Inventorising the Cultivation Status of Medicinal and Aromatic Plants in Telangana and Andhra Pradesh States

K Laxman Singh* and KP Sastry

Central Institute of Medicinal and Aromatic Plants, Resource Center, Hyderabad, India

*Corresponding Author: K Laxman Singh, Central Institute of Medicinal and Aromatic Plants, Resource Center, Hyderabad, India.

Abstract

Enormous promotion activities of Andhra Pradesh Medicinal and Aromatic Plants Board, Horticulture Universities, Resource Centers, Medicinal Plants Conservation Areas, and Vana Seva Samrakshana Samithi has been undertaken to encourage the farmers to cultivate the important MACs in Andhra Pradesh and Telangana to promote economic development among farmers. In this study, an extensive survey was conducted in these states under the supervision of Central Institute of Medicinal and Aromatic Plants, Hyderabad to understand the cultivation and economical status of MACs producing farmer. Because these states receives rain from both the season, geographical positioning, mild weather and availability of groundwater made the considerable development in western part of the states and the farmer's per capita income was significantly doubled by producing MACs with beside of cultivating regular agricultural crops in the same piece of land. It is identified that the Vishakhapatnam agency found that more than 50% of state MACs production and Srikakulam District was found at least in cultivation and production of MACs. Adilabad and Chittoor Districts were found significant decreased and increased the average areas of cultivation of all the MACs in subsequent years comparatively. Amla and Lemongrass were found as common cultivars in all the Districts. And the findings were, due to many gaps such as unaware of the agronomy of cultivation, post-harvest processing technology, and poor marketing specialty, the farmers in these states were lagging behind in the production of MACs. Therefore it is very important to create awareness on the importance of MACs, its agronomical methods of cultivation and transfer of technology at the farmer level, and also provide the governmental encouragement in the form of subsidiary and buyback guarantee for the farmers produce are the most needed to encourage the poor agriculture farmers.

Keywords: Medicinal and Aromatic Plants (MACs); Adilabad; Kadapa; Chittoor; Andhra Pradesh; Telangana

Abbreviation

MACs: Medicinal and Aromatic Crops

Introduction

Medicinal and aromatic crops (MACs) constitute a large segment of the flora, which provides raw materials for use by the pharmaceutical, cosmetic, fragrance and flavor industries. India is endowed with about 49,000 species of plants and is ranked eighth in the world biodiversity and ranks first with about 21% share of US $ 1.2 billion estimated world trade in essential oils (excluding turpentine oil). About 2500 plant species are known to contain aromas. About 18000 species of medicinal and aromatic plants were widely used in several modern medical systems like Ayurveda, Siddha, Unani, and Homeopathy, and also in rural traditional ethnic medical systems [1,2]. This unique property of the plant is due to the fact that these aromatic plants contain volatile and odorous constituents popularly known as "essential oils". The essential oils may be present in different parts of a plant such as a root, stem, bark, leaves, flowers, fruits and seeds etc. These essential oils being volatile in nature are extracted mostly through steam distillation and find wide applications in perfumery, cosmetic, medicine, beverages, liquor, and food industries worldwide. The importance, its uses, opportunities for cultivation, trade, business opportunities, research and development, and current issues scenario of MACs in India and also in the globe was thoroughly described elsewhere [3].

Because of its vast geographical areas, large bio-diversity and a wide variety of soil and climate, Indian is an ideal place for the cultivation of a large number of essential oil-bearing plants. The Andhra Pradesh and the Telangana States are endowed with a variety of soils ranging from poor coastal sands to highly fertile deltaic alluviums. Indian gooseberry (Amla), Winter cherry (Ashwagandha), Coleus, Long pepper, Asparagus etc. are some of the important medicinal crops and Lemongrass, Citronella, Palmarosa, lemon-scented gum etc. are some of the important aromatic crops cultivated in these states [3,4]. The aim of this study was to investigate the potential MACs and their cultivation status in Telangana and Andhra Pradesh states and to find the major gaps and merits in the production of MACs at ground level and recommendations towards beneficiation of the farmer/producer.

Materials and Methods

The baseline survey was conducted by direct interaction with the Farmers, Universities, Forest and horticulture Departments on the extent of cultivation of MACs in different Districts. The data with an average area of cultivation was calculated and identified the Districts with a higher area of cultivation and also Districts with least cultivation is presented in table 1. Apart from the overall study, the states were found to have many loopholes and drawbacks in the cultivation of the MACs. Further, to understand the major consequence of drawback in the cultivation of MACs in these states, there are three District i.e. Adilabad District from Telangana State and Kadapa and Chittoor Districts from Andhra Pradesh were selected based on the following parameter i.e. 1. The least producer of MACs, 2. The hilly terrain and 3. Particularly the districts having with more rainfed areas for further study to find the major gaps in cultivation and production of MACs. Therefore there is a need to understand the major causes of lagging behind in MCAs production.

