

## **REPORT OF THE WORKSHOP CUM MEETING HELD ON 6<sup>TH</sup> MAY 2016 WITH AGRICULTURAL UNIVERSITIES AND RESEARCH INSTITUTES TO DISCUSS THE PRIORITISED RESEARCH AREA OF NMPB**

A workshop cum meeting under the Chairpersonship of CEO, National Medicinal Plants Board was held on 6<sup>th</sup> April 2016 at 10.00 AM in the Conference Room, First Floor of Ministry of AYUSH to discuss the prioritised research areas of NMPB with Agricultural Universities, Research Institutes of ICAR, CSIR, ICFRE, etc.

At the outset, Dy. CEO, NMPB welcomed the chairperson and all the participants of the meeting and presented a brief presentation about the Research Component of Centre Sector Scheme of NMPB. She mentioned that NMPB has developed the Agro-technology of 104 MPs species through various agricultural universities and research institutes of India. She also informed that NMPB has created four list of medicinal plants viz. (A). For which Agro-technology, PHM, QPM has to be developed; (B). High prioritised plants for which field trials, agro-economics, PHM, QPM has to be developed in first phase; (C). For which field trials and other activities has to be developed in second phase; (D). For which advance research on variety development and other agro aspects has to be developed.

After presentation, CEO, NMPB mentioned that most of the high demanded Medicinal Plants (MPs) are sourced from the forest areas therefore most of the species fall under the question of proper identity and Rare, Endangered & Threatened (RET) status. To meet out the industrial demand of genuine raw material, cultivation of these species through Quality Planting Material (QPM) with Agro-technology is essentially required. She informed that NMPB has developed the Agro-technology of 104 MPs which needs to be tried on the farmers' field for proper estimation of yield and economics of cultivation. Further, she elaborated that NMPB has prioritised 10 thrust areas for next five years to attain the target of smooth supply of quality raw material to end users viz. ASU drug manufactures, nutraceutical, cosmetics, export, etc. These thrust areas includes:

1. Region specific field trials of agro-technology developed by NMPB
2. Estimation of agro-economics
3. Elite variety development and various methods of propagation
4. Development of QPM and facilitation center for capacity building
5. Establishment of Germplasm collection center and gene bank
6. Sustainable harvesting and SOPs of Post-Harvest Management
7. Development of cost effective primary processing techniques
8. Identification of substitutes of RET species
9. Good Agriculture Practices and Good Collection Practices and Quality Certification
10. Marketing Research and Marketing Linkages

She proposed that each agricultural university and research institutes could adopt 2-3 species on above mentioned themes. She also suggested that proposals on the line of detailed exclusive compilation of species specific research work should also be supported. After this, she invited the participants for discussion.

### **AMITY UNIVERSITY, NOIDA**

Prof. B K P Sinha, Advisor, AMITY University informed that AMITY has developed an incubator for indoor medicinal plant production and also running successfully various diploma/degree courses on the

area of medicinal plants. Dr. G T Kulkarni, Professor mentioned that AMITY has the wide chain of schools across the country which could be used to earmark the various promotional activities like competition, medicinal plants study tours, etc. to achieve targets of 365 days campaigning of medicinal plants. CEO, NMPB suggested that as AMITY is engaged in various courses of medicinal plants so that platform could be used to develop a quality certification mechanism of medicinal plants cultivated by the farmers or collected by the registered collectors.

#### **ARID FOREST RESEARCH INSTITUTE, JODHOPUR**

Dr. U. K. Tomar, Head, FGTB Division of Arid Forest Research Institute, Jodhopur informed that AFRI has developed the seed production area and haploid plants of *Commiphora wightii* (guggul). He further elaborated that AFRI has collected the best genotype of guggul and successfully developed the QPM from seeds. Now he is trying to develop the vegetative propagation techniques of guggul. He further elaborated that AFRI has germplasm of 18 medicinal plants. CEO, NMPB suggested that AFRI should focus on guggul and submit proposals for further extension work in the areas of germplasm collection, variety development, field trial in various agro-climatic zones on farmers land, estimation of agro economics, sustainable harvesting mechanism, PHM for extracted gum, etc. She further suggested that, AFRI could also be developed as a dedicated research cum facilitation center on guggul to provide the QPM and trainings, etc.

