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Medicinal and aromatic plants agro technologies developed by CSIR-central institute of medicinal and aromatic plants

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Abstract

CSIR-CIMAP Institute has developed Agro technologies, processes and products based on medicinal and aromatic plants. Many of these technologies have successfully been adopted by industries and farmers. This paper provides information on some of the Agro technologies developed by CSIR-CIMAP Institute on medicinal and aromatic plants.

Keywords: aromatic plants, Agro technologies, CSIR-CIMAP

Introduction

Central Institute of Medicinal and Aromatic Plants (www.cimap.res.in), popularly known as CIMAP, is a frontier plant research laboratory of Council of Scientific and Industrial Research (CSIR). Established originally as Central Indian Medicinal Plants Organization (CIMPO) in 1959, CIMAP is steering multidisciplinary high quality research in biological and chemical sciences and extending technologies and services to the farmers and entrepreneurs of medicinal and aromatic plants (MAPs) with its research headquarter at Lucknow and Research Centers at Bangalore, Hyderabad, Pantnagar and Purara. CIMAP Research Centers are aptly situated in different agro-climatic zones of the country to facilitate multi-location field trials and research. CIMAP's contribution to the Indian economy through its MAPs research is well known. CIMAP has released several varieties of the MAPs, their complete agro-technology and post-harvest packages which have revolutionized MAPs cultivation and business scenario of the country.

Role of CSIR-CIMAP Research Center developed in Agro technologies of MAP's

- 1. Bangalore:** The CIMAP Research Center at Bangalore (South Zonal Centre) was established in the year 1959. Since its inception, the center has been working as a CIMAP Field Station on diverse aspects of Medicinal and Aromatic Plants (MAPs), from agronomy to breeding to photochemistry, with the sole focus on farmers and the MAPs user industries in the states of Karnataka, Tamil Nadu and Kerala. The CIMAP Research Center, Bangalore has been in the forefront in developing in farmer-friendly, eco-friendly, sustainable agro technologies for economically important MAPs.
- 2. Hyderabad:** The Hyderabad Research Centre was established in July 1982 on 12-hectare area as the regional node of Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow for showcasing and promoting CIMAP's green technologies in Deccan Plateau. The Centre has been in the forefront in developing farmer-friendly, sustainable, production-distillation technologies and high yielding varieties of economically important medicinal and aromatic plants (MAPs) with export potential under resource constraint conditions for transforming wastelands and dry lands into eco-friendly, profitable green herbal farms. The Centre has developed agro-technologies under irrigated and rainfed conditions for aromatic grasses, rose-scented geranium, menthol mint, lemon-scented gum, basil, jamrosa, davana and medicinal crops like winter cherry, Chlorophytum, periwinkle, king of bitters, ambrette and itching bean. Among these, king of bitters, periwinkle, winter cherry, palmarosa, lemon-scented gum and lemongrass are amenable for rainfed cultivation.

The R&D endeavors coupled with extension activities of the Centre led to large-scale cultivation of MAPs. In Andhra Pradesh, >5000 farmers are cultivating >9500 hectares using CIMAP's varieties and technologies. Due to the initiative taken by the

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Centre, tribal farmers of East Godavari and Visakhapatnam districts are cultivating citronella, lemongrass, yarrow root and long pepper under rainfed condition. Small and marginal farmers of drought prone Anantapur district are cultivating winter cherry under rainfed condition partially replacing traditional groundnut that has become less remunerative. The Centre has established market linkages to these farmers. Owing to availability of quality herbals, the Centre encouraged entrepreneurs to launch herbal extraction units, marketing agencies, distillation unit manufacturing companies leading to business expansion and employment generation in the region. The Centre is helping schools and colleges to establish herbal gardens and is creating awareness in general public concerning the importance of medicinal plants and the necessity to conserve them for posterity. The awareness created by the Centre led to starting of courses on MAPs in the local universities and Greater Hyderabad Municipal Corporation established Botanical garden with medicinal and aromatic plants recently.