Intensive survey study for cultivation of MACs was carried out in three Districts - Adilabad District (in farmer's fields of Gudi Hatnoor and Mancherial, in Department of Agriculture Kadem, in Forest and Horticulture Departments, Mancherial), Kadapa District (in farmer's fields of Kadapa, Muddanur, Sunnaperellapally, Kondapur and Rajampet and in Shajasiddha project AGRIGOLD, Diddavaram, Porumamilla) and Chittoor District (in farmer's fields of Nimmapalli, Madanapalli, Gattu, B. Kota, B. Kothakota and Vishanakarravaripalli, P.T.M, Malakalacheruvu and Kurabalakotha) by regular field visits. In every field visits, the information was collected about the status of MACs cultivation and their merits and demerits in production and the data were recorded following standard procedure [5]. On the availability of information, the data were synthesized and the results were presented here.

Results and Discussion

Surveying the cultivation status of MACs in Telangana and Andhra Pradesh States

A considerable area is under cultivation of MACs in the State of Andhra Pradesh and Telangana. These crops are cultivated approximately in about 10,000 hectares and are cultivated on a large scale in Visakhapatnam, Prakasam, Guntur and Anantapur Districts. The area under cultivation of MACs in 21 Districts in Andhra Pradesh and Telangana are presented below table 1.

S. No	District	Area, ha	% of the total area
1	Visakhapatnam	4942.4	52.27
2	Prakasam	1001.5	10.59
3	Anantapur	801.4	8.48
4	Guntur	778.21	8.23
5	Nellore	347	3.67
6	Medak	214.6	2.27
7	Mahbubnagar	212.1	2.24
8	Rangareddy	160.1	1.69
9	Khammam	157	1.66
10	Vizianagaram	134.4	1.42
11	Warangal	116	1.23
12	Krishna	110.82	1.17
13	East Godavari	98.4	1.04
14	Kurnool	79.3	0.84
15	West Godavari	78.4	0.83
16	Nalgonda	70.6	0.75
17	Kadapa	45	0.48
18	Nizamabad	37	0.39
19	Karimnagar	33.88	0.36
20	Adilabad	20	0.21
21	Srikakulam	17	0.18

Table 1: The area (in ha) with decreasing order of cultivation of Medicinal and Aromatic plants in Telangana and the Andhra Pradesh States.

More than 50% of the total cultivated area in the State is in Visakhapatnam agency area followed by Prakasam and Anantapur Districts and the least cultivation of MACs was found in Srikakulam followed by Adilabad and Karimnagar Districts. This table also resulted with the major gaps i.e. due to lack of awareness of MACs cultivation and poor marketing sources, these two states were found to have very little in the production of MACs in all the Districts except the Visakhapatnam and Prakasam Districts. Therefore there is a need to understand the significant causes of lagging behind in MACs production as compared to the regular agriculture crops and find the solution towards the sustainable development of MAC producing farmers.

Cultivation status of major MACs in Adilabad, Kadapa and Chittoor Districts

During the study period, three Districts were surveyed and the distance covered in these Districts are detailed in the table 2.

Sl. No.	District	Period	Distance covered
1	Adilabad	21-07-2006 to 24-07-2006	1125 km
2	Kadapa	29-08-2006 to 23-01-2006	1474 km
3	Chittoor	17-01-2007 to 23-01-2007	1200 km

***Table 2:** The selected Districts for identifying major gaps in the cultivation of MACs and distance covered during the survey.*

