid urbanization and industrial expansion, the World is losing its biodiversity in an accelerated way. But, situating in such climatic situation, where any plant migrated from any part of the globe can find a suitable niche; the state of Assam possesses tremendous scope for a good business center of MAP products in near future. What is required is a system to know the demand of different MAP products with public sector patronization. Hope in near future that will also be available to encourage the entrepreneur in MAP sector.

Recommendations

1. Medicinal and Aromatic Plants based Cottage Industry offers immense potential for economic activity, by providing income-generating opportunities to a large section of the rural population of the state, through the conservation and sustainable use of such important natural resources. A proper knowledge based trainings need to be organized.
2. Success stories of MAP based economic enterprises and Cottage Industry of this region is not many. There are other factor endowments like the traditional skill of people in use of MAP species, available labour, huge internal, and export market with a good transport network. A serious thought on this aspect is urgently required.
3. Realization of potential and need for development of MAP based Cottage Industry in the state has been emphasized in different forums since long. There are schemes of central, as well as state governments towards this objective, which are limited in applicability, and therefore, could not create an environment for the desired level of urgency of end products. This point need to be looked into.
4. Enormous advantage from this Sector can be derived if the State Government takes timely and proper initiatives. Therefore, related projects/schemes may be immediately taken-up by the Forest & Environment Department.

Need for Government Intervention

Development of resource

- Sustainable Management of MAP species with Good Agricultural Practices (GAP)
- Enhancement of highly traded MAP species productivity for Good Horticultural Practices (GHP)
- Creation of Medicinal and Aromatic Plantations / Sanctuaries.
- *In-situ* and *Ex-situ* conservation of endemic and threatened MAP species

Utilization of resources for the development of economic enterprise

- Development of small scale semi processing industries
- Promotion of medium to large scale industries
- Market Information Support
- Developing marketing infrastructure
- Export promotion

Extension and training initiatives

- Organize training for processing of raw material and use of machines
- Training for plantation and Management
- Setting up of demonstration centers
- Awareness Programmes.

Further study

It is sincerely hoped that our efforts in bringing out this paper would help the Entrepreneurs/producer sellers of the region, to investigate the suitable MAP species available in the region for preparation of herbal products, by establishing cottage industries that would help in a way for the sustenance of the rural livelihood of the poor in this region. In this regards, it will strive towards a sustainable livelihood and development, and also create awareness among the various other stakeholders.

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