#### **INSTITUTE OF FOREST BIODIVERSITY, HYDERABAD**

Dr. GRS Reddy, Director (I/c), Institute of Forest Biodiversity (IFB), Hyderabad informed that IFB have two best genotype of *Santalum album* (chandan) which gives the 7% sandal oil. He further mentioned that, with support of IFB, DS group is successfully cultivating sandal wood in the orchards and exporting the oil to foreign countries. IFB is also engaged in the various conservation and research activities of *Pterocarpus santalinus* (red sandal). CEO suggested that IFB should focus on QPM development, field trials, agro-economics, PHM activities etc. of *Pterocarpus marsupium* and *Gloriosa superba*.

#### **UNIVERSITY OF HORTICULTURAL SCIENCES, UTTAR KANNADA**

Dr. Laxminarayan N. Hegde, Professor and Head, Horticulture Research & Extension Centre (RHREC), University of Horticultural Sciences (UHS), Uttar Kannada mentioned that UHS is engaged to enhance the growth of horticulture sector by providing leadership in teaching, research and extension services in horticulture and allied sciences through continuous innovation and assimilation of emerging paradigms, concepts and technology developments. He offered that UHS could contribute in elite variety development of *Rauvolfia serpentina* and *Gloriosa superba*.

#### **UNIVERSITY OF AGRICULTURAL SCIENCES, DHARWAD**

Dr. Venugopal, Professor, Department of Horticulture, University of Agricultural Sciences (UAS), Dharwad informed that UAS have 40 clones of *Mappia foetida* and also developed agro-technology of various medicinal plants. They have already started the field trial on multi locations of *Embelia ribes* and willing to develop the agro-technology and other activities viz. field trials, QPM, germplasm collection, gene-bank development, agro-economics, elite variety development etc. of *Salacia reticulata*, *Salacia oblonga*, *Coscinium fenestratum*, *Garcinia indica*, and *Mappia foetida*.

## **HIMALAYAN FOREST RESEARCH INSTITUTE, SHIMLA**

Dr. V. P. Tiwari, Director, Himalayan Forest Research Institute (HFRI), Shimla suggested that HFRI could work on germ-plasm collection, QPM development, multi-location field trials, agro-economics, PHM activities, variety development of *Aconitum* spp., *Podophyllum hexandrum*, *Nardostachys jatamansi*, *Valeriana jatamansi* and *Picrorhiza kurroa*. Dr. Manish Dash, ICAR suggested that HFRI should also work to reduce the gestation time of these medicinal plants.

## **FOREST GENETICS AND TREE BREEDING, COIMBATORE**

Dr. R. S. Prashanth, Director, Institute of Forest Genetics and Tree Breeding, Coimbatore (IFGTB) suggested that IFGTB could contribute to develop the agro-technology models with emphasis on inter-cropping technique, multi-location field trials, variety development, QPM for *Saraca asoca*, *Oroxylum indicum*, *Garcinia indica*, *Terminalia arjuna* and *Aegle marmelos*.

## **CENTRAL INSTITUTE OF AGRICULTURAL ENGINEERING, BHOPAL**

Dr. Nachiket, Head, APPD, Central Institute of Agricultural Engineering (CIAE), Bhopal informed that CIAE has separate division for Post-Harvest Management, under the division they have developed peeling technology of safed moosali, ashwagandha, satavari and senna. He further informed that CIAE is developing a tool for identification of adulterants in medicinal plants. He mentioned that CIAE could develop the species specific PHM of medicinal plants and protocol for extraction. CEO, NMPB suggested that CIAE could be established as a capacity building centre for customised PHM activities of medicinal plants.

## **CENTRAL AGRICULTURAL UNIVERSITY, PASIGHAT, ARUNACHAL PRADESH**

Dr. T. S. Mehra, Associate Professor (M&AP), Central Agricultural University (CAU), Pasighat, Arunachal Pradesh suggested that CAU could take responsibility to develop agro-technology of *Alpinia calcarata* and *Kaempferia galangal*, multi-location field trial of *Curcuma caesia* and *Alpinia galanga*, advance research on *Mucuna pruriens*, gene-bank & QPM development of *Alpinia galangal*, *Valeriana jatamansi* and *Curcuma caesia*. He further mentioned that a marketing centre could also be developed for North-eastern region under the supervision of CAU. CEO, NMPB suggested that CAU could also organise a buyer-seller meet to facilitate the marketing linkages between farmers and manufactures.

