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Status, scope and promotion of medicinal and aromatic plants in Andhra Pradesh

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Abstract

Andhra Pradesh has rich floral diversity with nearly 1800 species of medicinal plants out of 2586 species of plants with potential for conservation and cultivation of medicinal plants has initiated various efforts for conservation and promotion of medicinal plants through RFRC's, MPCA's and VSS activities. APMPB provides subsidy to encourage formation of farmers cluster groups for cultivation of important medicinal plants, value addition of produce for entering global market, including herbal medicine as a part of primary health care and disseminating information on Medicinal and Aromatic Plants to the interested candidates. It also proposed establishment of rural collection centers for providing linkages to farmers as well as traders at G Madugula in Visakhapatnam, Maaredimilli in East Godavari, Adoni in Kurnool District apart from trading of medicinal crops like *Aloe vera*, *Acorus calamus*, *Vetiveria zizanoides* and *Cymbopogon citratus*, through market committee. It provided funding for establishment of model and small nurseries, storage godowns, units involving development of seed production areas, theme park, arboretum, herbarium, construction of drying yards, formation of rural collection centers under marketing infrastructure etc. The budget allotted by Department of Ayush, Government of India is been utilized by the APMPB through various activities of Dr YSRHU, KVK of RASS, Tirupathi, Department of Horticulture and other allied departments for promotion and marketing of medicinal plants.

Keywords: medicinal and aromatic plants, department of forest /MPCA's, APMPB activities, Dr YSRHU activities

Introduction

Now a day's the importance of cultivation of medicinal and aromatic plants is increasing steadily due to the side effects of chemical and artificial medicines that is creating awareness among the people worldwide. Since Andhra Pradesh with its floral diversity having nearly 1800 species of medicinal plants out of 2586 species of plants. It has rich potential for conservation and cultivation of medicinal plants. The government of Andhra Pradesh has initiated efforts to conserve the gene pool of medicinal plants available in forests and also had taken up the ex-situ cultivation with the following objectives.

- Conservation and improvement of threatened/endangered/ endemic species of medicinal and aromatic plants in wild through Medicinal Plants Conservation Areas (MPCA's).
- Prevention of illicit removals through unscrupulous collectors.
- Creation of awareness among public on the importance of medicinal plants and Indian systems of medicine.
- Standardization of cultivation practices for economically viable species suitable to different agro climatic zones and cultivating them to meet the local pharmaceutical industry requirements and to enter the global market.
- Establishment of linkages/market tie-ups between the farmer/producer and the leading pharmaceutical industry.
- Creation of databank on existing medicinal plants in wild by conducting systematic and regular assessment surveys.
- Utilization of information technology (IT) for trade improvement

Medicinal Plants Conservation Areas in Andhra Pradesh

S. No	Name of MPCA	Name of forest division	Range	Village	District	Area
1	Maredeemilli	Kakinada	Maredumilli	Maredumilli	East Godavari	260
2	Lankapakala	Narsipatanam	R. V. Nagaram	Lankapakala	Visakhapatnam	275

3	Corangi	Rajahmundry	Corangi	Corangi	East Godavari	350
4	Peddacheruvu	Atmakur	Bairlutu	Peddacheruvu	Kurnool	220
5	Kurli	Anantapur	Kadri	Kurli	Anantapur	313
6	Talakona	Chittoor (E)	Bakarapet	Talakona	Chittoor	200
					Total	1618

