

Botanic Garden – A National Facility

- **Objectives**

- A 'National Repository' of germplasm collection of plants of indigenous and exotic origin including the Rare, Endangered and Threatened taxa for research and display.
- Introduction, multiplication, acclimatization, assessment and documentation of species from various sources.
- Domestication of indigenous taxa of ornamental significance.
- Technical advice/consultancy on landscaping and the establishment of Botanic Gardens.
- Capacity building by organizing trainings in ornamental horticulture at various levels.
- Providing package of practices for commercial cultivation of floricultural crops especially to small and marginal farmers for uplifting their economic conditions.
- Exchange and sale of plants.
- Organizing Annual Flowers Shows and Science Exhibitions for creating awareness among masses regarding importance and usefulness of plants.

- **Goals:** Botanical Garden: Serves as A National Facility to Enrich and Maintain Germplasm Collection of RET taxa and Ornamental crops for Conservation and Bioaesthetics

- **Competencies :**

- Technical advice/consultancy on landscaping and the establishment of Botanic Gardens.
- Providing package of practices for commercial cultivation of floricultural crops especially to small and marginal farmers for uplifting their economic conditions.

- **Facilities:**

Conservation of a diversified germplasm collection of plants of indigenous and exotic origin including the Rare, Endangered and Threatened taxa including the cycads in the Plant Houses as well as the ornamental crops viz.: Amaryllis, Bougainvillea, Canna, Chrysanthemum, Gerbera, Gladiolus, Rose and Tuberose for the research and display.

Conservatory: An arch-shaped plant house, in an area of 1370 sq. m., is meant for the conservation of house plants from tropical and subtropical climates. Nearly 500 species/cultivars of house plants are being conserved in the conservatory.



Cactus and Succulent House: A pagoda shaped glass house meant for the germplasm collection of cacti and succulents from arid regions is centrally located in 284 sq.m area in the Botanic Garden. This glass house shelters about 350 species/varieties of cacti and succulents.



Fern House: The specially constructed house for growing ferns and fern allies is pyramidal in shape and established covering 530 sq m area. A germplasm collection of 65 species of ferns and fern allies (indigenous and exotic) is maintained in the fern house. The collection includes rare, threatened, economic and relic species.



Palm House: A Palm House, extending over an area of 285 sq. m., is meant for maintaining the germplasm collection of members of the family Arecaceae. Palm collection comprises over 60 species displayed in pots and in the ground as well.



Bonsai House: Bonsai House is spread over an area of 450 sq m and equipped with automated misting system and shade net. A collection of 300 bonsai specimens trained in different styles have been exhibited for aesthetic and educative purpose. Plants are labelled, furnishing their botanical name and year of planting. Some of them are even more than 50 years old.



Cycad House: 45 species of cycads belonging to 8 genera are being conserved in the CYCAD HOUSE covering 300 sq m area for the educative and aesthetic display for the benefit of the cross section of society. This house is first of its kind in any Indian Botanic Garden for the *ex-situ* conservation of the cycads.

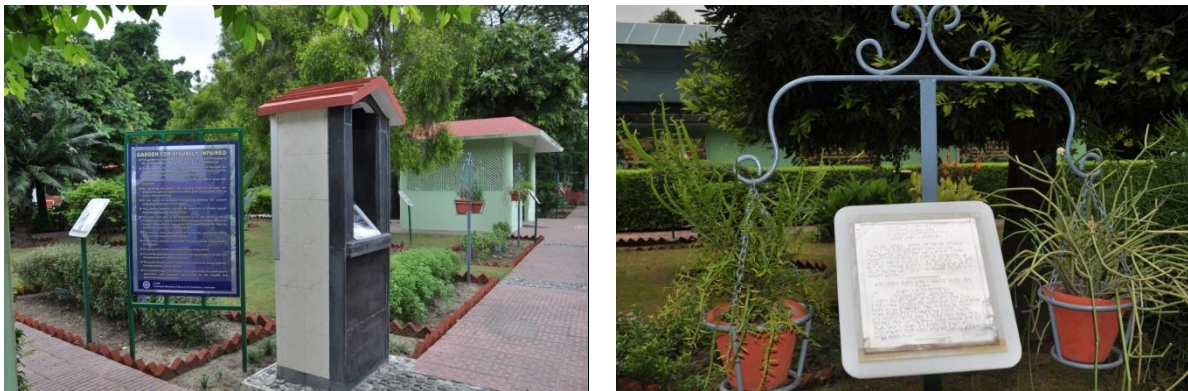


Moss House: A moss house has been established in an area of about 270 sq.m. covered with netlon and equipped with water sprinklers, misting system and water filled channels around