## **GOVIND BALLABH PANT UNIVERSITY OF AGRICULTURE AND TECHNOLOGY, PANT NAGAR**

Dr. M. S. Negi, Professor Agronomy, Govind Ballabh Pant University of Agriculture and Technology (GBPUAT), Pant Nagar mentioned that GBPUAT could develop the QPM of *Rauvolfia serpentina*, *Emblica officinalis*, *Asparagus racemosus*, *Aloe vera*, *Withania somnifera*, *Cinnamomum camphora*, *Bacopa monnieri*, *Centella asiatica*, *Valeriana jatamansi*. He further mentioned that GBPUAT could also develop the gene bank of elite germplasm of Himalayan species, agro-technology of *Acorus calamus*, *Alpinia calcarata*, *Artemesia annua* and *Valeriana hardwickii*.

## **INDIRA GANDHI AGRICULTURAL UNIVERSITY, RAIPUR, CHHATTISGARH**

Dr. P. K. Joshi, Principal Scientist, Indira Gandhi Agricultural University (IGAU), Raipur, Chhattisgarh elaborated that IGAU act as a Centre of Excellence on Medicinal Plants and Non-Timber

Forest Produce. IGAU have 300 nos of germplasm of *Andrographis paniculata*. IGAU could be established as QPM and capability building centre of medicinal plants.

#### **TAMIL NADU AGRICULTURAL UNIVERSITY, COIMBATORE**

Dr. K. Rajamani, Professor & Head, Tamil Nadu Agricultural University (TNAU), Coimbatore informed that TNAU could develop the QPM of *Gymnema sylvestre*, *Centella asiatica*, *Plumbago zeylanica*, *Eclipta alba*, *Tinospora cordifolia*, *Hemidesmus indicus*, *Psoralea corylifolia*, *Andrographis paniculata*, *Withania somnifera*, *Catharanthus roseus* and *Gloriosa superba*. He further elaborated that TNAU could initiate to establishment of germplasm collection center at different agro climatic zones of Tamil Nadu; agro-technology with agro economics of *Sida cordifolia*; multi-location field trials and variety development of senna, *Gloriosa superba*, Vetiver, *Coleus barbatus*, *Hemidesmus indicus* and *Gymnema sylvestre*. During the workshop TNAU has showed list of 6 proposals and 16 proposal concept notes which needs to be submitted individually as per the R&D project format of NMPB.

#### **JAWAHARLAL NEHRU TROPICAL BOTANIC GARDEN AND RESEARCH INSTITUTE, KERALA**

Dr. Vinod Kumar, Scientist, Jawaharlal Nehru Tropical Botanic Garden and Research Institute (JNTBGRI), Kerala proposed that JNTBGRI could work on variety development of *Saraca asoca*, *Sida cordifolia*, *Convolvulus* spp. and *Coscinium fenestratum*. During the workshop JNTBGRI has submitted proposal abstract of 10 projects which needs to be submitted individually as per the R&D project format of NMPB. Dy. CEO, NMPB subjected that JNTBGRI could work on reducing the gestation period of medicinal plants along with the integrated diseases control mechanism.

#### **NATIONAL GENE BANK, NATIONAL BUREAU OF PLANT GENETIC RESOURCES, NEW DELHI**

Dr. Veen Gupta, Principal Scientist, National Gene Bank, National Bureau of Plant Genetic Resources (NBPGR) presented a brief presentation about the management of genetic resources of medicinal and aromatic plants at NBPGR. She requested to all the agriculture universities and research institutes to deposit the identified germplasm in NBPGR as a reference. She further elaborated that NBPGR could provide the germplasm for research activities like QPM generation for cultivation, variety development, etc.

#### **NATIONAL ACADEMY OF AGRICULTURAL RESEARCH MANAGEMENT, HYDERABAD**

Dr. S. K. Som, Head, ICM Division, National Academy of Agricultural Research Management (NAARM), Hyderabad informed that NAARM is providing the assistance on formulation of research projects. CEO, NMPB suggested that NAARM could develop the market linkages policy for medicinal plants.

#### **INDIAN INSTITUTE OF HORTICULTURAL RESEARCH, BENGALURU**

Dr. Hima Bindu, Principal Scientist, Indian Institute of Horticultural Research (IIHR), Bengaluru proposed that IIHR could initiate the work related to development of agro-technology of *Citrullus colocynthis*, *Dacalophis hmltoni*, *Halarrhena antidysenterica*, *Stevia rebaudiana*; multi-location field trial, agro economics and PHM activities of *Eclipta alba*, *Embelia ribes*, *Gymnema sylvestre*, *Hemidesmus indicus*, *Psoralea corylifolia*; variety development for *Stevia rebaudiana*. She mentioned that IIHR is committed to work with NMPB for development of medicinal plants sector of the country. During the

workshop IHR has submitted 7 draft proposals which needs to be submitted individually as per the R&D project format of NMPB.

