India constitutes rich store house of Medicinal and Aromatic Plants on which the Indian System of Medicine is based and used since ancient times. Despite phenomenal development of the synthetic drug industry, medicinal plants still continue as an important and cheap source of medicine to half of the population in India. The Indian Council of Agricultural Research has established a National Research Centre for Medicinal and Aromatic Plants to strengthen the research base in increasing production and productivity of important medicinal and aromatic crops and also to fill the gap between demand and supply.

I am extremely happy to note that the National Research Centre for Medicinal and Aromatic Plants, Anand, is bringing out the first issue of NRCMAP Newsletter. I am sure, the technologies developed by the Centre would help us in achieving our coveted goal in medicinal and aromatic plants. I hope that this Newsletter will establish a strong information exchange linkage between different agencies involved in medicinal and aromatic plants research and development in the country. I wish this endeavour all the success.

Dr. S. P. GHOSH
Dy. Director General
(Horticulture)

The National Research Centre for Medicinal and Aromatic Plants was established in November, 1992 to develop new high yielding varieties, production technologies and basic information on various medicinal and aromatic crops for their successful cultivation to cater the need of ever increasing demand in this sector. A good number of improved varieties and production technologies have been developed through various research centres under All India Coordinated Research Project on Medicinal & Aromatic Plants. To popularise the cultivation of Medicinal and Aromatic Plants it was strongly felt that a disseminating medium in the form of a newsletter exclusively for Medicinal & Aromatic Plants is needed. Quinquennial Review Team of the AICRP on Medicinal and Aromatic Plants also recommended for publication of such a Newsletter.

I am happy to note that the Director, NRC for Medicinal & Aromatic Plants has taken initiative in bringing out first issue of the Newsletter shortly. I hope that Newsletter will serve the purpose for which it is intended.

I wish all success to this Newsletter.
EDITORIAL

Inspite of a number of innovations in modern medicine and in medical science, availability of the modern medical treatment to a vast majority of people remained as a dream because of its high cost and non availability at door step. About 80% of world population depend upon traditional system of medicine to meet their primary health care needs which is largely plant based. The Indian System of Medicine, among the all traditional systems of medicines and Homoeopathy are considered as holistic system, safe and cost effective and most important of these is having either negligible or no side effects. The 80% of the raw material of these systems comes from the medicinal plants. The effectiveness of these systems thus mainly depends upon the use and availability of genuine and quality raw plant material. Not only that, today a number of modern drug preparations utilised medicinal plants as raw material. Also there is a new trend of use of herbal medicines due to craze for natural products. The demand for natural product based medicinal health care, cosmetics, pharmaceuticals, food supplements etc. in the international and domestic market are increasing steeply. Therefore, pressure on availability of medicinal plant material has created unscrupulous collection of medicinal plants thereby creating threats to the survival of some of the species in nature.

According to report of Export Import Bank of India (1997), the value of medicinal plants related trade in India is in the order of Rs. 5.5 billion US dollars and is growing rapidly. Under these circumstances at present medicinal plants are looked upon not only as a source of affordable health care but also as a source of income. The Indian farmers are now looking forward to grow medicinal and aromatic plants to supply quality raw material to the industry to fill up the gap between demand and supply and also as source of extra income.

The Indian Council of Agricultural Research through its establishment of NRC for Medicinal and Aromatic Plants at Anand and the All India Coordinated Research Project on Medicinal & Aromatic Plants as its outfit has created infrastructure for research on medicinal and aromatic plants. Efforts are now being put to bring more and more number of medicinal and aromatic plants under cultivations by the development of cultivation package of practices and through varietal improvement. As a result, package of practices for a large number medicinal (13) and aromatic (16) plants have been developed. About 31 varieties have been released, out of which 24 are medicinal plants belonging to 13 species and 7 aromatic plants belong to 6 species.

Recently a NATP project in mission mode has been started on conservation of agro-biodiversity. Medicinal and aromatic plants constitute a major part of its targeted species for collection, conservation and evaluation of genetic diversity available in the country.