the ground area to simulate the microclimate for the luxuriant growth of Bryophytes. This house is first of its kind in India which conserves the tiny bryophytes delicate in nature under local tropical conditions. A collection of nearly 20 species of liverworts and mosses is being maintained in moss house.



Touch-‘n’-Smell Garden: This unique garden is spread over an area of 0.1 ha and is divided into four blocks, each containing 8-12 beds. Hanging potted plants have been displayed at a convenient height so that disabled visitors, in wheel chair, can easily touch and smell them. The plant labels and legends are written in Braille on the aluminium sheets mounted on stands which provide information about plants. A variety of plant species either having fragrant flowers, aromatic / coarse leaves have been planted in this garden.



- **List of Ongoing projects:**
- “Improvement of infrastructural facilities in NBRI Botanic Garden to promote conservation of indigenous particularly Rare, Endangered and Threatened (RET) plant species and development of the botanic garden as a Lead Garden” sponsored by the Ministry of Environment & Forests, Govt. of India, New Delhi (Three Years), **Dr. Anil K. Goel, PI** (Email: akgoelofcsirn bri@gmail.com); **Dr. R.K. Roy, Co-PI** (Email: roynbri@rediffmail.com)

- Techniques of commercial Floriculture, sponsored by UPDASP (A farmers' oriented programme) Dr. R. K. Roy, Principal Investigator (GAP-223825)

- **Significant achievements:**

- **Release of New CSIR-NBRI Cultivars**

1. ***Canna generalis* 'Raktima'**

For induction of somatic mutation rhizomes of *Canna* cv. 'Cleopatra' was treated with various dose (10, 20, 30 Gy) of gamma rays (Cobalt 60) and growth parameters were observed. It was found that one mutant showed morphological changes (leaves from green to brown and flower from yellow-spotted to pure red). This mutant was isolated in pure form and later multiplied. The changed characters showed stability, uniformity and distinct from the parent.



Canna generalis 'Raktima'

2. **Gladiolus** – A new cultivar **Gladiolous 'Sydney Percy Lancaster'** developed by NBRI was formally released in Annual Rose & Gladiolus Show held at the Central Lawn of the Botanic Garden on 18-19 January, 2011 by Director, CSIR-NBRI.



Gladiolous 'Sydney Percy Lancaster'

3. **Bougainvillea:** A new cultivar Bougainvillea '**Dr. P.V. Sane**' developed at CSIR-NBRI was displayed and released in the '**Bougainvillea Festival**' organized at IARI, New Delhi on 25-26 March, 2011. Visitors of the festival especially

Bougainvillea lovers acclaimed the bract colour and variegated leaves of the new cultivar.



Bougainvillea 'Dr. P.V. Sane' in foliage & flowering

➤ **New Introductions**

Triplaris surinamensis Cham. ('Mulatto Tree' / 'Long John')

Family: Polygonaceae; **Nativity:** Surinam (South America)



Triplaris surinamensis

Educational Tour from Longwood Botanic gardens (USA)

A study-tour was organized for the team from Longwood Gardens as a part of graduate programme in public horticulture under University of Delaware, Newark, USA on 17 Jan., 2011. Dr. C.S. Nautiyal, Director along with other senior scientists made interaction with them on R&D activities of NBRI as well as Longwood gardens by presentations and discussions. The team was taken to the Botanic Garden, Herbarium and Exposition where they interacted with the concerned scientists. It was also discussed that NBRI and Longwood Gardens may have collaborative research work and exchange of scientists in future.



