

### Crops under AICRP-MAP&B

- Aloe (*Aloe barbadensis*)
- Arjun (*Terminalia arjuna*)
- Asalio (*Lepidium sativum*)
- Ashwagandha (*Withania somnifera*)
- Ashoka (*Saraca asoca*)
- Atis (*Aconitum heterophyllum*)
- Babchi (*Psoralea corylifolia*)
- Bala (*Sida cordifolia*)
- Ban kakri (*Podophyllum hexandrum*)
- Betelvine (*Piper betle*)
- Bhui Amlaki (*Phyllanthus amarus*)
- Brahmi (*Bacopa monnieri*)
- Chirayita (*Swertia chirayita*)
- Coptis (*Coptis teeta*)
- Dodi (*Leptadenia reticulata*)
- Coleus (*Coleus forskohli*)
- Giloe (*Tinospora cordifolia*)
- Hypericum (*Hypericum perforatum*)
- Indian Valerian (*Valeriana jatamansi*)
- Isabgol (*Plantago ovata*)
- Kalmegh (*Andrographis paniculata*)
- Kawach (*Mucuna pruriens*)
- Kutki (*Picrorrhiza kurroa*)
- Lal Chitrak (*Plumbago rosea*)
- Lemongrass (*Cymbopogon flexuosus*)
- Long pepper (*Piper longum*)
- Madhunashini (*Gymnema sylvestre*)
- Makoi (*Solanum nigrum*)
- Mandukaparni (*Centella asiatica*)
- Opium poppy (*Papaver somniferum*)
- Palmarosa (*Cymbopogon martinii*)
- Safed musli (*Chlorophytum borivilianum*)
- Shankhpushpi (*Convolvulus microphyllus*)
- Shatavari (*Asparagus racemosus*)
- Senna (*Cassia angustifolia*)
- Vach (*Acorus calamus*)
- Tulsi (*Ocimum sanctum*)

### Salient Achievements

1. The effort on collection, conservation, evaluation and documentation of germplasm of medicinal and aromatic plants is a continuous process. At present, more than 2450 accessions of 43 MAP species are conserved in field gene bank of the Directorate and its AICRP centers. Further, 276 accessions of Betelvine (*Piper betle*) are also being maintained.
2. The ICAR-DMAPR has released two varieties viz. Vallabh Medha in Mandhukparni (*Centella asiatica*) and Vallabh Isabgol-1 in Isabgol (*Plantago ovata*).
3. Two process patents have been filed: (i) "Method of preparing aloin" in 2008 which is a new aloin extraction method for preparation of pure aloin from Aloe (*Aloe barbadensis*). (ii) "Improved gum tapping in Guggal" in 2009 which is a process of gum tapping by using a bacteria which has not only improved the gum yield per plant but also improved the efficiency of tapping at will at any period of the year.
4. The ICAR-DMAPR has established a Medicinal Plant Botanical Garden in an area of about 21 ha which maintains 426 species (111 tree species, 65 shrubs, and 250 herbs). Botanical garden is a member of Botanical Gardens Conservation International (BGCI), UK.
5. Sixteen elite germplasm viz, two each in *Chlorophytum borivilianum* (INGR 04114 and INGR 04113), *Plantago ovata* (INGR 08104 and INGR 14010), *Withania somnifera* (INGR 11026 and INGR 13047), *Commiphora wightii* (INGR 13044 and INGR 13045) and *Andrographis paniculata* (INGR 07041 and INGR 13042) three in *Aloe barbadensis* (INGR 06023, INGR 06024 and INGR 13043) and one each in *Tinospora cordifolia* (INGR 06025), *Centella asiatica* (INGR 08105) and *Gymnema sylvestre* (INGR 13041) have been developed and registered with NBPGR, New Delhi.
6. A good agricultural and collection practices (GACP) training toolkit for medicinal plants have been developed in collaboration with

Food and Agriculture Organization (FAO) which comprises of a) Trainer's Manual, b) GACP video, (c) Illustrated cause effect training tool and (d) Illustrated booklet for the benefit of quality assurance of raw drug.

7. Good Agricultural Practices (GAP) for six medicinal and aromatic plants have been developed and further being refined. Further, work on developing GAP in other medicinal and aromatic plants are in progress.
8. Protocols for extraction and estimation of active principle components from various MAPs have been standardized. Morphological and biochemical characterization and chemical finger printing have also been done for some species.