- Pantnagar:** The CIMAP Research Centre, Pantnagar was set up in February 1963 in the name of Northern Zonal Centre of Central Indian Medicinal Plants Organization (CIMPO) at Haldwani with a farm of 50 acres in Tarai region of Nainital and extended to 286 acres by 1967. The established infrastructures like distillation units, boiler, agricultural implements etc. are another advantage to run the center effectively. Genetic improvement of MAPs especially mints, aromatic grasses, satawar, clarysage, silybum rose, kalmegh etc., agro technological experiments; large scale production of Quality Planting Materials (QPMs); essential oil analysis; germplasm collection and introduction are the major activities of the center. Besides these, promotion of MAPs cultivation in Uttarakhand, adjoining areas of Uttar Pradesh, Bihar and other parts of country through training and demonstration programme; development of post-harvest technologies of MAPs.; establishing Bio village programmes for various crops and transfer of improved agro-technologies of MAP to the farmers and industries are some other activities of the center.
- Purara:** CIMAP RC Purara, the youngest centre of CIMAP, situated on the laps of Western Himalayas was established in 1995 in an area of 10 ha. It is located in

Katyur valley of Bageshwar district of Uttarakhand. Centre Activities are collection, conservation, domestication and characterization of MAPs of Uttarakhand, R&D programme for agro technology development for hill region, especially Uttarakhand, Integrated soil fertility management in MAPs, Training, awareness, skill up gradation and field demonstrations for the farmers, SHGs, NGOs, State govt. and entrepreneurs, rural development by promoting medicinal and aromatic crop cultivation and technology dissemination through training and capability building, quality analysis of essential oils, industrial scale distillation of aromatic crops, field survey for cultivation of MAPs and feasibility studies and multiplication of elite plant propogules of medicinal and aromatic plants.

Agro technologies developed by CSIR-CIMAP for value addition of medicinal and aromatic plants

- Agro technologies and processing technologies:** High yielding varieties of medicinal and aromatic plants; Agro technologies for medicinal and aromatic plants; Distillation and rectification technologies for aromatic plants; Aroma chemicals extraction technologies; Extraction technologies for medicinal plants; Books, Periodicals publication; Services to farmers, entrepreneurs and industry on all aspects of medicinal and aromatic plants. Farm bulletins on various economically important MACs (e.g. Mint, Lemongrass, Palmarosa, Geranium, Withania, Artemisia, etc.) in Hindi, English and regional languages, Training manuals - 'Aus Saathi' and 'MAPs Companion', Crop calendars, a composite research journal 'Journal of Medicinal and Aromatic Plants Sciences (JMAPS)' covering research papers, and trade related information on MACs are published by CIMAP.

CSIR-CIMAP has been dedicatedly working towards improving the utilization of the medicinal and aromatic plant resources. The varieties developed by CSIR-CIMAP have been used by the Indian farmers and entrepreneurs in good measure as evident by the increasing acceptability of the produce in the world market. The present database documents more than 100 varieties of medicinal and aromatic plants that have been developed by CSIR-CIMAP based on the demand of the industry and years of research and field trials.

Table 1: Cultivated Varieties of MAPs developed by CSIR-CIMAP.

Botanical Name	Common Name	Variety
<i>Acorus calamus</i>	Sweet flag	CIM-Balya
<i>Aloe vera</i>	Aloe	Sheetal
<i>Andrographis paniculata</i>	Kalmegh	Megha
<i>Artemisia annua</i>	Wormwood	CIM-Arogya, Jeevanraksha
<i>Asparagus racemosus</i>	Satavari	Shakti
<i>Bacopa monnieri</i>	Bramhi	Jagriti, Pragyashakti
<i>Cassia senna/angustifolia</i>	Senna	CIM-Sona
<i>Chamomila recutita</i>	Chamomile	CIM-Sammohak, Prashant, Vallary
<i>Chlorophytum borivilianum</i>	Safed musli	CIM-Oj
<i>Chrysanthemum cinerariaefolium</i>	Pyrethrum	Avadh
<i>Curcuma longa</i>	Turmeric	CIM-Pitamber
<i>Cymbopogon flexuosus</i>	Lemon grass	Pragti, Krishna, Praman, Chirharit, Nima, Suwarna, Cauvery, T-1, GRL-1
<i>Cymbopogon martini</i>	Palmarosa	PRC-1, Trishna, Tripta, CIM-Harsh, Vaisnavi
<i>Cymbopogon winterianus</i>	Citronella	CIM-Jeeva, CIM-Bio13, Manjusha, Manjari, Mandagini, Jalpallavi
<i>Foeniculum vulgare</i>	Fennel	CIM-Sujal
<i>Hyoscyamus niger</i>	Black Henbane	Aela, Aekala