The Government of India is equally concerned about this area and is in the process of creating a national level nodal institution which can take up issues related to cultivation, conservation, trade, manufacturing, exports, etc. of medicinal and aromatic plants by creating a national level board for medicinal and aromatic plants.

I wish to remember here that on the first day of Independence Pandit Jawaharlal Nehru while addressing the nation said, “it means the ending of poverty and ignorance and disease and inequality of opportunity”. If we have to fulfill these dreams we need to grow more medicinal plants for ending of diseases. Let’s join our hands to fulfill this dream by growing more quality medicinal plants.

Jai Hind !!

Satyabrata Maiti
An **In house Brain Storming Discussion on Future Research Requirements on Medicinal & Aromatic Plants** was organized by NRCP at Gujarat Agricultural University, Anand during May 31-June 1, 1999. The Group Discussion was inaugurated by Dr. S.P. Ghosh, DDG (Hort.), ICAR and was attended by about 39 Scientists representing ICAR, SAUs, NGOs and Private Sector Enterprises.

The prime objective of the discussion was to reorient the research activities of AICRP on Medicinal and Aromatic Plants in the light of ever increasing demand of medicinal plants. The stalwarts of medicinal plants research in India like Dr. Akhtar Husain, Dr. Rajendra Gupta, Dr. K.C. Dalal, beside Dr. S.P. Ghosh, DDG (Hort.), ICAR and Dr. R.N. Pal, ADG (PC), ICAR participated in the discussion.

The important issues were discussed in three separate technical sessions. In Session I, QRT Recommendations on AICRP M&AP were discussed which was chaired by Dr. S.P. Ghosh. Beside fixing time targets for cataloguing of medicinal and aromatic plants it also discussed about modalities of publication of a book/bulletin based on the three decades of works in AICRP M&AP.

In second technical session, future action plan of AICRP M&AP was reified by the chairman, Dr. Rajendra Gupta. After thorough discussion, 13 crops were identified as mandatory for AICRP M&AP centres. Emphasis was given on identification of new areas and criteria for collection and selection. Basic works like development of male sterile lines, package of practices for Aswagandha hybrids and creation of variability in Glycyrhiza were discussed. Cropwise technical programme of AICRP M&AP for 1998-2000 was modified and approved by the house after discussion at length.

The third technical session on Biodiversity Conservation of M&AP was chaired by Dr. Akhtar Husain. A work plan for collection and conservation of biodiversity of 56 species of medicinal and aromatic plants were discussed and finalized.

The 2-day brain storming discussion ended with vote of thanks proposed by Dr. Satyabrata Mali, Director & PC (M&AP).

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**New Initiatives**

**Field Gene Bank of Endangered Medicinal Plants created**

A field Gene Bank of endangered medicinal plants of tropical and subtropical region has been established at the NRCP. There are eight species conserved in the repository. The main objectives of field gene bank is conservation of endangered medicinal plants species for future generations. Species maintained in the Gene Bank are *Acorus calamus*, *Artemisia pallens*, *Celastrus paniculatus*, *Commiphora wightii*, *Chlorophyllum borivilianum*, *Gloriosa superba*, *Pterocarpus santalinus*, *Rauwolfia serpentina* and *Saraca asoca*.

**Domestication of threatened species**

*Gentiana kurroo* (Indian Gentian), commonly known as *kuru* or *kutiki*, occurs as a perennial herbs in the Himalayan region of India at an altitude of 1500-3000 m. The dried rhizomes and roots of this species are used as a substitute for true gentian. In Indian system of medicine it is widely used as a bitter to stimulate gastric secretions, to cure debility and in cases of liver and urinary complaints. Presently, it is not being cultivated in India.

For the last few years, AICRP M&AP, Solan centre has successfully domesticated and standardized propagation techniques for large scale cultivation. Ten germplasms have been collected from Solan and Sirmour districts of
Himachal Pradesh and were evaluated for their growth and yield characteristics and analysed for bitter contents in the laboratory. Kanjiyar Dhar collection has been identified as highest yielding which gives about 5 q/ha fresh leaf and 4 q/ha fresh root yield. It has also high bitter content of about 0.20 per cent in leaves and 0.0018 per cent in roots. About 2000 plants through seeds have been raised and are ready for future planting.