Significant strides made by Department of forest in medicinal plants

- Establishment of ethno botanical garden with around 400 species in Regional Research Centre's located at Rajahmundry and Tirupathi.
- Initiated research on various aspects like analysis of active ingredients, development of protocols for different species for large scale production of tissue culture plants notified as endangered plants (*Boswellia serrata*, *Syzygium alternifolium*, *Terminalia chebula*, *Shorea tumbuggaia* (Thambajalari), *Cycas beddomei* etc) at Tirupathi.
- Taken up field trials of different varieties were to find the suitable variety for a given agro climatic zone.
- Initiated large scale production of grafts and clonal plants of tree species of medicinal value for planting throughout the state as a prelude to cultivation of herbs, shrubs and climbers of medicinal value involving VSS (Vana Seva Samrakshana Samithi).
- Published books like "A field guide on medicinal plants, A profile on dye yielding plants and Cultivation of medicinal and aromatic plants to popularize cultivation and conservation of medicinal plants in Andhra Pradesh
- Conducted Rapid Assessment Surveys (RAS) and compiled the list of medicinal plants occurring in the state in general and Nallamalai hills in particular.
- Conducted workshops at Warangal, Rajahmundry and Tirupati to discuss different medicinal plants identified and the ailments for which they are used and prepared data bank of Medicinal plants available in the state.
- Raised trees (*Emblica officinalis*, *Terminalia chebula*, *Terminalia bellerica*, *Terminalia arjuna*, *Syzygium cumini*, *Azadirachta indica*, *Tamrindus indica*, *Bixa orallena*, *Sapindus emarginatus*, *Sterculia urens*, *Aegle marmelos*), herbs and climbers (*Withania somnifera* (Ashwagandha), *Cassia angustifolia* (Senna), *Coleus forskohlii* (Pashanabhedhi), *Gymnema sylvestre* (Podapatri), *Tinospora cordifolia*, *Decalepis hamiltonii*, *Hemidesmus indicus*, etc.) for improvement of degraded forest lands.
- Made efforts in replacing the Globally Endangered and Over Harvested medicinal plant like *Decalepis hamiltonii* (Maredugaddalu/Maredukommulu/Nannari/Bar resugandhapala) in the natural forest areas. About 190 Kg of the seed was collected and 12 lakh plants raised in bags were planted in the natural habitat of united Andhra Pradesh.

Scope for promotion of medicinal plants in Andhra Pradesh

Crops like *Withania somnifera*, *Piper longum*, *Cassia angustifolia*, *Aloe vera*, *Coleus forskohlii*, *Rawolfia serpentina*, *Decalepis hamiltonii*, *Abelmoschus moschatus*, *Cymbopogon citratus*, *Mucuna pruriens*, *Cymbopogon martinii*, *Cymbopogon winterianus*, *Ocimum sanctum* etc are commercially under cultivation out of which *Withania somnifera* and *Piper longum*, alone occupy 80% of the area under medicinal plants cultivation in Andhra Pradesh.

In srikakulam and vijayanagarm districts *centella*, *patchouli*, *lemon grass* and *citronella* can be successfully cultivated. Vishakapatnam due to its high altitude area is suitable for

Piper longum and *Geranium*. East and west Godavari districts are home for various medicinal plants due to existence of natural biodiversity and favourable conditions where *Bach*, *Ocimum sp*, *Mucuna*, *Centella*, *Hedychium*, *Andrographis* can be successfully cultivated. Paddy is the main cultivated crop in these districts and hence cultivation of Japanese menthol in paddy/rice fallows can be taken up which increases paddy yields. *Vattiver* and *Aloe* can be grown in areas where cattle feeding, pests and diseases incidence is more. Krishna district rich in red soils is suitable for *Pterocarpus* and *Santalum* sp. Guntur, Prakasm and Nellore districts are suitable for cultivation of *Abelmoschus*, *Adathoda*, *Cissus*, *Tribulus*, *Hemidesmus*, *Artemisia racemosus*, *Asparagus*, *Achyranthes*, *Phyllanthus*, *Amla*, *Bael* etc. Rayalaseema areas like Chittoor are most suitable for *Pterocarpus* and is the home for many endangered medicinal plants. *Aswagandha*, *Senna*, *Aloe*, *Indigo*, *Coleus* can be commercially cultivated in Kurnool, Ananthapur and Kadapa districts.

In addition to the above, crops like *Gymnema sylvestre*, *Tinospora cordifolia*, *Kempheria rotunda/sp*, *Pelargonium hortorum*, *Artemisia pallens*, *Strychnos potatorum*, *Decalepis hamiltonii* etc are suitable for cultivation in Andhra Pradesh on commercial scale depending upon the market demand. Based on the soil type's cultivation of various medicinal plants can be taken up like humic soils for pepper and cardamom; loams for rhizome crops like *Acorus calamus* and *Asparagus racemosus*. *Chlorophytum borivillianum* can be grown as inter crop in orchards having sandy loams. Aloe can be grown in all types of soils.

