The first meeting of Research Advisory Committee of NRCCMAP was held on December 14, 2001. Dr. Satyabrata Maji, Director, NRCCMAP welcomed the chairman and members of the RAC and presented an overview of the functioning and achievements of NRCCMAP during last couple of years. He also highlighted several problems and constraints of a new developing institution. The Chairman of the committee, Dr. P. Pushpangadan in his introductory remarks expressed his deep satisfaction about development of the NRCCMAP. He remind that our present share of medicinal plants in global market is negligible 2.3%. Hence, science led development of the medicinal plant sector is the need of the hour. Dr. B. R. Tyagi, opined that the ICAR should allocate more fund to this Institute for the development of proper instrumentation facility in the next plan. Dr. V. P. Singh, suggested that immediate breeding programme must be taken up for development of short duration varieties of annual medicinal crops to fit into the existing cropping sequence. Dr. S. K. Pareek pointed out that crops like Isabgol and Guggal must be given top priority and the NRC should lead the research in the country on these two important crops. Dr. M. H. Parabia said that there is a need to bring change in chemical evaluation of medicinal crops from single molecule to whole range of chemicals to fit into ISM drug development.

While presentation of work done in their projects by individual scientists, chairman and members of the committee suggested several measures for the betterment of the ongoing projects and future direction in which the institute should work. The meeting came to an end with the vote of thanks proposed by the Director, NRCCMAP.
EDITORIAL

In ancient days, the activity of herb procurement, storage, preparation of drugs and its distribution were remained mainly the responsibility of local physicians (Vaidyas). It was on a one to one relationship between physicians and the patients; a matter of sacred trust and belief. However, the socio-economic changes in modern era, the technological advancement, market driven economy, consumerism, changing lifestyles, etc. have influenced greatly the way herbal drugs are being ‘manufactured’ and distributed in the country. Vaidya as well as the patient now are becoming conscious and look for assurance of quality, safety and efficacy of a readymade Herbal/Ayurvedic Medicine from the manufacturer.

Therefore, similar to the pharmaceutical industry, it needs utmost care to assure quality of herbal products through the whole manufacturing process and maintain strict quality control of the finished products. However, major players of Indian herbal drug industry are not very receptive in this area. Majority of them are producing drugs without assuring quality of raw material and also concept of implementing good manufacturing practices in house is total lacking. Regularity mechanism also does not have adequate qualified manpower that can assure the quality of herbal products. These weaknesses are reflected in our export figure. Inspite of huge global market of herbal industry, which is expected to reach US$80 billion this year, and has been forecasted to hit US$5 trillion by 2050, India’s contribution is negligible. India has developed an ambitious plan to tap this export market by increasing its export earning to about US$ 600 million by 2005 from the present about US$ 120 million. But yet to create required infrastructure and HRD for this purpose. A Medicinal Plant Board has been created, but almost one year is over after its formation and it is yet to start functioning in full vigour. To my opinion, Government should give full autonomy to the board in terms of recruitment and man power development.

Present status of treating it like any other government department with all ban and cut imposed in recruitment and spending is not going to yield any result. If immediate action is not taken for revitalizing the board, the dream of becoming a world leader in herbal sector will remain unfulfilled. The task ahead of the Board is monumental. They have to act quickly to create the following common facilities:

- Quality analysis of all herbal ingredients (raw drug) before their use in formulations.
- Developing analytical methods and their standardization for all herbal formulations.
- Creation of testing facilities for NATURAL PRODUCTS using state of the art equipment and highly trained personnel at least in zonal basis.
- Creation of Human Resource Development facilities with deep understanding of natural product chemistry, analytical techniques and pharmaceutical technology within the country.
- Creation of networking of consortium of labs to handle all the diverse tests (Physico-chemical, Pharmaceutical, Pharmacological) that are commonly called for in the Herbal Industry and to undertake any tests on Botanicals required to meet quality standards worldwide.
- Creation of infrastructure for cultivation of more and more species to assure quality of raw drug as well as finished product.
- Establishment of strategic partnership with existing local players or even foreign players could also be one of the possible strategic moves to venture into the large scale production of medicinal plants.

I wish and hope that the Board will act quickly on the above suggested line without losing further time so as to keep spirit of Indian farmers high that has been created by formation of the Board.