Data was collected and analysed from individual growing farmers and institutes who regularly cultivate and produces the MACs in these three Districts and the synthesized data was recorded (detailed in figure 1). These Districts majorly produces five aromatic crops such as *Cymbopogon citratus* (Lemongrass), *Cymbopogon martinii* (Palmarosa), *Artemisia pallens* (Davana), *Pogostemon cablin* (Patchouli) and *Eukalyptus citriodora* (Citriodora), and three medicinal crops such as *Phyllanthus emblica* (Amla), *Aloe vera* (Aloe) and *Senna alexandrina* (Senna). All the three Districts were found in common in the cultivation of Lemongrass and Amla crops. Davana, Aloe vera and Patchouli cultivation majorly found in Adilabad and Chittoor Districts, and the cultivation of palmarosa found in Adilabad and Kadapa Districts. The cultivation of Senna and *E. citriodora* were found in Kadapa District only. The total area of cultivation of MACs was found more in Adilabad and least in Chittoor District.
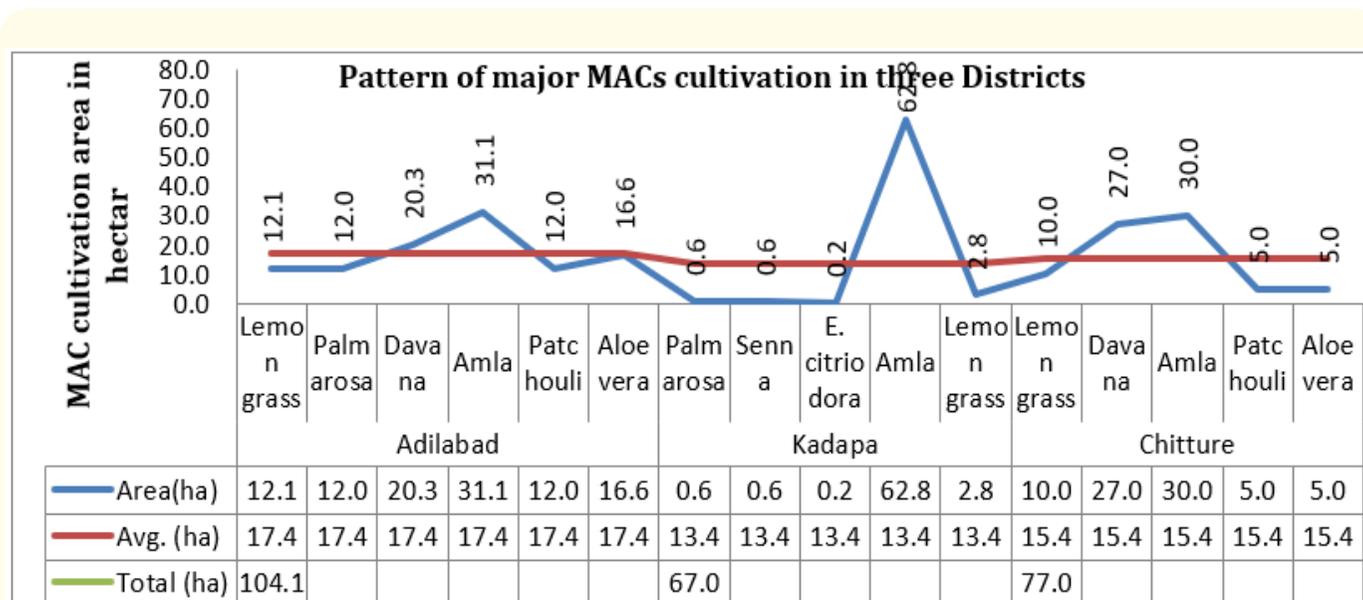

***Figure 1:** Average area (in hectors) of cultivation of different major Medicinal and Aromatic plants in three selected Districts in Telangana and Andhra Pradesh States.*

Citation: K Laxman Singh and KP Sastry. "Inventorising the Cultivation Status of Medicinal and Aromatic Plants in Telangana and Andhra Pradesh States". *EC Agriculture* 5.2 (2019): 61-66.