- Phyllanthus emblica*, *Withania somnifera*, *Cassia angustifolia* can be encouraged under rainfed conditions in waste lands / uplands.
- Garcinia sp*, *Gymnema sylvestrae*, *Sterculia urens* (Karaya) etc can be planted on field bunds as wind breaks.
- Acorus calamus*, *Centella asiatica*, *Bacopa monnieri* can be planted in marshy areas like ponds, water tanks, canals etc.
- Senna alexandrina* (Indian senna) can be grown as mixed crop in citrus (Lime), mango orchards or in Annatto/Henna and groundnut fields.
- Gloriosa superba* can be encouraged in boarders around orchards.
- Centella asiatica* can be grown as inter crop and on bunds in coconut gardens.
- Piper longum* can be grown as mixed crop in subabul, eucalyptus or coconut / oil palm gardens.
- Psoralea* can be cultivated as inter crop.
- Piper longum* is suitable for cultivation in Maredumilli and Paderu areas
- Cassia angustifolia* can be successfully cultivated in Kadapa and Ananthapur
- Indigofera tinctoria* can be grown in Kadapa
- Embelia ribes* can be grown in Kurnool, East Godavari, Visakhapatnam and Vijayanagaram
- Trachyspermum ammi* (Vamu) can be grown in Kurnool.
- Centella asiatica* can be grown in Srikakulam, Visakhapatnam and Chittoor.
- Lepidium sativum* can be grown in waste lands in rainy season whereas *Garcinia sp* can be grown in houses just

like coconut trees.

- *Catharanthus sp* can be raised on road sides, waste lands and as boarder plants.
- Japanese menthol can be cultivated in rice fallows
- *Vetiveria zizanoides*, *Aloe vera* can be grown in areas where cattle feeding, pests and diseases incidence is more.
- *Mucuna pruriens* can be cultivated on bunds and as intercrop in bamboo, *Piper longum* and *Asparagus* in Coconut gardens, *Hedychium spicatum* and *Tinospora cordifolia* on boarders /fences,
- *Albizia lebbbeck* (Vaaka), *Lawsonia inermis* around gardens and *Aloe vera* as inter crop in *Phyllanthus emblica* gardens should be encouraged.
- The collection of *Cycas beddomei* was banned, while *Gloriosa superba* was included in Red list due to its less availability by the Andhra Pradesh forest department

APMPB aims for promotion of medicinal plants cultivation

Small and marginal farmers are formed into cluster groups by DRDA and loans are sanctioned to increase the area under medicinal plants cultivation. Supply of planting material for cultivation and information on availability of seeds under social forestry schemes to be promoted. Providing facilities for proper cleaning, drying, grading for obtaining quality produce.

Andhra Pradesh Medicinal Plant Board (APMPB) is working with following objectives.

- Protecting biodiversity by encouraging medicinal plants cultivation in rural areas
- Encouraging value addition of produce to enter into global market
- Including the herbal medicine as a part of primary health

care

- Disseminating information on Medicinal and Aromatic Plants to the interested candidates.

Activities of APMPB / Annual Action plan during 2017-18

- Proposed construction of Rural Collection Centre in the vicinity of medicinal plants farming areas. Provision of Rs 20 lakhs for establishment of Rural Collection Centre / pre cleaning, sorting, grading and packing centre.
- Provided Rs 10 lakhs for e-market facility and proposed to establish e-market in the APMPB office itself.
- Provided Rs 15 lakhs for exposure visits to the cluster group farmers to the areas where good agricultural, storage, packing and marketing practices are followed both within and outside the state. These trips are scheduled during the months of September/ October and January / February which include
- Proposed State Level Exhibition during January 2018 and State Level Workshop during February 2018 for approximately 300 participants at Vijayawada, Krishna district.
- Proposed Exposure trips outside the state for 40 participants to Tamilnadu, Kerala and Karnataka during October 2017, Madhya Pradesh, Chattisgarh, Rajasthan and Maharashtra during February 2018,
- Proposed Exposure trips within the state for 50 participants to Kurnool, Kadapa, Chittoor and Nellore during August 2017, to Visakhapatnam, East Godavari, West Godavari and Prakasam districts during January 2018.
- Proposed schedule for conducting workshops/ seminars include