Satyabrata Maiti
Pollination in Aloe

Aloe barbadensis Mill (Aloe vera Linn.), a member of Liliaceae is a herb with condensed stem and fleshy leaves. The aloin present in the gel of leaves is therapeutically very important. It is used in many cosmetic preparations and also in Indian System of Medicine. The plant also produces at least six antiseptic agents which kill or control mold, bacteria, fungus and viruses, explaining why the plant has the ability to eliminate many internal and external infections. It also contains at least three anti-inflammatory fatty acids, cholesterol, campesterol and B-sitosterol (plant sterols). About 23 polypeptides (immune stimulators) are present in Aloe which helps control a broad spectrum of immune system diseases and disorders. The polypeptides plus the anti-tumour agents, Aloe emodin and Aloe lectins, are now also used in treatment of cancer.

The plant blooms during October to February. The inflorescence is a raceme either branched or unbranched. The flowers are tubular and orange red. It splits open at a time when the stigmatic surface is not fully developed and also placed below the level of anthers. Anthers mature prior to stigma receptivity. This is an indication of cross pollination in the species. Flowers contain nectar at the base of the ovary within the corolla tube. Anthesis occurs through out the day with maximum number of flowers opening either in the morning or in the afternoon. Soon after anthesis, pollen dispersal occurs.

Interesting thing to note in this plant is its pollination by birds. In nature usually insects and wind play a major role in pollen transfer in herbaceous plants. Birds usually pollinate tree species. However, in Aloe it was found that birds visit the plant during its bloom for collecting nectar. During this process it also transfers pollen grains from flower to flower. Anthesis is a continuous process throughout the day in Aloe and the bird population also visit the crop intermittently through out the day. Role of birds in pollination of Aloe is clearly evident from the reduced number of fruit set in the crop where the bird population is disturbed by human interferences.

The bird is identified as Sunbird (Nectarinia asiatica var. asiatica) which is commonly present in India and Sri Lanka. The bills and tongue of the bird are well adapted and play an important role in cross pollination of plant species.

Training programmes on medicinal plants

A National Training Course on Production Technology of Medicinal and Aromatic Plants" was organized by Centre of Excellence for Training, University of Horticulture and Forestry, Solan with the support of AICRP M&AP, Solan from 16-23 October, 2001. It was sponsored by Dept. of Extension, Ministry of Agriculture. Twenty participants from various parts of the country attended this training.

One day training programme was organized by Sriram Fertilizer for Opium poppy growers at Menar village, Udaipur on 11th November, 2001 which was attended by about 30 Opium poppy farmers. Dr. P. C. Bordia and Dr. M. P. Sharma of AICRP M&AP, Udaipur attended the programme as resource persons. They emphasized on use of improved high yielding opium poppy varieties such as Chetak Aphim. The farmers were also advised to follow recommended production technology developed under the AICRP M&AP.

A 3-day (September 13-15, 2001) training programme on production techniques on medicinal plant was organized by the Director, Directorate of Extension, MPUAT, Udaipur for the farmers of the forest areas. The programme was sponsored by the forest department. Cultivation practices of Safed musli and Aswagandha were explained to the farmers by Dr. P. C. Bordia, Head, AICRP M&AP, Udaipur.
Group meeting of AICRP on Betelvine

The 18th Group Meeting of the All India Co-ordinated Research Project on Betelvine was organized at Mahatma Phule Krishi Vidyapeeth, Agricultural Research Station, K. Digraj, Sangli during November 30-December 2, 2001. About 30 Scientists from 8 SAUs and NBRI, Lucknow participated in the three day long discussion on various aspects of Betelvine research in India. Dr. T. A. More, Head, Department of Horticulture, MPKV, Rahuri welcomed the delegates in the inaugural session. Inauguration of the group meeting was done by Dr. Gautam Kalloo, Dy. Director General (Horticulture), ICAR. Dr. R. N. Pal, Assistant Director General (PC), ICAR presented a brief account of the prospect of the project in the tenth plan. Project Co-ordinator of AICRP on Betelvine, Dr. Satyabrat Maiti presented a lengthy report on the work done in the project during last one year. The function was presided over by Dr. R. B. Deshmukh, Director of Research, MPKV, Rahuri. The Inaugural Session came to an end with vote of thanks proposed by Dr. B. R. Patil, Associated Director of Research, NARP, Kolhapur. The technical programme of Crop Improvement, Crop Production, Crop Protection and Plenary Session were followed after the Inaugural Session in the next two days. A field trip was also organized for the benefit of the delegates to show the betelvine cultivation in Maharashtra.

