

NBRI BOTANIC GARDEN: A CENTRE FOR CONSERVATION AND EDUCATION IN INDIA

Ogród Botaniczny Narodowego Instytutu Badawczego Botaniki – Centrum
Konservatorskiego i Edukacyjnego w Indiach

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INTRODUCTION

The National Botanical Research Institute (NBRI), Lucknow is one of the National Laboratories and Institutes of the Council of Scientific and Industrial Research (CSIR), New Delhi, India. Its mandate is to carry out research and development on the conservation, improvement and exploitation of economic and ornamental plants. The institute undertakes basic and applied research on the botanical, horticultural and phytochemical aspects on plants and plant products.

The Botanic Garden of National Botanical Research Institute is a historical garden laid out around 1800. It is situated at the heart of the Lucknow city, the capital of Uttar Pradesh (India). The garden is well known all over the world for its unique informal design besides indigenous and exotic flora displayed aesthetically over an area of 25 hectares. It is the third largest Botanic Garden in India. A rich collection of 7000 taxa representing 210 families comprising trees, shrubs, economic, medicinal and rare plants are worth seeing besides bougainvilleas, cannas, chrysanthemums, gladioli and roses which make the garden a repository of genetic treasure land. This garden serves as a National Facility for India by performing various educational activities, training and research in addition to its primary role for conservation of plant genetic diversity.

Germplasm collections

The plant wealth is displayed in the arboretum of the Botanic Garden and also in the plant houses viz. conservatory, cacti and succulents house, palm house, bonsai house, fern

house and Percy- Lancaster House. The approximate number of plant species/cultivars displayed in different sections are: arboretum – 500; bonsai house – 500; *Bougainvillea* – 250; cacti and succulents house – 500; *Canna* – 80; conservatory (House Plants) – 750; Fern House – 65; *Gladiolus* – 150; Palm House – 60; Rose – 500.

Ex-situ Conservation

The Botanic garden plays an important role in the *ex-situ* conservation of genetic resources and acts as a centre of excellence for the conservation of wild and ornamental plants. The flora of Indian sub-continent is very rich in diversity and endemism. Due to various factors, about 4000 taxa are under varying degree of threat or on the verge of extinction. The *ex-situ* conservation is an effective step to save such taxa from extinction and forms an integral activity of the Botanic Gardens. The important germplasm collections of some rare, endangered and endemic plants under conservation in our Botanic Garden are: *Commiphora wightii*, *Cycas beddomei*, *C. pectinata*, *Erythrena resupinata*, *Frerea indica*, *Hoya pendula*, *H. wightii*, *Rauvolfia serpentina*, *Phoenix rupicola*, *Sophora mollis*, *Tecomella undulata*, *Vanilla planifolia* etc.

PLANT HOUSES

Conservatory

This Plant House (1370 sq.m.) is meant for conserving house plants hailing from tropical and sub-tropical regions of the world. The plants have been displayed educatively and aesthetically. Some of the notable ones are: *Bambusa*

ventricosa, *Christia vespertilionis*, *Hoya carnosa*, *Fatsia japonica*, *Ginkgo biloba*, *Vanilla planifolia* besides a large number of spp./cvs. of *Agaltonema*, *Alocasia*, *Anthurium*, *Asparagus*, *Calathea*, *Chlorophytum*, *Codiaum*, *Dieffenbachia*, *Peperomia*, *Philodendron*, and *Synгонium*.

Cacti and Succulents House

A classical pagoda shaped glass house over an area of 284 sq.m. which houses the collection of Cacti and Succulents in informally laid out beds as well as pots. A few important collection are: *Adenium obesum*, *Agave stricta*, *Beaucarnea recurvata*, *B. Stricta*, *B. longifolia*, *Dyckia remotifolia*, *Echinocactus grusonii*, *Gasteria maculata*, *Haworthia fasciata*, *Opuntia microdasys* 'Albida', *O. vulgaris*, *Pereskia aculeata*, *P. bleo*, *Stapelia gigantea*, *Welwitschia mirabilis* and various other grafted cacti.

Palm House

This house (765 sq.m.) holds the collection of palms as potted plants. Some of the interesting collection are: *Arenga pinnata*, *Areca catechu*, *Caryota urens*, *Chamaedorea elegans*, *Chrysalidocarpus lutescens*, *Licuala grandis*, *Livistona chinensis*, *Mascarena verschaaffeltii* etc.

Fern House

This pyramidal house has an area of 400 sq.m. and holds the collection of ferns. Beds have been aesthetically laidout informally alongwith a water course. Some of the important species are mentioned hereunder: *Adiantum capillus-veneris*, *Blechnum occidentale*, *Equisetum debile*, *Lygodium flexuosum*, *Microsorium alternifolium*, *Nephrolepis cordifolia*, *Psilotum nudum*, *Pteris vittata* etc.

Percy-Lancaster House

This Plant House is named after the pioneer horticulturist S. Percy Lancaster in ecognition to his contribution towards the improvement of horticulture in India. The House is in the shape of a tunnel where potted plants of medicinal and economic importance have been displayed in tiers on both sides. A few of them are: *Andrographis paniculata*, *Bixa orellana*, *Law-*

sonia inermis, *Piper longum*, *Vanilla planifolia* etc.