S.No	District	Month	Approximate No of Participants
1	Chittoor	June – 17	100
2	Visakhapatnam	July – 17	200
3	Ananthapur	August – 17	150
4	Prakasam	September – 17	75
5	Kurnool	October – 17	300
6	East Godavari and West Godavari	November – 17	200
7	Krishna and Guntur	December – 17	200
8	Srikakulam	January – 17	100
9	Vijayanagaram	February – 17	100
10	Kadapa	March – 17	100

- Allotted Rs 5 lakhs to start Pilot project to provide minimum support price for Aswagandha and Pippalamodi
- Allotted Rs 5 lakhs to test the samples of Aswagandha and Pippalamodi in 250 units.

Activities of APMPB during 2016-17

- Released subsidy of Rs.429.58 lakhs for cultivation of *Withania somnifera* and *Piper longum*.
- Encouraged formation of farmers cluster groups to provide subsidy for cultivation of medicinal plants covering minimum of 5 acres but not more than 5 ac/ farmer with atleast five farmers in three neighboring villages.
- Twelve species of medicinal crops for cultivation in an area of 24994.77 acres was proposed by 196 cluster groups for subsidy.
- Constituted District level technical screening committee for field inspection before release of subsidy amount. Fifty per cent subsidy will be released only when 50% area is under cultivation and no subsidy will be released if it is less than 25%.

- Proposed establishment of rural collection centres for providing linkages to farmers as well as traders at G Madugula in Visakhapatnam, Maaredimilli in East Godavari, Adoni in Kurnool District.
- Proposed for trading of medicinal crops like *Aloe vera*, *Acorus calamus*, *Vetiveria zizanoides* and *Cymbopogon citratus*, through market committee.

Annual Action plan 2016-2017

- Funding for establishment of three model nurseries (Rs 25 lakhs/ unit) and six small nurseries (Rs 6.25 lakhs/unit).
- Promoting the cultivation of medicinal plants in 7445 ac. with the subsidy of Rs 659.02 lakhs
- Funding for establishment of three units involving development of seed production areas, theme park, arboretum, herbarium etc (Rs 25 lakhs/ unit).
- Funding for construction of six drying yards (Rs 10 lakhs /unit), four storage godowns (Rs 10 lakhs/ unit) and formation of three rural collection centers under marketing infrastructure (Rs 20 lakhs/unit).

S. No	Amount (Rs. in Lakhs)	Rate/ Unit	Purpose
1	112.5	@ 25 lakhs/model nursery	3 model nurseries
		@6.25 lakhs/nursery	6 small nurseries
2	240.13		For cultivation of 19 species of medicinal plants throughout Andhra Pradesh
3	70.00	@ 10 lakhs/godown	2 godowns
		@ 10 lakhs/drying yards	2 drying yards
		@ 20lakhs/centre	1 rural collection centre
		@ 10lakhs/centre	1 e-marketing centre

- Released notification for subsidy release to cluster group farmers where 30% area of cultivation for bund plantation and 50% area of cultivation for mixed crop is considered for releasing subsidy.
- Under bund plantation, one time subsidy will be given for newly planted Red sanders and sandal wood plants.
- Under mixed crop, *Piper longum* at Visakhapatnam grown along with turmeric, ginger and other horticultural crops was considered for subsidy release.
- Funds were released for establishing godowns and drying yards based on location and local farmers needs at

S. No	Village	Mandal	District
1	Joharapuram	Aspari	Kurnool
2	Lingampalli	Holagonda	Kurnool
3	Puttluru	Tadipatri	Ananthapuram
4	G.Kottala	Guntakal	Ananthapuram
5	Rachapalli	G.Madugula	Visakhapatnam