Annual day celebration

Foundation day of NRC was observed with all fan fare and enthusiasm as Annual Day of the Institute on November 24, 2001. A function was organized to commemorate this day. Dr. Satyabrat Maiti, Director, NRCMAP in his welcome address in the function congratulated all the members of the NRC family. He expressed his gratefulness to former and present DDGs who made developmental process of the NRC easier. He also presented a brief note on achievements of the centre in recent past and urged for help and cooperation from all concerns in the development of the institute. Special guest of the function, Prof. I. L. Kothari, Head, Dept. of Biosciences, S. P. University, V. V. Nagar expressed that he felt at home in NRC and enjoyed to see its growth and development within a short period of time. He promised all support from his department for this centre. Staff members from the NRC expressed their feelings on this occasion. The function was traditionally inaugurated by lighting a lamp by the chief guest, Dr. D. J. Patel, Principal, B. A. College of Agriculture, GAU, Anand. He also congratulated the spirited team of NRC. Dr. K. C. Dalal, former Director of NRC presided over the function. Guests were presented with mementoes to commemorate this red letter day of the institute. The staff Welfare Club organized lunch and several friendly competitions and matches. The spirit ran high when the ‘non-playing players’ took part in a friendly volleyball match. The winners of all the competitions were presented prizes by the Director. The NRC family members strengthened the ties of love with this day long celebration.

From the Institute

Institute Management Committee

The Institute Management Committee meeting was held on June 30, 2001 under the chairmanship of Dr. Satyabrat Maiti, Director, NRCMAP which was attended by Dr. R. N. Pal, DDG (Horticulture), ICAR; Dr. G. C. Jadia, Professor & Head, Department of Botany, GAU, Anand; Shri G. P. Sharma, Sr. Finance & Accounts Officer, CAZRI, Jodhpur; Dr. Ram Chandra, Sr. Scientist (Horticulture), Dr. B. K. Jha, Scientist (Horticulture), Miss K. A. Geetha, Scientist (Genetics), Mr. Sarvanan Raju, Scientist (Plant Physiology) and Shri V. S. Parmar, Assistant Administrative Officer as members. The committee reviewed the various research and developmental activities of the institute and suggested a number of measures to speed up the development of the institute.
Promotion
- Dr. P. P. Joshi, Pr. Scientist (Org. Chem.) from Sr. Scientist (Org. Chem.) w.e.f. 27.7.98.
- Mr. R. B. Koli, T-2 (Driver) from T-1 (Driver) w.e.f. 29.6.2001.
- Mr. H. A. Khatri, T-2 (Tractor Driver) from T-1 (Tractor Driver) w.e.f. 29.6.2001.
- Mr. S. B. Prajapati, T-2 (Field Asstt.) from T-1 (Field Asstt.) w.e.f. 16.2.2001.
- Mr. S. R. Patel, T-2 (Field Asstt.) from T-1 (Field Asstt.) w.e.f. 19.2.2001.
- Mrs. S. S. Nair, T-2 (Lab. Asstt.) from T-1 (Lab. Asstt.) w.e.f. 1.3.2001.

Transfer
- Mr. R. Natarajan, Scientist (Eco. Botany) to NRC for Banana, Trichy on 26.12.2001

Distinguished Visitors
- Dr. S. R. S. Dange, Principal, CPC, GAU, S. K. Nagar on 18.7.2001
- Dr. A. Bandyopadhyay, Director, NRCG, Junagadh on 10.8.2001
- Prof. G. C. Jadeja, Head, Dept. of Botany, GAU, Anand on 10.8.2001
- Dr. K. D. Raval, Campus Engineer, GAU, Anand, on 10.8.2001
- Dr. S. N. Saha, Joint Director, NAARM, Hyderabad on 13.8.2001
- Dr. I. S. Yadav, Former Director, IIHR, Bangalore on 25.8.2001 and 14.12.2001
- Dr. O. P. Pareek, Emeritus Scientist, CIAH, Bikaner on 25.8.2001
- Dr. G. B. Raturi, Director, CIAH, Bikaner on 25.8.2001
- Dr. O. P. Dubey, ADG(PP), ICAR, New Delhi on 4.9.2001
- Dr. G. Kalsoo, DDG(Hort.), ICAR, New Delhi on 10.11.2001
- Dr. K. C. Dalal, Former Director, NRMAP, Boriavi on 24.11.2001
- Dr. D. J. Patel, Principal, B. A. College of Agriculture, GAU, Anand on 24.11.2001
- Prof. I. L. Kothari, Head, Deptt. of Biosciences, SPU, V. V. Nagar on 24.11.2001
- Dr. P. Pushpangadan, Director, NBRI, Lucknow on 14.12.2001
- Dr. R. N. Pal, Assistant Director General (PC), ICAR, New Delhi on 14.12.2001
- Dr. B. R. Tyagi, Dy. Director, CIMAP, Lucknow on 14.12.2001
- Dr. V. P. Singh, Former Director of Research, CCS HAU, Hisar on 14.12.2001
- Dr. M. H. Parab, Professor, Dept. of Biosciences, South Gujarat University, Surat on 14.12.2001
- Dr. S. K. Pareek, Principal Scientist, NBPGR, New Delhi on 14.12.2001