### Contact us

The Director

ICAR-Directorate of Medicinal and Aromatic Plants Research  
Boriavi - 387 310, Anand, Gujarat, India

Ph: 91 2692 271602 ♦ Fax: 91 2692 271601 ♦ EPABX: 91 2692 271605, 91 2692 271606  
Email: [director.dmapr@icar.gov.in](mailto:director.dmapr@icar.gov.in) ♦ Website: [www.dmapr.org.in](http://www.dmapr.org.in)



Compiled by Dr. R. Nagaraja Reddy, Dr. R. S. Jat & Dr. P. Manivel  
Published by: Director, ICAR-DMAPR, Anand

anandpress@gmail.com



## ICAR - DMAPR

*at a glance*

ICAR-DIRECTORATE OF MEDICINAL AND AROMATIC PLANTS RESEARCH  
BORI AVI, ANAND, GUJARAT  
(INDIAN COUNCIL OF AGRICULTURAL RESEARCH)  
ISO 9001: 2008 CERTIFIED INSTITUTE

## Genesis

The Indian Council of Agricultural Research (ICAR), New Delhi established a National Research Centre for Medicinal and Aromatic Plants (NRCMAP) in 1992 on a 20.2 hectare irrigated land at Boriavi, Anand, Gujarat with a well defined mandate to work on medicinal and aromatic crops. The NRCMAP has been rechristened as the Directorate of Medicinal and Aromatic Plants Research (ICAR-DMAPR) in the year 2009.

## Location

ICAR-DMAPR is located on Ahmedabad-Mumbai rail and road route. The centre is 7 km away from Anand Railway station on Anand-Ahmedabad state highway via Nadiad. Anand is well connected to all parts of the country by road, rail and Air. The nearby airports are at Vadodara (45 km) and Ahmedabad (65 km).

## Vision

Provide "Health for all" to ever-increasing world population through ensuring quality raw drug production and supply.

## Mission

To contribute for sustainable production of quality medicinal and aromatic plants (MAPs) through development of new varieties, good agricultural practices, quality assessment methodologies and standard products using frontier cutting age technologies such as IT and Biotechnology.

## Mandate

- Germplasm enhancement of various MAPs.
- To act as a National Repository of the genetic resources of selected important MAPs.
- Development of appropriate production, protection and processing technologies for important MAPs through basic, strategic and applied research.

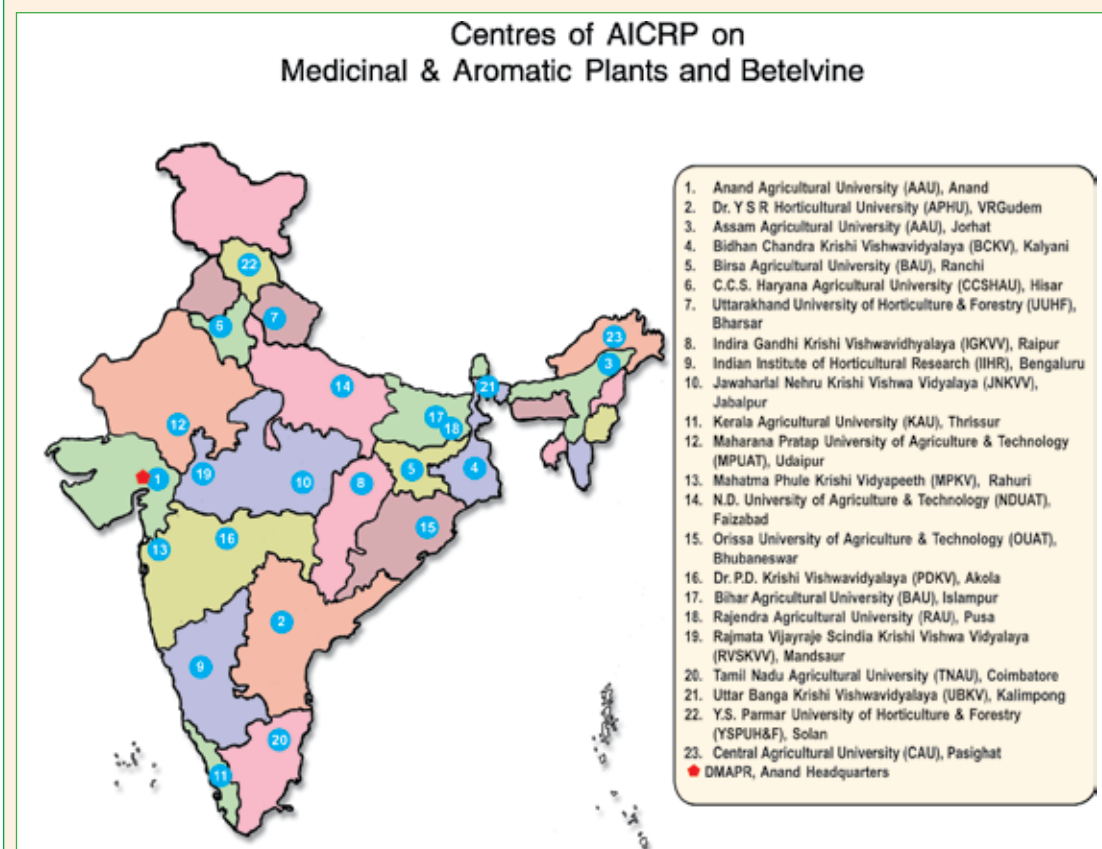
- To act as information data bank on MAP.
- Transfer of technologies developed by the ICAR-DMAPR for the farmers through cooperation with the developmental agencies.
- To coordinate research under the All India Coordinated Research Project on Medicinal & Aromatic Plants and Betelvine (AICRP-MAP&B).