- Funds were released during 2016-17, to Krishi Vigyana Kendra RASS, Tirupathi for raising of small nurseries. An amount of Rs.6.5 lakhs was released to CIMAP, Hyderabad for collection of Aswagandha seeds from farmers of Kurnool and Ananthapur District which will be distributed at subsidy rates to the farmers only at the time of raising of crop.
- An amount of Rs.14,16,507/- from 2015-16 was revalidated to the Senior Scientist (Hort.) and Head, Dr. YSRHU, Chintapalli, Visakhapatnam District during the year 2016-17 for implementation of the Model Nursery Project.
- An amount of Rs.451.6 lakhs was released by ministry of Ayush, Government of India to AAP during 2016-17 out of which Rs. 112.5 lakhs for 3 Model Nurseries @ Rs.25 lakhs for each Nursery and for 6 small Nurseries @ Rs.6.25 lakhs for each Nursery and Rs.240.13 lakhs for cultivation of 19 species of Medicinal plants throughout Andhra Pradesh for which notification will be issued in the month of June/July, 2017 for inviting applications from farmers for subsidy release
- Initiated a 365 days campaign on medicinal plants from July' 2016 – June' 2017 with the following objectives
 - To create awareness among the farmers, students, youth, women groups and public on importance and availability of planting materials through trainings, public meetings, interactive sessions, field visits and pamphlets.
 - To generate awareness regarding planting in community areas, government and private lands with the involvement of government, local people, NGO's, students, other stake holders of medicinal plants and people's representatives in the activities related to the medicinal plants.
 - To conduct quiz shows, competitions like painting, essay writing, poem, elocution, speech, tracking and nature walk on medicinal plants at school/Zonal level.

Activities to be performed under campaign:

- Publicity through regular participation in Exhibitions/Fairs.
- Aushadi Vanaspati Mitra Program (AVM)
- Organizing Workshops/Seminars/Conferences/Arogya Fair etc.
- Publication of Periodicals/Magazines, Souvenirs, Pamphlets, Booklets and News letter for display and distribution.
- Launching mobile exhibitors or Aushadi Chetna Yatra for spreading the message of medicinal plants through role plays, audio visuals, expert advice on medicinal plants conservation, cultivation and uses.
- Demonstration of technologies developed by institutions at farmer's fields/conservation areas and natural habitats.

Plan for the Campaign

- Implementing national campaign by engaging NGOs/KVKs/Aanganvadi etc.
- Establishing nurseries and distribution of plants throughout the state.
- Organizing weekly haats for medicinal plants so as to facilitate marketing of produce by collectors and cultivators.
- Developing market linkages.
- Developing audio visual programmes in vernacular languages and relay through local radio stations.
- Developing and promoting jingles on medicinal plants, talks and quiz on medicinal plants.
- Displaying notices on medicinal plants uses at railway stations, bus stands, airports, metro stations etc.
- Preparing video clips at ground level/farmer experience which can be displayed in arogya (s) at outdoor venues.
- An amount of Rs 5-6 lakhs for conducting meeting /conferences/seminars, Rs 6 lakhs towards publicity/printing charges and Rs 4 lakhs for data maintenance, documentation, purchase of books was allotted under this campaign.

Activities of APMPB during 2014-15 and 2015-16

- Released subsidies to cluster group farmers for establishment of godowns and drying yards.
- Sanctioned two small nurseries during 2015-16.
- Model nurseries were established at Sri Srinivasa Ayurveda Pharmacy, Srinivasa Mangapuram, Chittoor District, CIMAP Hyderabad, ITDA Paderu, Horticultural Research Station, Venkatramannagudem and Horticultural Research Station, Chintapalli under Dr YSR Horticultural University
- APMPB is raising model and small nursery at Ontimitta, Kadapa district in the land provided by Tirumala Tirupathi Devasthanam.
- Sanctioned Rs 150.00 lakhs for construction of 15 storage godowns and 15 drying yards @ Rs 5 lakhs per unit during 2014. Kovel foundation and other farmer groups submitted proposals for establishment of godowns cum drying yards in districts of Visakhapatnam, East Godavari,

Kurnool, Chittoor, Vizianagaram, Ananthapur and Kadapa.

