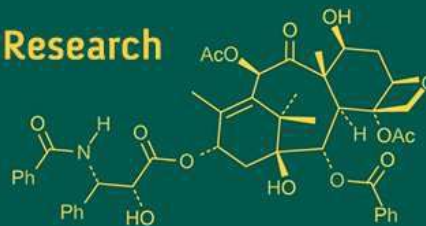


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Kalpna Kunjam
Assistant Professor,
Mahatma Gandhi University of
Horticulture and Forestry,
Sankra, Patan, Durg,
Chhattisgarh, India

Ritika Samrath
Assistant Professor,
Mahatma Gandhi University of
Horticulture and Forestry,
Sankra, Patan, Durg,
Chhattisgarh, India

Dr. Eshu Sahu
Assistant Professor,
Mahatma Gandhi University of
Horticulture and Forestry,
Sankra, Patan, Durg,
Chhattisgarh, India

Dr. Sarita Paikra
Assistant Professor,
Mahatma Gandhi University of
Horticulture and Forestry,
Sankra, Patan, Durg,
Chhattisgarh, India

Income generation through medicinal and aromatic plant cultivation: A review

Kalpna Kunjam, Ritika Samrath, Dr. Eshu Sahu and Dr. Sarita Paikra

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Abstract

It is estimated that the primary health care of over 80 percent of the world's population still depends on plant based traditional medicines (WHO, 2002). Growing consciousness about health and side effects of modern medicines has again set the stage for innovation and use of herbal medicines. The present study aims to understand the production scenario of medicinal and aromatic crops in India. Medicinal and aromatic plants use to make different value added herbal products, so farmers can cultivate on a large scale and get a remunerative return, while consumers may receive the health benefits of herbal products. This paper tries to fill the gap and contributes literature on production, marketing and constraints in cultivation of medicinal and aromatic plants, which may be helpful in improving the supply chain of medicinal and aromatic plants.

Keywords: Medicinal plants, aromatic plants, marketing channel

Introduction

Aromatic plants come in Medicinal plants category and collectively they are known as Medicinal and Aromatic Plants (MAP). These are plants, which provide medicines or help in preservation of health. In India, Ayurveda, Unani and Siddha medicines are of huge demands. According to the World Health Organization, "a medicinal plant is any plant which, in one or more of its organs, contains substances that can be used for therapeutic purposes, or which are precursors for phyto pharmaceutical semi synthesis". World Health Organization (WHO) reported that medicinal and aromatic plants used worldwide is counted as 20,000. While 4000 drugs are widely used, there are currently more than 2000 medicinal plants are traded in the world and 500 in western Europe (Anonymous, 2017) [4].

Economic Potentials of MAPs

The demand for medicinal plants in India, to meet both domestic and export market, comprising of 162 species, is expected to increase at about 15 to 16% between 2002 and 2005 (CRPA, 2001). Evidence shows that the total domestic potential for crude drugs and oil extracts in India is worth Rs 3 billion, of which the requirements of over-the-counter products (K.M. Singh, Abhay Kumar, R.K.P. Singh and Ujjwal Kumar, 2013) [10].

Status in India

Area and production data of medicinal and aromatic crops was collected for a period of 2005-06 to 2015-16. The area under these crops has increased over year with the annual growth rate of 1.12 percent per annum (Shilpa P Chowti, Shreeshail Rudrapur and Naik BK, 2018) Cultivation of medicinal and aromatic crops has increased from 2, 62, 000 hectares during 2005-06 to 6, 33, 900 hectares in 2015-16. A drop in area was observed during 2013-14 (4, 93, 300 ha) and again it has increased to 5, 07, 800 hectares during 2014-15.

Rajasthan is having highest area under these crops with a share of 56 percent (average 3, 03,630 ha) followed by Uttar Pradesh (25%). Other major states were Madhya Pradesh (11%), Tamil Nadu (2%), Punjab (2%), Chhattisgarh (2%), Andhra Pradesh (1%) and Bihar (1%). In case of production, Madhya Pradesh ranks first with a share of 44 percent and Rajasthan ranks second with a share of 19 percent. The states like Tamil Nadu, Chhattisgarh and Arunachal Pradesh were having a share of 16 percent, 8 percent and 7 percent respectively.

