

Noni Search 2008*

The Third National Symposium, Noni Search 2008, was inaugurated by A. P. J. Abdul Kalam on 18 October 2008. The symposium was organized with the aim to popularize noni cultivation to uplift the farming community, to standardize noni cultivation practices with minimum organic inputs and maximum outputs, to establish therapeutic action of noni against various diseases, and to create awareness about the health-enhancing properties of noni. Kalam, in his inaugural address, advocated the development of internationally acceptable standards for noni composition from cultivation to fruit stage, certifications of noni products as an approved food supplement by accrediting agencies, evolution of noni plant varieties which will have high yield, development of appropriate agrotechnology for cultivation of noni in marginal lands of hot, humid regions without dilution of standards, development of post-harvest technologies such as plucking, handling, storage, extraction of juice and value-addition to maximize the return to the farmers, scientific validation of the claims of noni users in India and abroad to convert noni formulations as medically approved products for treatment of various diseases after going through systematic trials and finding methods of using noni plantation as a companion crop with eucalyptus, coconut and other fruit-bearing trees.

The technical sessions I and II that dealt with noni for health and nutrition, comprised three lead papers and six oral presentations. N. Muruges (K.S.R. College of Technology, Thiruchengode) reviewed pharmacological research on noni, A. K. Bakshi (SKUAST-J, Jammu) reviewed noni as food supplement and K. Ramasamy (S.R.M. University, Kattankulathur) talked on metabolic engineering of secondary metabolites of *Morinda citrifolia*. G. Surendran (Madras University, Chennai) revealed that the fruit

extract and the isolated molecules exhibited anticancer activity against retinoblastoma Y79 cell lines. N. Muruges *et al.* reported hepatoprotective activities of Indian Noni (*Morinda citrifolia* L.) on paracetamol-induced hepatic damage in rats. Studies by D. S. Kannan *et al.* (Madurai Medical College) showed that the aqueous extract of *M. citrifolia* fruits has significant anti-anxiety, sedative and hypnotic effects in mice. Jai Sunder *et al.* (Central Agricultural Research Institute (CARI)), Port Blair showed the possible antibacterial activity of *M. citrifolia* and its possible uses in the treatment of bacterial infection. Vijay Venkat (Dr Vijay Venkat and Associates, Mumbai) dealt in detail, with factors of nutrition as fresh air, sunlight, genetically patterned food from nature, exercise and activity, rest-relaxation-sleep, mental poise and creativity, and socially protective and productive work. P. Geervani (Sri Padmavathy Mahila University, Tirupati) elaborated on the role of noni in nutritional security. The UN millennium development goal to reduce extreme poverty and promote food and nutrition security can be achieved through management of natural resources in tune with nature's laws and limitations. Chandra Venkata-subramanian and K. Priya (Queen Mary's Colleges, Chennai) concluded that noni is a good hypoglycaemic and hypocholesterolaemic agent.

The technical session III dealt with crop improvement and production. P. Reethinam (Asia Pacific Coconut Community, Jakarta, Indonesia) dealt with the global scenario of production of noni. It is easy to be propagated from seeds. Stems or rooted cuttings and air layering are possible. Production technologies, including widening germplasm, developing high-yielding varieties and hybrids, standardization of nursery techniques, nutrients and water management, cropping system, pruning and training, standardization of harvest and post-harvest technologies need to be addressed for the successful cultivation of noni. Veena Gupta and S. K. Sharma (National Bureau of Plant Genetic Resources, New Delhi) made a diversity distribution analysis of the noni populations. The study conducted in the tsunami-affected

coastal areas of Kerala, Karnataka and Tamil Nadu, showed that *Morinda tomentosa* is restricted to the Karnataka region, whereas *M. citrifolia* is present throughout the coastal areas of Kerala and Tamil Nadu. Both vine type and small shrub type of plants were observed in *M. citrifolia*. Germ plasm characterization was done for various fruit and seed characters, viz. fresh fruit weight (25.86–33.35 g), fruit size (4.36 × 3.52 cm), fruit colour (light yellowish-green to bright parrot green), seeds/fruit (50–80), seed colour (brownish-black), seed size (3.7 mm) and hundred seed weight (2.02–2.33 g). Substantial polymorphism was observed by D. R. Singh *et al.* (CARI, Port Blair). A. K. Singh *et al.* (Central Institute of Arid Horticulture, Bikaner) reported the presence of *M. citrifolia* in an experimental farm of the above Institute at Vejalpur (near Godhra). J. Subramani (Khoday Biotech Ltd, Bangalore) reported callus and cell suspension studies of *M. citrifolia*. Vishal Nath and V. Pandey (Regional Centre, NBPGR, Bhubaneswar) studied the performance of bare rooted plants of noni. Poly-bagged-rooted plants of noni considerably reduce the cost of plant establishment. L. R. Varma and M. M. Masu (S.D. Agricultural University, Dantiwada) reported that use of indole butyric acid (IBA)-promoted rooting in cuttings of noni.