## Focus

- To identify plants which need attention of agricultural scientists and to collect, maintain and evaluate the identified plants and develop improved varieties.
- Conservation of MAP in field gene bank and their utilization.
- To carry out those basic and applied researches on the chosen crops, which are useful to develop their Good Agricultural Practices (GAP).
- To develop various quality testing parameters (Physical, chemical and molecular) of raw drugs.
- To develop various certification parameters for issuing certificates such as Non-GMO, GACP, quality planting material, quality parameters, microbial load, pesticide residue and phytotoxin as well as heavy metal free produce.
- To provide quality planting material and technical know-how to different MAP stakeholders.
- To develop partnership between the Directorate, with NGOs and farmers' associations/progressive farmers interested in promoting the use of herbal medicines.
- To coordinate the research activities of the AICRP centres on Medicinal & Aromatic Plants and Betelvine (AICRP-MAPB) located in various agro-climatic zones of India.

## Outreach Programme

AICRP-MAPB is also located at ICAR-DMAPR and the Director, ICAR-DMAPR is responsible for coordination and monitoring of research work of the project as Project Co-ordinator. There are 23 centres in State Agricultural Universities and one center at ICAR-IIHR, Bangalore under ICAR.



## Facilities

### Special Equipments:

1. GLC
2. HPLC
3. Densitometer with scanner & recorder
4. Freeze dryer
5. Flow injection nitrogen analyzer
6. Plant growth chamber
7. Semi Preparative HPLC with accessories
8. UV-VIS Spectrophotometer
9. Karyotype analyzer
10. HPTLC
11. Portable photosynthesis system
12. Water potential meter
13. LC-MS
14. GC-MS
15. Thermo cycler

16. Inverted microscope
17. IR spectra photometer
18. FTIR spectra photometer
19. Super critical fluid extraction unit
20. Atomic absorption spectrophotometer

### Seminar Hall:

ICAR-DMAPR is having 100 sitting capacity of Seminar Hall, besides a conference hall with 25 seating capacity.

### Guest House:

The Guest House comprise of 2 VIP suits, 8 air-conditioned double bed rooms, One air-conditioned Dormitory with nine beds, a non AC Driver's room, a well- equipped Dining Hall & a Kitchen.

## Services

### Consultancy and Contract research:

Consultancy on production of quality medicinal and aromatic plants, technologies/ processes for extraction of bioactive principles, innovative formulations of different bioactive natural products and other aspects related to MAPs.

### Contract services:

Contract services such as testing of chemicals/ products, soil test, plant analysis etc.

### Library:

Well established library with international and national journals, books and proceedings.

### Training:

ICAR-DMAPR conducts training to farmers, students and other stakeholders on need and demand basis on various aspects of MAPs.

## Databases:

1. Digital herbarium of medicinal and aromatic plants in India ([www.dmapr.org.in:8080/dhmap/Home.jsp](http://www.dmapr.org.in:8080/dhmap/Home.jsp))
2. Networking of herbal gardens for quality planting material supply in India ([www.herbalgardenindia.org](http://www.herbalgardenindia.org))

### Professional society:

Medicinal and aromatic plants association of India (MAPAI) has headquarters at ICAR-DMAPR, Anand. The Director, ICAR-DMAPR is the President of MAPAI. MAPAI conducts seminars/conferences in emerging areas of MAPs. It also publishes an Open Access Journal of Medicinal and Aromatic Plants (OAJMAP) (<http://epubs.icar.org.in/ejournal/index.php/JMAP>)

## Mandate Crops - ICAR - DMAPR



Aloe (*Aloe barbadensis*)



Ashwagandha (*Withania somnifera*)



Gilo (*Tinospora cordifolia*)



Guggal (*Commiphora wightii*)



Isabgol (*Plantago ovata*)



Safed musli (*Chlorophytum borivilianum*)



Senna (*Cassia angustifolia*)



Lemongrass (*Cymbopogon flexuosus*)



Palmarosa (*Cymbopogon martini*)