Human Resource Development

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<tr>
<th>Name</th>
<th>Course</th>
<th>Date</th>
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<tr>
<td>Mr. N. A. Gajbhiye, Scientist (Org. Chem.)</td>
<td>Analytical Instrumentation in Pharmaceutical Sciences at PERD Centre, Ahmedabad</td>
<td>July 2-7, 2001</td>
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<tr>
<td>Mr. V. S. Parmar, Asstt. Admin Officer</td>
<td>Refresher Training Course on “O&amp;M Reforms in Administrative &amp; Finance Management (Under NATP)” at NAARM, Hyderabad</td>
<td>July 23-31, 2001</td>
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<tr>
<td>Mr. K. Mandal, Scientist (Pl. Path.)</td>
<td>Winter school on “Molecular approach for diagnosis and sustainable management of plant viruses” at GAU, Anand</td>
<td>September 04-24, 2001</td>
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<tr>
<td>Mr. Sarvanan Raju, Scientist (Pl. Phys.)</td>
<td>Training programme on “IPR &amp; WTO Awareness” at CIFE, Mumbai</td>
<td>September 18-20, 2001</td>
</tr>
<tr>
<td>Mr. R. Natarajan, Scientist (Eco. Bot.)</td>
<td>Agricultural Research prioritization and impact assessment at TNAU, Coimbatore</td>
<td>October 8-12, 2001</td>
</tr>
<tr>
<td>Dr. Satyabrata Maiti, Director</td>
<td>5th Executive Development Programme in Agricultural Research Management at NARRM, Hyderabad</td>
<td>December 21-24, 2001</td>
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Congratulations to our New Director General

Dr. Panjab Singh assumed the charge of the DG, ICAR and Secretary, DARE on 5.10.2001. An Agronomist by training, Dr. Singh served NARS in various capacities before joining as DG, ICAR such as ADG(NARP); Director, IGFRI, Jhansi; Vice-Chancellor, JNKVV; Joint Director, IARI; Director, IARI. He bagged several prestigious awards for excellence in his professional area. We congratulate him and also look forward to receive his kind guidance and support in the research and developmental activities of NRCMAP.

Our New DDG

Dr. Gautam Kaloo, a renowned vegetable breeder joined as new Deputy Director General (Horticulture) on 28.9.2001. He did his Ph.D. from BHU and thereafter joined HAU where he served in various capacities before joining to ICAR as the Director, IIHR, Varanasi. He developed 42 vegetable varieties. He is the author of number of books published by international publishers. He is also recipient of ICAR team award. We will feel obliged to receive his guidance in the research and development of NRCMAP.

Asoka (Saraca asoca (Roxb.) De Wilde) which is considered as one of the sacred trees of Hindus and Buddhists, belongs to the family Caesalpiniaceae. As the name indicates the plant is believed to remove sorrows of the people and is considered as a symbol of love.

Previously, the Indian material was referred as Saraca indica. However, De Wilde (1967) revised the genus and renamed it as Saraca asoca based on bracteole and pedicel characters. Some authors wrongly refer Polyalthia longifolia also as asoka and is often used as an adulterant or substitute to the genuine asoka bark.

Asoka is a medium sized evergreen tree of 6-9 m height. Leaves are alternate pinnate which are copper red when young. The flowers are arranged in attractive dense bunches. Pods are black and tapering at both ends. The tree blooms in February to April. Asoka is propagated by seed. In nature the seed germinates soon after first rain.

Asoka bark is widely used in Indian System of Medicines against uterine disorders particularly in uterine haemorrhages, dysmenorrhea and menorrhagia. Flowers are used in the treatment of bleeding piles and various skin diseases. Because of the destructive extraction of bark for medicinal uses, the plant is recently enlisted in the threatened category of Indian flora. So measures has to be taken for its sustainable conservation and utilization.