Session IV dealt with crop protection of noni. B. S. Yadav and Siddique (M.P. University of Agriculture and Technology, Udaipur) reviewed nematodes of noni. The root knot nematode (*Meloidogyne javanica*) is the most serious and damaging among nematodes, reported S. Sithanatham (Sunagro Biotech Research Centre, Chennai) reviewing insect pests of noni. The major groups of insect pests include Lepidoptera, Hemiptera, Thysanoptera, Coleoptera, Orthoptera and Diptera. The non-insect pests consist of mites, rodents and birds. N. Mathivanan and S. Sithanandham (University of Madras) reviewed diseases of noni. Leaf spot and black flag diseases were recorded in a few noni plantations. J. Kannaiyan and P. Karthi (Sunagro Biotech Research Centre, Chennai) reported prevalence of noni diseases in south India. Stem blight

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and fruit rot cause yield loss of 10% in noni. Other commonly observed diseases and pests are mosaic and root rot nematodes. M. Jayakumar *et al.* (Sunagro Biotech Research Centre, Chennai) reviewed insect pest complex of noni in South India. A black ant species and an unidentified mite were reported.

Session V dealt with noni utilization and value-addition. Vigneswari Karthik and P. I. Peter (Health India Laboratories, Chennai) elaborated on noni-based products for health and nutrition. The wide range of noni-based products includes healthcare, homecare, food products, fruit drinks and cosmetics. Swatantra Kalra (Truely Natural, Gurgaon) talked on an instant protein noni

drink made of noni juice concentrate and soy protein.

Alok Sha *et al.* (Defence Food Research Laboratory, Mysore) mentioned about value-addition perspectives of noni. A protocol for packaging and shipment of noni fruits has been developed at CARI, Port Blair, according to D. R. Singh.

Session VI covered success stories and testimonials on the beneficial effects of noni on human health and wellness. B. M. Hegde (Manipal Institute of Medical Sciences, Manipal) delivered the plenary lecture. According to Hegde, 'God gives medicines where He gives the disease', was an old belief of the Peruvians in the 15th century, when malaria used to kill millions there every year. Peruvians got

what we now call quinine from the bark of a tree in their forests, which they named Cinchona, after the wife of their then viceroy. Quinine must have saved millions of lives all over the world. A similar effort by the Europeans resulted in aspirin from willow bark.

Nature has remedies which are safe, unlike the artificial chemical molecules, for all human ailments. May the noni effort bring succour to the needy in the area of human healing.

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MEETING REPORT

Sericulture and viable technologies for better silk production*

A three-day workshop-cum-training programme on sericulture for the production of better silk production was organized for progressive sericulture farmers from all over Assam. The meeting was attended by sericulture farmers, delegates, including special invitees and the scientific community from the North-East Institute of Science and Technology (NEIST), Jorhat, Central Silk Board (CSB), Jorhat and Boko, Kamrup and representatives from NABARD, Guwahati, Jorhat and Sivasagar.

P. G. Rao (NEIST) in his welcome address mentioned that it is the initiative of NEIST to spread newer technologies to the local people in order to uplift their socio-economic status. He mentioned the role of NEIST in developing and transferring technologies to the local population and also requested the farmers to approach the institute in case they require any help in their farming practices. Rao also mentioned that concerted effort was made by all participating agencies – NEIST, CMER&TI and NABARD to

help sericulture farmers solve some of their problems. The Indian Institute of Chemical Technology (IICT), Hyderabad and CMER&TI, Jorhat have also helped disseminate the technologies developed, for successful and better cocoon production. He also stressed upon the prospect of using medicinal plants for control of various diseases of muga silkworms. He congratulated NABARD for successful implementation of programmes for the development of sericulture and supporting the cause of farmers.

Earlier, B. G. Unni (NEIST) in his welcome address, noted that the workshop was organized under the project entitled 'Implementation of new technology and training programme for rural development in sericulture at North-East states of India – Assam and Manipur' sponsored by CSIR in the 11th five-year plan under RSW-NET category to IICT. The main motive of the programme is to provide training to farmers in the area of sericulture, especially in muga culture, which is found to be essential in the NE region. Unni mentioned that updated information on simple technologies developed at laboratory and field level in the area of sericulture will also be imparted to the farmers.

U. S. N. Murthy (IICT), while delivering a lecture on the activities of IICT in sericulture development, mentioned that

the laboratory has taken up various programmes for rural development in different parts of the country, including the NE region. He particularly highlighted the performance of Samadhan Kendras (Rural IT centres, developed at the initiative of IICT) in various parts of the country, particularly in Andhra Pradesh, for providing necessary information to the farmers and mentioned how these can be established in this part of the country for the benefit of the farmers. He also informed about the partnership of IICT in India Development Gateway. In his lecture during the technical session, Murthy discussed the technology of pupal oil extraction and prospects of using pupal oil in various industries and invited the muga sericulture farmers to visit IICT to get a first-hand experience on various technologies on the extraction of pupal oil.

R. Chakravorty (CMER&TI) speaking on 'Readily available technologies for muga culture', mentioned that Assam is unique in respect of producing all the four varieties of silk, viz. those of mulberry, tassar, eri and muga. Muga silkworm, *Antheraea assamensis* is now patented on the basis of Geographical Indicator of the region. He mentioned that 6758 ha of land is included in muga culture, with 30,000 families directly engaged in pre-cocoon sectors and that

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