**Break Throughs & Research Highlights**

**New Propagation Techniques**

*Commiphora wightii* (Guggal) is one of the endangered medicinal plants of desert ecosystem. A very easy and effective "air-layering" technique has been developed and demonstrated by GAU, Anand centre of the AICRP on Medicinal and Aromatic Plants. Scientists of NRC for Medicinal and Aromatic Plants also have developed a simple hard wood cutting technique. Pencil thick 20-30 cm long stem cuttings were dipped in IBA 100 ppm solutions for 12-14h before planting in raised beds. The rooting and new flush of leaves were observed after 7-10 days of planting.

![Rooted hard wood cuttings of Guggal](image)

**New Varieties**

*Viswam* - a high yielding variety of long pepper (*Piper longum*) has been developed by KAU, Trichur centre through clonal selection which is suited for cultivation in irrigated coconut gardens. The yield potential of this new variety is 650-700 kg dry spikes/year/ha from the 3rd year crop. It needs replanting only after 7-8 years. Rooted cuttings of ‘Viswam’ are distributed from Trichur centre at a cost of Rs. 1 per rooted cutting in polybag.

A new variety of *Asalio* (*Lepidium sativum*), also known as garden cress has been developed by GAU, Anand which has been notified by the state variety release committee on April 26, 1999. This new variety yields about 1400 kg/ha seed which is about 20% higher than the local check variety.

**Availability of Planting Material**

NRCMAP can provide propagation material of the following medicinal and aromatic plants on demand:

<table>
<thead>
<tr>
<th>Plant</th>
<th>Scientific Name</th>
<th>Planting Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aloe</td>
<td><em>Aloe barbadensis</em></td>
<td>Suckers</td>
</tr>
<tr>
<td>Asalio</td>
<td><em>Lepidium sativum</em></td>
<td>Seeds</td>
</tr>
<tr>
<td>Aswagandha</td>
<td><em>Withania somnifera</em></td>
<td>Seeds</td>
</tr>
<tr>
<td>Guggal</td>
<td><em>Commiphora wightii</em></td>
<td>Rooted cuttings and seedlings</td>
</tr>
<tr>
<td>Isabgol</td>
<td><em>Plantago ovata</em></td>
<td>Seeds</td>
</tr>
<tr>
<td>Kalmegh</td>
<td><em>Andrographis paniculata</em></td>
<td>Seeds and seedlings</td>
</tr>
<tr>
<td>Lemongrass</td>
<td><em>Cymbopogon flexuosus</em></td>
<td>Slips</td>
</tr>
<tr>
<td>Palmarosa</td>
<td><em>Cymbopogon martini</em></td>
<td>Seeds and seedlings</td>
</tr>
<tr>
<td>Senna</td>
<td><em>Cassia angustifolia</em></td>
<td>Seeds</td>
</tr>
</tbody>
</table>
From the Institute

Institute Management Committee

The second Institute Management Committee meeting was held on March 30, 1999 under the chairmanship of Dr. Satyabrata Maity, Director, NRCMAP. Dr. R.N. Pal, ADG (PC), ICAR, Dr. K.M. Patel, Principal, Municipality Arts and V.B. Science College, Mehsana, Sri J.N. Chaturvedi, Agriculture Officer from Directorate of Horticulture, Jaipur, Dr. G.C. Jadeja, Professor, GAU, Anand, Dr. P.P. Joshi, Sr. Scientist (Org. Chem.), NRCMAP, Dr. Ajay, Scientist, (Pl. Physiology), NRCMAP, Dr. Dinesh Kumar, Scientist (Horticulture), NRCMAP, Sri VS. Parmar, Asstt. Admn. Officer, NRCMAP were present as members. The committee discussed about various activities of the institute and suggested means for speedy development.

Staff Research Committee (SRC)

The first SRC of NRCMAP was held on June 2, 1999. Dr. Satyabrata Maity, Director, NRCMAP chaired the meeting and Dr. R.N. Pal, ADG(PC) was the observer. Ten research projects were discussed and finalised covering Plant Genetic Resources (1), Crop Production (4), Crop Improvement (1), Crop Protection (1) and Organic Chemistry & Plant Physiology (3) aspects of the mandate. These projects would mainly concentrate on five medicinal and two aromatic crops.