Corresponding Author:
Kalpna Kunjam
Assistant Professor,
Mahatma Gandhi University of
Horticulture and Forestry,
Sankra, Patan, Durg,
Chhattisgarh, India

Opportunities of Aromatic plants cultivation

1. It is realized now that perfumes and essential oils are not the articles of luxury as they were in the past. The demand for essential oils is increasing day by day with the advancement of education and prosperity in the country.
2. The search for natural resources has been intensified as synthetics have failed to provide versatility and a situation of saturation and later stagnation started developing. Improved instruments and chemicals also and thus helped in the search for new aromatic compounds.
3. Natural essential oils have the potential of being very safe insecticides. One good example in this regard is of the essential oil obtained from *Acorus calamus* which has asarone as an active principle, and produces sterility among a variety of insects of either sex. It has been found very effective and safe for the storage of food grains.
4. Their spent waste can be converted into boards and can be used as a mulching material or ploughed back into the soil to improve its tilth.
5. Most of these raw materials are produced in the tropics, in the developing countries of Asia and Africa from where they go to Europe and the USA for use in the manufacture of perfumery chemicals, cosmetics, food

flavours and a host of other consumer products which, in turn, are distributed all over the world. (Rakesh Kumar, Ajay K. Singh Amit Kanawjia, 2023)^[11]

Marketing of medicinal and aromatic Plants

Value-chain embodies an important change in development and the relationships among producers, processors, traders, and consumers (Devaux *et al.*, 2018)^[7]. There are two key marketing channels involved in the marketing of this crop. Channel I was producer to a local trader to industry, and channel II was producer to processor to industry. Most of the aromatic plants are marketed through the channel I, and only one-fourth of the produce is marketed through channel II (Suresh *et al.*, 2012)^[12]. Lack of proper marketing information, pest and disease problems, higher cost of cultivation, and fluctuation in market price, low price which are major challenges faced by producers during the crop production and marketing phase, lack of a minimum support price, lack of a regulated and organized market (Ajjan *et al.*, 2008; Bhattacharya *et al.*, 2008; Ahmed and Sharma, 2012; Ram *et al.*, 2012; Balaji *et al.*, 2016; Mohapatra *et al.*, 2018)^[3, 5, 2, 15, 6, 14]. To understand the farming system and the success of the value chain of the plants, a thorough financial feasibility and technical study are required (Alam and Belt, 2009)^[1].

List of medicinal and aromatic plants

Medicinal plants				
S.No.	Medicinal Plants	Part Used	Alkaloids	Uses
1.	<i>Aloe vera</i>	Leaves	Aloin	Laxative Purpose
2.	Asgand (Aswagandha) Indian Ginseng	Roots	Withanine Somniferine	Aphrodisiac Property Immune-modulator Anti- stress
3.	Medicinal Yam	Tubers	Diosgenin	Production of Contraceptive Pills
4.	Fox-Glove	Leaves	Digoxin	Heart Disease
5.	Opium	Capsule (Latex)	Codeine	Painkiller
6.	Dill or Sowa	Seeds	Carvone	Improve digestion, Control vomiting, Carminative property
7.	Guggul (Kiluvai)	Oleogum Resin	Z and E Guggulsteroids	Anti- inflammatory Hypoglycaemic
8.	Henbane	Leaves	Hyoscyamine	Anti-asthma Anti- cholicgenic
9.	Isabgol	Husk, Seed	Mucilage	Anti-diarrhoea Laxative
10.	Khasi-kateri	Fruits	Solasodine	Production of Contraceptive Pills
Aromatic plants				
S.No.	Aromatic Plants	Part Used	Oil content	Uses
1.	Ambrette/Muskdana	Seeds	Farnesol and Ambreetolide	Musk odour used in incense stickes, Panmasala, perfumery, cometics and Scents
2.	Celery	Seeds	Selinene, Limonene	Seasoning, Flavouring Sauces, purees
3.	Chamomile	Flowers	Blue Oil	Pain Relieving blams
4.	Davana	Leaves	Hydrocarbons	Delicate fragrance for floral decoration, bouquets
5.	Indian bBasil	Leaves	Methyl Chavicol Eugenol and Linalool	Flavoring foods
6.	Lemon Grass	Leaves and Shoots	Citral	Starting material for Inonones
7.	Palmarosa Grass	Leaves and Shoots	Geraniol	Aoap,Perfumery industry
8.	Mint	Leaves	Menthol and Carvone	Scenting Supari
9.	Rose Geranium	Leaves and Flowers	Rhodinol	Perfume Industry
10.	Vetiver	Roots	Citronellal	Carminative Property

Conclusion

The major commonality of the Indian classical and the folk health care traditions is their dependence upon the raw material derived from a large diversity of plant species,

which is estimated to be about 6,500. India is blessed with varied climatic condition which is suitable of growing diverse medicinal and aromatic crops but not much expansion in cultivation of these crops was observed.

Demand for medicinal plants is expand rapidly in future, and fuelled by the growth of sales of herbal supplements and remedies. The key benefits of medicinal plants cultivation for farmers are improved access to local markets, assured markets and prices (lower risks) especially for non-traditional crops, assured and often higher returns, and enhanced farmer access to production inputs, mechanization and transport services, and extension advice.

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