#### **UTTAR BANGA KRISHI VISHWAVIDYALAYA, KALIMPONG**

Dr. Sumit, Associate Director of Research, Regional Research Station (RRS), Uttar Banga Krishi Vishwavidyalaya, Kalimpong proposed that RRS could develop the QPM of *Bergenia ciliata* and *Swertia chirayita*. He further mentioned that RRS would submit proposals in the area of agro-technology, agro-economics, multi-location trials and variety development of hilly medicinal plants. During the workshop RRS has submitted 3 project proposals in the format of NMPB.

#### **BIDHAN CHANDRA KRISHI VISWAVIDYALAYA, WEST BENGAL**

Dr. Gautam Mondal, Associate Professor, Bidhan Chandra Krishi Viswavidyalaya (BCKV), West Bengal informed that BCKV would like to work in the area of development of agro-technology, estimation of agro-economics, multi-location field trials, QPM, variety development of prioritised medicinal plants.

#### **INSTITUTE OF HIMALAYAN BIO RESOURCE TECHNOLOGY, PALAMPUR**

Dr. Rakesh Kumar, Senior Scientist, Institute of Himalayan Bio resource Technology (IHBT), Palampur proposed that IHBT could develop the gene bank, QPM and multi-location trials of *Picrorhiza kurroa*, *Valeriana jatamansi*, *Inula racemose* and *Aconitum heterophyllum*. He further mentioned that IHBT could also develop the agro-technology of *Panax pseudoginseng*.

#### **ASSAM AGRICULTURAL UNIVERSITY, ASSAM**

Dr. G. N. Hazarika, Director of Research, Assam Agricultural University (AAU), Assam informed that AAU would submit individual proposals on the line of agro-technology, agro-economics, QPM development, multi-location trials, gene bank development, variety development of prioritised medicinal plants. Meanwhile he proposed *Centella asiatica* and *Hemidesmus indicus* for variety development.

#### **DIRECTORATE OF MEDICINAL AND AROMATIC PLANTS RESEARCH, ANAND, GUJARAT**

Dr. Satyanshu Kumar, Principal Scientist, Directorate of Medicinal and Aromatic Plants Research (DMAPR), Anand, Gujarat proposed that DMAPR could develop the elite varieties of *Desmodium gangeticum*, *Chlorophytum* spp., *Gymnema sylvestre*, *Leptadenia reticulata*, *Withania somnifera*, *Piper longum*, *Berginia ciliata* and *Plumbago zeylanica*; QPM of *Asparagus racemosus*, *Leptadenia reticulata*, *Tinospora cordifolia*, *Commiphora wightii*, *Centella asiatica*, *Bacopa monnieri*, *Gymnema sylvestre*, *Swertia chirayita*, *Picrorhiza kurroa*, *Hemidesmus indicus* and species specific SOPs of Post-Harvest Management.

#### **CENTRAL INSTITUTE OF MEDICINAL AND AROMATIC PLANTS, LUCKNOW**

Dr. Alok Kalra, Chief Scientist, Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow mentioned that CIMAP would like to work on the prioritised areas fixed by NMPB and would submit proposals accordingly.

## **JAWAHARLAL NEHRU KRISHI VISHWAVIDYALAYA, JABALPUR**

Dr. S. K. Dwivedi, Professor, Department of Plant Physiology, Jawaharlal Nehru Krishi Vishwavidyalaya (JNKV), Jabalpur informed that JNKV has developed some single component based value added products of medicinal plants like Arjun powder, Bel powder, Gudmar leaf powder, Giloy stem powder, Kalmegh powder, Mamphal leaf powder, Stevia powder, Sheonag stem bark powder, Adusha leaf powder, Bhui-amla powder and multicomponent based value added products like Madhunashini powder, Jawar nashak powder, Herbal anti dandruff hair oil, Aloe vera powder, Herbal tea (with and without natural sweetner), Arjun tea (with and without natural sweetner). He proposed that JNKV could work on multi-locations trials, QPM development, germplasm collection, standardization of PHM and GAP for *Bacopa monnieri*, *Coleus forskohlii*, *Tinospora cordifolia*, *Andrographis paniculata*, *Aloe barbadensis*, *Asparagus racemosus*, *Gymnema sylvestre*, *Bixa orellana*, *Borhavia diffusa*, *Plantago ovata*, *Adhatoda zeylanica*, *Convolvulus pluricaulis*, *Centella asiatica*, *Withania somnifera*, *Rayvokfia serpentina*, *Lepidium sativum* and *Stevia rebaudiana*.