Our New Colleagues

- Dr. Satyabrata Maity, Director & Project Coordinator joined on February 4, 1999.
- Dr. Ram Chandra, Sr. Scientist (Horticulture) joined on March 3, 1999.

Promotion

The following staff members were promoted. Congratulations to all!

- Mrs. D.R. Chellani, T-II-3 to T-4
- Miss P.U. Pandit, T-II-3 to T-4
- Mr. Shyamji Shukla, Jr. Clerk to Sr. Clerk
- Mr. M.A. Saiyad, S.S. Gr. I to S.S. Gr.II
- Mr. V.P. Rohit, S.S. Gr. I to S.S. Gr.II

Distinguished Visitors

- Dr. G.B. Ratnuri, Head, Central Horticultural Experiment Station, Godhra on February 4, 1999
- Prof. B.S. Chundawat, Dean of Horticulture, Gujarat Agricultural University, Navsari on March 19, 1999
- Dr. R.N. Pal, Assistant Director General (Plantation Crops), ICAR on March 30, 1999, May 31, 1999 and June 2, 1999
- Dr. D.N. Singh, Ministry of Agriculture, New Delhi on May 7, 1999
- Dr. A. Bandopadhyay, Director, National Research Centre for Groundnut, Junagad on April 14, 1999
- Dr. S.P. Ghosh, Dy. Director General (Horticulture), ICAR on May 31, 1999
- Dr. Akhtar Husain, Former Director, Central Institute of Medicinal and Aromatic Plants, Lucknow on May 31, 1999

Human Resource Development

| Mr. Kunal Mandal, Scientist (Plant Pathology) | 66th FOCARS Training at NAARM, Hyderabad | January 6 to May 5, 1999 |
| Dr. B.K. Jha, Scientist (Horticulture) | Computer and graphical assisted multivariate data analysis held at IASRI, New Delhi | March 8-20, 1999 |
| Dr. Ram Chandra, Senior Scientist (Horticulture) | Computer awareness programme head at NAARM, Hyderabad | April 12-17, 1999 |
| Dr. P.P. Joshi, Senior Scientist (Organic Chemistry) | Use of Computer in Agricultural Research held at IASRI, New Delhi | April 18 to May 1, 1999 |
About the Newsletter

The National Research Centre for Medicinal & Aromatic Plants (NRCMAP) is one of the institutes of the Indian Council of Agricultural Research (ICAR). NRCMAP's mission is to conduct research on all aspects of crop production, improvement and utilization of medicinal and aromatic crops. It also supports and is engaged in activities of multilocational testing of technologies through its outreach organ, All India Coordinated Research Project on Medicinal & Aromatic Plants (AICRP M&AP).

AICRP M&AP works in partnership with State Agricultural Universities and other organizations, undertakes research, multi location testing of technologies, training and provides scientific and technical advice and information to a host of clients such as farm and growers, industries etc.

Endangered Species

Safed musli - a Threatened Medicinal Herb

A dried root powder which contains sapogenins, is of medicinal importance. The plant is naturally distributed in the sub-tropical forests of Madhya Pradesh, Gujarat and Rajasthan. This is an annual herb propagated vegetatively as well as through seeds. Though seed germination percent is very low. In the natural vegetation the sprouts come out soon after first rain. The plants grow up to 15-25 cm height having white flowers on spike. During September-October the plants go into dormancy. Market value of 1 kg of fleshy root varies from Rs. 50 to Rs. 250. Growing demand and irrational exploitation have resulted in the rapid depletion from the natural habitat to a level of near extinction. Thus it has been listed in the Red Data Book of Indian Plants. NRCMAP has taken up elaborate programme on its conservation and also its improvement.

Consultancy

National Research Centre for Medicinal and Aromatic Plants has geared up to undertake contact research, contact service such as field testing of pesticides and growth regulators, soil analysis, chemical analysis etc. and limited consultancy on various aspects of crop development, production and protection of medicinal and aromatic plants.

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