- Sanctioned Rs 81 lakhs towards nursery, out of which Rs

132.767 lakhs was utilized towards medicinal and aromatic plants cultivation during 2014-15

- During 2015-16 the following cluster groups are formed

District	No of Clusters	Crop	Number of Farmers	Cultivated Area (Acres)
Ananthapur	4	<i>Rauvolfia serpentina</i>	469	7882.86
Kurnool	21	<i>Rauvolfia serpentina</i>	1741	7835.3
West Godavari	1	<i>Santalum album</i>	10	67
Krishna	3	<i>Santalum album</i>	17	56.56
Prakasam	1	<i>Santalum album</i>	8	39.48
Nellore	1	<i>Santalum album</i>	10	113.28
Visakhapatnam	40	<i>Piper longum</i>	3321	1793.12
Total	71		5576	17787.6

APMPB provide subsidies to the following crops

S. No	Crop	Amount in Rupees per acre	Subsidy %
1	<i>Aloe vera</i> , <i>Aloe barbadensis</i>	7446 --	-- 30
2	<i>Piper longum</i>	10980	30
3	<i>Phyllanthus emblica</i> <i>Phyllanthus amarus</i>	3380 --	-- 30
4	<i>Saraca asoca</i>	8125	50
5	<i>Azadirachta indica</i>	6588	--
6	<i>Andrographis paniculata</i>	4392	30
7	<i>Gloriosa superba</i>	40262	50
8	<i>Ocimum sanctum</i>	5270	30
9	<i>Rauvolfia serpentina</i>	18301	50
10	<i>Coleus forskohli</i>	3440	30
11	<i>Asparagus racemosus</i>	10980	30
12	<i>Mucuna pruriens</i>	1600	30
13	<i>Cassia auriculata</i>	2000	--
14	<i>Aegle marmelos</i>	11712	50
15	<i>Acorus calamus</i>	--	30
16	<i>Embhica officinalis</i>	--	30
17	<i>Hemidesmus indicus</i>	--	30
18	<i>Terminalia arjuna</i>	7905	30
19	<i>Terminalia bellarica</i>	7027	30
20	<i>Terminalia chebula</i>	7027	30
21	<i>Withania somnifera</i>	4392	30
22	<i>Bacopa moneri</i>	7027	30
23	<i>Tinospora cordifolia</i>	--	30
24	<i>Garcinia indica</i>	--	30
25	<i>Solanum nigrum</i>	--	30
26	<i>Kesiyang angustifolia</i>	--	30
27	<i>Embelia ribes</i>	--	30
28	<i>Catharanthus roseus</i>	--	30
29	<i>Cinnamomum verum</i>	--	30
30	<i>Vitex negundo</i>	--	30
31	<i>Stivia ribadiyana</i>	--	30
32	<i>Cloropitas borivilianam</i>	--	30
33	<i>Glycerrhiza superva</i>	--	50
34	<i>Atropa beldona</i>	--	50
35	<i>Pterocarpus marsupium</i>	--	50
36	<i>Gmelina arborea</i>	--	50
37	<i>Aconitum heterophyllum</i>	--	75
38	<i>Santalum album</i>	21389	75
39	<i>Pterocarpus santalinus</i>	24816	75
40	<i>Berberis aristata</i>	--	75
41	<i>Commiphora wightii</i>	--	75
42	<i>Nardostachys jatamansi</i>	--	75
43	<i>Saussurea costus</i>	--	75
44	<i>Picrorrhiza kurroa</i>	--	75

- Rural collection centers will be established at G Madugulain Visakhapatnam, Maaredimilli in East

Godavari and Adoni in Kurnool district to provide linkages to farmers and traders.