## **CHAUDHARY CHARAN SINGH HARYANA AGRICULTURAL UNIVERSITY, HISAR, HARYANA**

Dr. I.S. Yadav, Professor & Head, Department of Genetics & Plants Breeding, Chaudhary Charan Singh Haryana Agricultural University (CCSHAU), Hisar, Haryana informed that CCSHAU is committed to work on the development of medicinal plant sector of the country and would like to submit proposals on prioritised areas.

## **NATIONAL BOTANICAL RESEARCH INSTITUTE, LUCKNOW**

Dr. Rakesh Chandra Nainwal, Scientist- Agronomy, National Botanical Research Institute (NBRI), Lucknow proposed that NBRI could undertake the multi-location trials of *Desmodium gangeticum*, *Uraria picta*, *Plumbago zeylanica* and *Psoralea corylifolia* and also could support to develop the agro-technology, intercropping techniques, agro-economics, capacity building and germplasm collection of prioritised medicinal plants. CEO, NMPB mentioned that as NBRI is renowned institute of the country in the field of botanical research therefore NBRI should act as a facilitation centre for QPM development, capacity building, marketing linkages, etc.

## **INDIAN INSTITUTE OF FOREST MANAGEMENT, BHOPAL**

Dr. C. P. Kala from Indian Institute of Forest Management (IIFM), Bhopal informed that IIFM is a sectoral management institute, which constantly endeavors to evolve knowledge useful for the managers in the area of Forest, Environment and Natural Resources Management and allied sectors. He proposed that IIFM would submit the proposals on the line of policy development, marketing, etc.

### **In the end of the workshop following actionable points were highlighted:**

1. All Agricultural Universities and Research Institutes would act as a research partner of NMPB and would facilitate all the activities related to medicinal plants viz. cultivation, conservation, research, capacity building, promotion, marketing, etc.

2. All Agricultural Universities and Research Institutes would submit research proposals on the line of above mentioned objective in the prescribed format of NMPB for allotted medicinal plants or they could opt plants from prioritised list provided during the meeting e.g. list A,B,C & D.

3. Central Institute of Agricultural Engineering would submit the proposal for species specific PHM and cost effective semi-processing techniques of medicinal plants and also for capability building centre for PHM activities.

4. All Agricultural Universities and Research Institutes would also act proactively for development of Marketing Facilitation Cell for Medicinal Plants in their organization. They could also organise Buyer-Seller Meet to disseminate the agro-technology to the farmers and also for facilitation linkages between farmers and manufactures. For Buyer-Seller Meet, separate proposal in prescribed format would be submitted to NMPB.

5. All Agricultural Universities and Research Institutes would share the agro-technology with NMPB developed by their organizations.

6. AMITY University would submit proposal for development of quality certification mechanism of raw material and also would submit proposal for 365 days campaign through their schools.

7. All Agricultural Universities and Research Institutes would nominate one or two subject experts from their organizations to review the proposals. The Name, biodata and full address along with contact number and email id would be provided to NMPB with in a moth.

CEO, NMPB thanks all the participants and expected their proactive participation for strengthening the medicinal plant sector of the country by way of proving quality and cost effective raw materials to the end users.

### Visuals of Workshop



**LIST OF PARTICIPANTS**

- 1.** Smt. Shomita Biswas, CEO, National Medicinal Plants Board (NMPB)
- 2.** Smt. Padmapriya Balakrishnan, Dy. CEO, NMPB
- 3.** Dr. Lalit Narayan, Dy. Director (MPs), NMPB
- 4.** Dr. Pawan Kumar, Research Officer, NMPB
- 5.** Sh. Shahidul Khair, Assistant Research Officer, NMPB
- 6.** Dr. Lalit Tiwari, Senior Research Assistant, NMPB
- 7.** Mr. Akif Alvi, Photographer, NMPB
- 8.** Sh. Praveen Kr. Wadhwa, Computer Operator, NMPB
- 9.** Dr. Kavita Tyagi, Consultant, NMPB
- 10.** Dr. Santosh Kumar, Consultant, NMPB
- 11.** Sh. Feyaz, Consultant, NMPB