The data with identified variations of the total cultivation status of MACs in subsequent years is also presented in figure 2. As compared to previous year i.e. 2004 - 2005, in Adilabad and Kadapa Districts (Except lemongrass, Amla and Senna) show the significant decreased area of cultivation of all the MACs in 2005 - 2006, consequent due to lack of awareness and marketing resources. However, because of the presence of marketing resources nearby i.e. Bangalore city and educated farmers, the Chittoor District shows the significant increased area of cultivation of MACs as compared to the previous year. Therefore the Adilabad District was identified with least in the production of MACs and Chittoor District was found to have higher in cultivation and production of MACs as comparatively.
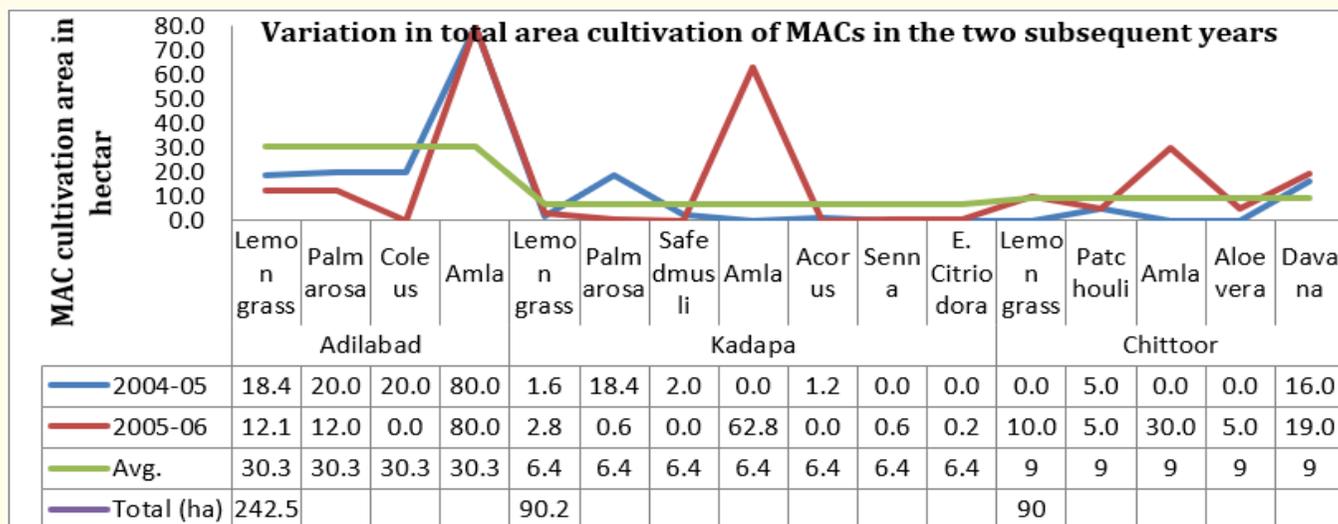

Variation in total area cultivation of MACs in the two subsequent years

	Adilabad				Kadapa							Chittoor				
	Lemon grass	Palmarosa	Coleus	Amla	Lemon grass	Palmarosa	Safedmusli	Amla	Acorus	Senna	E. Citriodora	Lemon grass	Patchouli	Amla	Aloe vera	Davana
2004-05	18.4	20.0	20.0	80.0	1.6	18.4	2.0	0.0	1.2	0.0	0.0	0.0	5.0	0.0	0.0	16.0
2005-06	12.1	12.0	0.0	80.0	2.8	0.6	0.0	62.8	0.0	0.6	0.2	10.0	5.0	30.0	5.0	19.0
Avg.	30.3	30.3	30.3	30.3	6.4	6.4	6.4	6.4	6.4	6.4	6.4	9	9	9	9	9
Total (ha)	242.5				90.2							90				

Figure 2: Identifying the variation of the total cultivation status of MACs in two subsequent years.

The cultivation of Amla was found more in Kadapa District followed by Adilabad and Chittoor District, and Davana cultivation was high in Chittoor District followed by Adilabad District. Except for Amla and Davana (which falls beyond the average cultivation), all the MACs cultivation mentioned in these three Districts were falls below the average area of cultivation. However, it is also found that few farmers have the major MAC crops practicing with the addition to the cultivation of the regular traditional crops such as cereals, pulses, oilseeds, and trading crops. Hence, it needs to encourage farmers to improve the cultivation of MACs in addition to the regular crops by adopting various Governmental schemes such as input subsidies, and buyback guaranty etc.

Identification of gaps and merits in MACs cultivation

To understand the consequence of drawback in the cultivation of MACs in these states, three Districts were selected for further studies to find the major gaps in cultivation and productions. After the intensive survey and study it is observed that the farmers in these Districts majorly cultivated Cotton, Paddy, Groundnut, Maize, Soybean, Redgram, Castor, Chillies, Sorghum, Greengram, Blackgram, Bajra, Turmeric, Sunflower, Sugarcane, Sesamum, Horticulture and Vegetable crops, and even floral crops. But in the cultivation of MACs these states were found to lag behind due to lack of inculcation of the culture of cultivation, and limited knowledge on agronomy, availability of seed and plant materials and also proper marketing environment.

Gaps and merits found in MACs production in Adilabad District

Total area under cultivation and variation of different MACs in the two subsequent years in the Adilabad District is presented in figure 1 and figure 2. The major findings in gaps and merits in the production of MACs in this District are as follows:

1. This District has the largest area under cotton and soybean cultivation.
2. This District has less area under irrigation and bulk of area under cultivation is under rain-fed agriculture.
3. Because of mild weather, Palmarosa and Lemongrass were tried under limited irrigation conditions and the crops performed well.