Medicinal crops cultivated in Andhra Pradesh during the years 2015 -16 and 2016 – 17

Crop	Area	Area Covered		Per cent Subsidy
		2015–16 (Acres)	2016–17 (Acres)	
<i>Andrographis paniculata</i>	Visakhapatnam, East Godavari, West Godavari	12.5	20	30%
<i>Cassia augustifolia</i>	Kurnool, Krishna, Prakasam, Ananthapur	12.5	50	30%
<i>Gloriosa superba</i>	Visakhapatnam	25	60	30%
<i>Ocimum sanctum</i>	Prakasam, Nellore, Krishna	25	150	30%
<i>Piper longum</i>	Visakhapatnam	25	800	30%
<i>Rauwolfia serpentina</i>	Kurnool, Kadapa, Ananthapur	26.25	50	30%
<i>Withania somnifera</i>	Ananthapur, Kurnool	250	5000	30%
<i>Aloe vera</i>	Ananthapur, Kurnool	-	300	30%
<i>Bacopa monnieri</i>	West Godavari, East Godavari, Visakhapatnam	12.5	50	30%
<i>Centella asiatica</i>	West Godavari, East Godavari, Visakhapatnam	12.5	50	30%
<i>Phyllanthus emblica</i>	Ananthapur, Kurnool	25	125	30%
<i>Aegle marmelos</i>	Chittoor, Kadapa, Ananthapur	50	100	50%
<i>Azadirachta indica</i>	Ananthapur, Kurnool, Chittoor	25	150	30%
<i>Pterocarpus santalinus</i>	Chittoor, Kadapa, Ananthapur, Nellore, Kurnool	250	500	75%
<i>Santalum album</i>	Prakasam, Chittoor, Kurnool	250	500	75%
<i>Terminalia arjuna</i>	Prakasam, Krishna, Kurnool	42.5	50	30%
<i>Terminalia bellarica</i>	Kurnool, Kadapa, Chittoor	25	50	30%
<i>Terminalia chebula</i>	Kurnool, Kadapa, Chittoor	50	50	30%

Activities of Dr YSR Horticultural University

- For raising model nursery an amount of Rs 20 lakhs was sanctioned to Horticultural Research Station, Venkatramannagudem, Dr. YSR Horticultural University by APMPB during 2014-15, under which *Santalum album* – 100000, *Pterocarpus santalinus* 25000 and *Aloe vera* 3000 were raised during 2015-16.
- Funds were received for facilitation centre at Horticultural

Research Station, Venkatramannagudem, under which farmers training programmes were organized on medicinal plants cultivation at Paderu, Araku and Venkatramannagudem during 2015-16.

Market Information in Andhra Pradesh

The following crops are in trade with the mentioned firms/agents

Crops	Company / Person	Contact Number
Palmarosa, Citronella, Patchouli, Eucalyptus and Lemon grass	Arogya Trading Company, Satyendrakumar	9441200911
	Venkatapathi Aromatics, Guntur	9440248520
	SR Bio Nature, BangaruRaju, Tadepalligudem	-
Aromatic oils and Davanam crop	Yugandhar, Madanpalli,	-
All Medicinal and Aromatic crops	SR Bio, Gangaraju	9492352233
Gajapippali	Dabur Company, Rama Moorthy	9640211998
Neem leaf, Kalmegh, Cyprus roots and other medicinal crops	SrinivasRao, Nunna	9032065659
	Gangadhar Rao, Hyderabad	9392485187
All types of Medicinal plants based on market demand	Chemiloids, Venu Gopal, Vijayawada,	-
	Sri Sai Naturals, V. KoteswaraRao, Addanki, Prakasam district	9849079321
	Manyam Girijan Abhivrudhi Samstha, Sudhir, Rajamundry	9490303197
<i>Terminalia, Achyranthus, Kalmegh, Eclipta Phyllanthus</i> etc	Phani Kumar, Nunna	9440737556
<i>Piper longum</i> fruits and roots	NSR Herbals, Jagadish, Visakhapatnam	8332940440
All Medicinal Plants, and <i>Terminalia chebula</i>	Prasad, Peddapuram	9542917744
Aswagandha, Coleus	Sri Hanuman Enterprises, M. Narasimhulu Nayak, Tirupati	8501036207
	S. Ampaiah, Kurnool	9963368746
	M Gajendra, Nagari (M), Chittoor	8008500079
	J V Kondaiah, Ananthapur Dist	9441535325
	B Mohan, Guntakalu, Ananthapur Dist	8019377815
	Gajendra Reddy, Kurnool Dist	9533729953
Aloe vera	J.D Rangaswamy, Kurnool Dist	8978305978
	K Sivarami Reddy, Adoni, Kurnool Dist	7036308923
	Mahaveera Traders, E. Sanjeeva Goud, Kurnool	9441802051
Tulasi, Aloe vera, Aswagandha	E. Damodhar, Ananthapur Dist	9966645513
Tulasi, Aloe vera, Aswagandha, Coleus, Red Sanders	Vedamantra Ayur Hospital, Dr. S Sahithi, Vijayawada	8008998080
	Aparajitha Services, Vijayawada.	7730069678
Pippalli Modi	Naturo Tech pvt ltd, P. Madhava Reddy, Guntur	9866672765
	D Raju, Visakhapatnam Dist	7382303895
	Y Venkata Apparao, Paderu, Visakhapatnam	9492231277
	K Venkatarao, G Madugula (M), Visakhapatnam	9885291457
	Naga Sankar, G Madugula (M), Visakhapatnam	9491766696
	K Venkateswarao, Visakhapatnam	8326202262
Coleus, Pippalli Modi	K Devi Prasad, Visakhapatnam	9491572699
Aswagandha, Pippallu, Aloe vera	Aditya Herbal, No.20A, Durai swamy, Chennai	--
	Suresh Desh Pande, Patanjali group	8937000377