Director addressing the delegation from Longwood Botanic Gardens

➤ **Training Course for the Farmers**

The first training course was organized on November 29-30, 2010 where 24 farmers from different districts (Ambedkarnagar, Bulandshahar, Faizabad, Mathura, Sitapur and Unnao) of Uttar Pradesh participated. The second training programme was organized during December 20-21, 2010. 37 selected farmers from different districts (J.P. Nagar, Gautam Budh Nagar, Rampur, Moradabad, Kanpur and Unnao) of Uttar Pradesh participated. Main purpose of this training programme was knowledge up-gradation as well as apprising of the latest technologies of commercial cultivation of floricultural crops (Rose, Gladiolus, Chrysanthemum, Tuberose, Marigold and Gerbera) to the progressive farmers and the entrepreneurs.



Dr. C.S. Nautiyal, Director, CSIR-NBRI in the opening session of First Training Course



A view of field visit at village Dafedarpurva during Second Training Course

- **Recent Publications:**

- Goel, A. & Mitra, R. 2000. Methods and approaches to the conservation of plant diversity in India (*Review Article*), **Appl. Bot. Abst.**, 20 (1): 63-90.
- Goel, A. K., Swarup, Vishnu & R. K. Roy, R.K. 2003. Lotus (11), in **Commercial Flowers** (Eds. T. K Bose, L.P. Yadav, P. Pal, V. A. Parthasarthy & P. Das), vol. 2: p. 419- 428. 2nd Edition, Noya Udyog, Kolkata. (Chapter in Book)
- Goel, A.K. & Kulshreshtra, K.2005. *Ex-situ* conservation of *Isonandra villosa* (Sapotaceae) at the National Botanical Research Institute, Lucknow, India, **Bjournal (UK)**, 2 (2): 28-29.
- Roy, R.K. 2006. Role of Botanic Gardens in education and public awareness: NBRI botanic garden – A case study. *Proceedings BGCI's 6th Education Congress, Oxford University Botanic Garden, United Kingdom*, www.bgci.org.edncongress.
- Roy, R. K. and Goel A. K. (Eds.). 2008. **Proceedings of the National Conference on Bougainvillea- 2006**, Economic Botany Information Service, NBRI, Lucknow, p. 116.
- Roy, R.K. 2008. New Glad cultivars from India. *Glad World*, Glad Growers Quarterly (256) North American Gladiolus Council, **USA**: 21-22.
- Roy, R.K. 2008. Floricultural Boom in India. *Chronica Horticulturae*, International Society for Horticultural Science, **Belgium** 48 (2): 14-19.
- Raj, S.K., Snehi, S.K., Kumar, S., Banerji, B.K., Dwivedi, A.K., Roy, R.K. & Goel, A.K. 2009. First Report of '*Candidatus* phytoplasma asteris (16SrI group) associated with colour malformation of floral spikes of gladiolus in India, **New Disease Reports**, p.1-2.
- Roy, R.K. 2009. Save these rare ornamental trees, *Current Science*, 97(11):1536-38.
- Raj, S.K., Snehi, S.K., Khan, M.S., Asif, M.H., Bag, S.K., Roy, R.K & Goel, A.K. 2010. Molecular characterization of a new isolate of phytoplasma associated with malformation and twisting of floral spikes of Gladiolus, **J. Gen. Plant Pathol.**76: 389-394.
- Kaur, C., Raj, S.K., Snehi, S.K., Goel, A.K. & Roy, R.K. 2011. Natural Occurrence of *Ornithogalum mosaic* virus newly reported on gladiolus in India, **New Disease Reports**, 24 (2): 2.
- Roy, R. K. 2011. Introduction and Migration of Ornamental Trees to India, *Chronica Horticulturae*, Int'l Soc. for Hort. Sci., Belgium: 51(1): 29-33.

- **Scientists:**

- Dr. Anil K. Goel, Scientist-F
- Dr. R. K. Roy, Scientist-EII
- Dr. Kamla Kulshreshtra, Scientist-EI
- Dr. R.S. Chaurasia, Scientist-EI

- **Technical Staff:**

- Shri N.C.Tiwari, Sr. Technical Officer (3)
- Dr. Shankar Verma, Sr. Horticulture Officer (1)
- Dr. Daya Shankar, Sr. Technical Officer
- Dr. Rajeev Kumar, Technical Officer
- Shri Girdhari Sharma, Technical Officer
- Dr. Satish Kumar, Technical Officer