<i>Lippia alba</i>	Bushy matgrass	Kavach
<i>Mentha arvensis</i>	Menthol mint	Kranti, Kushal, Kalka, Kosi, Himalaya, Gomti, CIM-Saryu, Saksham, Sambhav, Damroo, MAS-1
<i>Mentha citrata</i>	Bergot mint	Kiran
<i>Mentha piperita</i>	Peppermint	CIM-Indus, Madhuras, Pranjal, Tushar, Kukrail
<i>Mentha spicata</i>	Spearmint	Neerkalka, Neera, Arka, MSS-5
<i>Mucuna pruriens</i>	Velvet bean	CIM-Ajar
<i>Ocimum africanum</i>	Lemon-scented basil	CIM-Jyoti
<i>Ocimum basilicum</i>	French/Indian basil	Kushmohak, Vikarsudha, Saumya, Sharada
<i>Ocimum tenuiflorum</i>	Holy/sacred basil	CIM-Ayu, CIM-Kanchan, CIM-Angana
<i>Papaver somniferum</i>	Opium poppy	Ajay, Sampada, Rakshit, Sanchita, Sapna, Shyama, Shweta, Sujata, Shubhra, Vivek
<i>Pelargonium graveolens</i>	Geranium	CIM-BIO 171, CIM-Pawan
<i>Phyllanthus amarus</i>	Carry me seed	Jeevan, Navyakrit, Kayakirti
<i>Plantago ovata</i>	Psyllium	Mayuri, Nimisha, Niharika
<i>Pogestemon patchouli</i>	Patchouli	CIM-Samarth
<i>Rauvolfia serpentina</i>	Sarpagandha	RS-1, CIM-Sheel
<i>Rosa damascena</i>	Damask Rose	Noorjahan, Ranisahiba
<i>Rosmarinus officinalis</i>	Rosemary	CIM-Hariyali
<i>Salvia sclarea</i>	Clarysage	CIM-Chandni
<i>Silybum marianum</i>	Milk Thistle	CIM-Liv, CIMAP-Sil 9
<i>Stevia rebaudiana</i>	Sweet herb	CIM-Mithi, CIM-Madhu
<i>Tagetes minuta</i>	Little marigold	Vanphool
<i>Vetiveria zizanioides</i>	Vetiver/Khus	CIM- Samriddhi, KS-1, KS-2, Dharani, Gulabi, Kesari, CIM-vridhi, CIM-Khus15, CIM-Khus22
<i>Withania somnifera</i>	Ashwagandha	Poshita, Rakshita, NMITLI-118, Chetak, Pratap

(Source: Improved Varieties Portal of MAP's: Director; CSIR-CIMAP's Contribution.)

- Technologies, processes, products:** Bio-enhancers: lysergol (*Ipomoea muricata*), glycyrrizin (*Glycyrrhiza glabra*), niaziridin; Antifungals; Anti-bacterials: oenostacin (*Oenothera biennis*), thymol (*Trachyspermum ammi*); Anticancer: docetaxel (*taxotere*) (*Taxus wallichiana*), camptothecin (*Mappia foetida*); Hepato-protective: silymarin (*Silybum marianum*), Cliv-92 (*Cleome viscosa*); Andrographolides (*Andrographis paniculata*).
- Herbal products:** Cracknil (anti-crack cream); Mosrep (mosquito repellent agarbatties); Mospray (mosquito repellent spray); Mosaway (mosquito repellent cream); Mosex (mosquito repellent lotion); Mosnobite (mosquito repellent vaporizer); Pain chhoo (pain balm for headache & sprain); Swabee (surface disinfectant); Hankool (hand disinfectant); Skinpro (antifungal cream); Myconil (antifungal cream); Herbal tooth powder (for plaque & gingivitis); Kleenzie (Hand & face wash with Aloe vera); Rose water; Essential oil kit (Organic); CIM-Phalse (nutraceutical); Herbisoft and Geranium Active (Shampoos); CIM-Poshak; Haloe skin.

Conclusion

Technologies, processes and products based on natural raw materials like medicinal and aromatic plants developed by CSIR-CIMAP institute are listed. This is not an exhaustive and complete list of the CSIR-CIMAP and Research Centers. Interested persons are advised to contact respective directors or the technology and business development cell of the institute to get complete details and procedures for technology transfer. While conserving the plant genetic resources systematically and undertaking world class research work in plant science, CSIR-CIMAP is equipping the nation with high-tech agriculture linked to industrial processing of MAPs. The R and D efforts of CSIR-CIMAP Institute continues with renewed vigor in the light of the global interest on medicinal and aromatic plants based technologies and products. CSIR-CIMAP endeavors to develop cutting edge technologies to

make India a global leader.

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References

1. www.cimap.res.in