Gaps and merits found in MACs production in Kadapa District

Total area under cultivation and variation of different MACs in the two subsequent years in the Kadapa District is presented in figure 1 and figure 2. The major findings in gaps and merits in the production of MACs in this District are as follows:

1. In Kadapa District Lemongrass, Senna, amla, and Palmarosa performed well and there is scope for increasing the area under these crops.
2. Porumamilla Mandal with the hilly terrain is an ideal location for the cultivation of aromatic grasses.

Gaps found in MACs production in Chittoor District

Total area under cultivation and variation of different MACs in the two subsequent years in the Chittoor District is presented in figure 1 and figure 2. The major findings in gaps and merits in the production of MACs in this District are as follows:

1. There is a need for fine tuning the available agro-technology to meet the specific situation needs of Davana, Patchouli and lemongrass cultivators.
2. This can be developed into a successful productive zone for the davana seeds.
3. There is also a need to create awareness among the local farmer about the advantages of crop diversification and cultivation of the Medicinal and Aromatic crop.

Like other States in India, agriculture is the main occupation of the people in these states. The western part of these states has mild weather(maximum temperature in the western part of the states is around 36ºC to 38ºC and in eastern parts it touches 46ºC, minimum temperature in western parts is around 12ºC to 14ºC and in eastern part it is 16ºC to 18ºC) compared to eastern part. These states receive rain from both the monsoons.

The geographical positioning of the region, mild weather, and availability of groundwater made the western part of the states (comprising Adilabad, Warangal, Nalgonda, Mahabubnagar, Kadapa, Anantapur, and Chittoor) are highly productive zones for commercial seed production of particular crops. This is the main reason for the success of davana and patchouli in this region. This part is also known for the production of foundation seed of tomato hybrids and can become the hot spot for the production of medicinal and aromatic crops such as Citronella, Palmarosa, Lemongrass, Vetiver, along with Basil, Patchouli, and Davana.

Recommendations

It is also recommended that

1. The creation of awareness among the public on the importance of medicinal and aromatic crops and their use in traditional and modern systems of medicine.
2. Transfer of latest MACs production technology and inculcate the culture of MACs cultivation at ground level i.e. to the rural farmer.
3. Increasing Governmental subsidies on medicinal plants for increasing their production and supply.
4. Establishment of linkages of tie-ups between market and the producer farmer and also the nearby pharmaceutical industries.
5. Prevention of illicit excavate through unscrupulous unknown collectors.
6. It is also important to conserve the improvement threatened and endangered endemic species of medicinal and aromatic values in wild areas.

Conclusion

India has varied agro-climatic conditions and the Telangana and the Andhra Pradesh States are unique with mild weather and hilly terrain particularly western parts of these states hence an ideal location for the cultivation of a number of economically important indigenous and exotic MACs. But there is a huge gap in methods of cultivation and marketing of medicinal and aromatic products at ground level. Therefore, there is a needs to transfer the latest technologies to the rural farmer to create awareness on the cultivation and marketing of MACs and their importance of medicinal values. Encourage the agriculture communities on culture of cultivation of MACs particularly

the farmers belongs to hilly terrain and having with more rainfed areas by providing Governmental schemes and subsidies with beside of their regular agricultural practices to generate alternate extra income within the same piece of land. It is also important to protect the plants with medicinal and aromatic values from illicit unscrupulous and conserve the threatened and endangered species in wild areas is now essential needed toward the balanced biodiversity.

Acknowledgment

Pics: *Myself with project investigators (left), a demonstration to school children's (center), to delegates, entrepreneurs and farmers (right) on importance, methods of cultivation and technology of processing of MACs at CIMAP, Resource Centre, Hyderabad.*

Bibliography

1.   Komaraiah K., *et al.* "Herbal abortifacients used by Paderu Tribes in Visakhapatnam District of Andhra Pradesh, India". *Journal of Medicinal Plants Studies* 5.4 (2017): 107-109.

2.   Prasanna Anjaneya Reddy L., *et al.* "Collection and exsitu conservation of medicinal plants of Andhra Pradesh". CIMAP Golden Jubilee National Symposium on "Future Trends in Medicinal and Aromatic Plants Technologies and Strategies" (2009).

3.   Rajeshwara Rao BR., *et al.* "Cultivation of Medicinal and Aromatic Plants - Current Scenario". Oshadhi National Exhibition and Seminar on Medicinal Plants and Herbal Products (2006).

4.   Rama Devi P., *et al.* "Status, scope and promotion of medicinal and aromatic plants in Andhra Pradesh". *Journal of Pharmacognosy and Phytochemistry* 6.6 (2017): 283-289.

5.   Jain SK. "Dictionary of Indian folk medicine and ethnobotany". Deep publication, New Delhi (1991).

Volume 5 Issue 2 February 2019