RESEARCH AND DEVELOPMENTAL ACTIVITIES

Horticultural Research

Research work on different aspects of floricultural crops is also carried out in the Botanic Garden. For eg. Standardisation of agro-technology for commercial cultivation of floral crops viz. *Gladiolus*, *Tuberose* and *Bougainvillea*. Improvement and evolution of new and novel cultivars are another aspect of the research work. As a result, a large of new cultivars have been evolved in *Bougainvilleas*, *Chrysanthemum*, *Rose*, *Amaranth*, *Gladiolus* and *Hippeastrum*.

Training Course

Short educational - cum-training courses are organised in the Botanical Garden on several aspects of Ornamental Horticulture, Commercial Floriculture, Garden Management etc. Different categories of personnels viz. Scientists, Horticulturists, Managers, Supervisors and Gardeners from Private & Public Sectors, National Institutes and Government organisations are deputed to our Botanic Garden for undergoing training.

Educational tours to the garden

The Botanic Garden is regularly visited by the students and teachers of the schools, colleges and Universities from Lucknow as well as other cities of India. The main purpose of the educational tours is to acquaint the students with the diversity of plant species from the well identified germplasm collection. Most of the plant species are labelled furnishing botanical name, family, nativity and common name so that one can have first hand information about the particular plant species. Thus, our Botanic Garden provide a massive support to the class room teaching of the educational institutions.

Herbarium specimens and plant materials

In order to facilitate teaching of Life Science and Botany in schools and colleges, plant specimens of representative families are pro-

vided to the students for identification and preparation of herbarium specimens.

Planting materials in limited scale are also provided to different Institution, Universities and National Laboratories for conducting studies and R&D work. Surplus plant materials are sold to the plant lovers and connoisseurs.

Flower Shows and Exhibitions

Two flower shows are organised in the Botanic Garden annually in January and December. In these Shows, about 500 exhibitors from different parts of the country participate in various classes. About twenty thousand people visit each show. The main purpose of organising these shows is to expose the R&D activities in Floriculture to the public. This also helps to inculcate the habit of growing plants and educating people regarding utility and importance of plants and flowers in daily life.

Our Botanic Garden also participates in the Flower Shows and Science Exhibitions organised by other Government Departments putting up educative stall. Selected cultivars of ornamental plants specially those have been evolved by the Botanic Garden are displayed besides plants of economic and rare importance.

Open Days

Our Institute observes 28th February and 26th September as "Open Day" every year for celebrating "National Science Day" and to commemorate the "Foundation Day" of Council of Scientific & Industrial Research (CSIR), the parent body of NBRI respectively. The main purpose is to project the R&D work of the Institute to the public. On this occasion main Laboratories, Plant Houses and Conservatories in the Botanic Garden are kept open for the students of the schools, colleges, universities and local people. Scientists explain the important activities and utility of the plants besides their significance for the conservation programme.

Exchange of Information

The Botanic Garden is maintaining a computerised record of its total living germplasm collection. Information on each plant species is well documented with its botanical name, family, nativity, status and salient features. Any

Institution or Organisation in need of information on any the documented plant species/cvs. for education or any other purpose is provided by the Botanic Garden.

Recently, a computerised database networking programme has been taken up for the purpose of linking all the Botanical Gardens of India. The information on germplasm collection of the Botanic Gardens is being compiled and documented in a concise manner following a definite proforma for the purpose of monitoring *ex-situ* conservation strategies required to be taken up for the endangered plant species.

Dissemination of information

Information generated as a result of R&D work on the different activities of the Botanic Garden viz. agrotechnology of floricultural crops, Bonsai technique, cultivation of House Plants etc. have been documented and are being sent to the public on request. In addition, Radio, T.V. talks and lectures are given on the above topics for better dissemination and impact of the generated information.

Technical advice & Consultancy

Scientists of the Botanic Garden render expertise in the form of technical advice/consultancy for landscaping, Ornamental horticulture and establishment of Botanic Gardens in India.

STRESZCZENIE

Ogród Botaniczny w Lucknow należy do Narodowego Botanicznego Instytutu Naukowego. Położony jest w centrum miasta Lucknow. Ogród jest znany na świecie z unikalnych, oryginalnych projektów dotyczących roślin egzotycznych oraz rodzimych gatunków posadzonych na obszarze 25 ha. Jest to trzeci co do wielkości ogród w Indiach. Bogate kolekcje liczą 7000 taksonów reprezentowanych przez 210 rodzin drzew, krzewów, roślin leczniczych i rzadkich. Oprócz tego znajdują się tam bogate kolekcje bugenwilli, kawy, chryzantem, mieczyków i róż. Rośliny rosną w arboretach znajdujących się na terenie Ogrodu oraz w kompleksie szklarniowym złożonym z części z kaktusami i sukulentami, palmiarni, bonsai z paprociami

mi. W arboretum znajduje się 500 gatunków i odmian roślin.

Ogród Botaniczny odgrywa ważną rolę w ochronie gatunków w naturalnych warunkach dla celów genetycznych, a także w ochronie gatunków dzikich i ozdobnych. Oprócz ochrony rzadkich i zagrożonych oraz endemicznych gatunków występujących bardzo licznie we florze Indii, Ogród zajmuje się popularyzacją wiedzy ogrodniczej wśród studentów i uczniów ze szkół. Organizuje również dwa razy do roku wystawy dotyczące uprawy kwiatów przez miłośników i przedstawia nowe gatunki i odmiany.