Limitations in cultivation and marketing of medicinal and aromatic plants

- Non availability of sufficient planting material that are in demand.
- No organized research setup for continuous recharge of scientific inputs to make their cultivation economically viable and more profitable.
- Lack of improved varieties planting material, extension literature, organized training, quality testing at procurement and trading centre's with unscrupulous market handling, fixation of quality standards at phyto pharmaceutical industry either for raw material or final product.
- Non availability of good agricultural practices for demand crops along with lack of technically skilled man power.
- Adulteration and substitution of drugs along with manipulations in quality.
- Lack of sufficient market potential, marketing channels, buy back guarantee for suitable drugs under GMP and good agricultural practices is not available sufficiently.

Improvement can be done by

- Reducing the number of intermediaries in the collection, distribution and marketing chain.
- Increasing the negotiation powers of the produces / collections
- Drastically increasing cultivable land under medicinal crops to ensure consistent supply of large quantities of produce.
- Improving the post collection handling, value addition and product presentation.
- Improving technologies for increasing the active ingredients composition and their estimation in medicinal plants.
- Encouraging investments on development of new technologies.
- Undertaking more in depth global overview of the demand and supply of medicinal and aromatic plants herbal products and herbal drugs.
- Increasing subsidy on medicinal plants for increasing their production and supply.
- Setting up export promotion zones exclusively for medicinal plants and herbal products in potential state like Andhra Pradesh.
- Ensuring the purity and safety against microbial contamination and quality deterioration during harvesting, drying and storage of medicinal plants by organizing training programmes to collectors, producers / farmers and middlemen.
- Providing linkage between growers and pharmaceutical companies to ensure marketability of raw drugs.
- Research on usage of organic and chemical fertilizers to medicinal plants and their impact on medicinal content should be studied for encouraging cultivation of these plant on large scale.

Conclusion

Since the medicinal plant industry is on the verge of entering into an escalating phase in the fields of pharmaceuticals, nutraceuticals and aroma therapy, the market potential has become extensive which needs continuous up gradation of botanical raw materials, creating competitiveness for the domestic industry apart from globalizing the international market. The global demand for more herbal ingredients creates possibilities for local cultivation of medicinal crops

apart from regular and sustainable harvest from wild stands. To meet this emerging demands worldwide knowledge regarding their cultivation, bringing new suitable areas under their cultivation, value addition, proper pre and post-harvest handling techniques, processing knowledge regarding adulterants and substitutions of crudes drugs, standardization techniques and quality control is highly essential.

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