

Research Round Up

Bougainvillea Research in India, its Popularization and Registration

CSIR-National Botanical Research Institute, Lucknow, India

Considering ornamental importance and commercial potentiality of Bougainvilleas, CSIR-NBRI initiated R&D work during 1960s. As a first step, building up of germplasm collection was started in the botanic garden for creating a broad genetic base for taking up research and improvement work. In India, CSIR-NBRI was the first institute to take up research work on Bougainvilleas. Collection of varieties was initiated from various sources and conserved as living specimens. At present, the institute has collection of four basal species of *Bougainvillea* (*B. spectabilis*, *B. glabra*, *B. peruviana* and *B. x buttiana*) and 200 named varieties. Moreover, these collections are often referred for identification, research and improvement work on Bougainvilleas taken up by National and International institutions/ organizations.

Germplasm Collection:

The living germplasm collection of Bougainvilleas has been maintained in the following two ways.

Potted Collection - This collection has been displayed and is being maintained in an enclosure measuring 50x8 m. The varieties have been arranged and displayed in alphabetical order keeping three potted plants together. Altogether, there are 600 pots in the collection having plant labels so that one can easily identify and locate the varieties.

Field Collection - This collection has been developed as a *Bougainvillea* Garden over an area of one acre. There are 165 varieties planted in this garden as per specific layout plan. There are four sectors planted with four horticulturally important species viz. *B. glabra*, *B. spectabilis*, *B. peruviana* and *B. x buttiana*. Under these species different varieties have been planted in rows at a distance of 5 m. All the varieties are labelled for their educative and aesthetic use.

Development of New Varieties:

The broad genetic base developed in the form of live germplasm collection was used for multidisciplinary research work for the development of new varieties through hybridization, selection, bud sport, polyploidy and mutation

breeding. As a result, a large number of new and novel varieties have been developed by the institute. Altogether, 26 new varieties have been developed by employing different plant breeding methods (Table 1)

Multiplication and Providing Authentic Plant Material:

There is good demand of *Bougainvillea* plants especially named varieties in the nursery trade as well as for research work usually taken up by R&D institutions and universities. Keeping in this view, large scale multiplication of the available germplasm collection was taken up. As a result authentic planting material was produced which were provided to the research institutes and Bougainvillea lovers. Over the years, the germplasm collection of Bougainvilleas maintained in the botanic garden, CSIR-NBRI, Lucknow has been a source of well identified plant material in India.

Popularization:

Popularization of Bougainvilleas as a flowering garden plant was taken up by this institute along with the R&D work. Newly developed varieties as well as selected germplasm collection were displayed in the Flower Shows organized by the institute. Over and above, participated in the state flower shows as well as Bougainvillea Festival by displaying potted collection along with publication, literature and posters. The visitors in general and Bougainvillea growers in particular were made aware about the ornamental importance, pollution tolerance ability and low maintenance requirement of the Bougainvilleas besides their various usages in ornamental gardening.

Registration of New Varieties:

New varieties of Bougainvilleas developed by CSIR-NBRI have been registered with the International Registration Authority, IARI, New Delhi.

Recognition:

The live germplasm collection maintained by the institute and the new varieties developed has been recognized as 'National Collection' by the National Biodiversity Board, Ministry of Environment, Forests, wildlife & Climate Change and Ministry of Agriculture, Govt. of India.

Table 1. List of varieties developed by CSIR-NBRI

| Sl. No. | Name of the Variety | Methods | Parent | Year of development |
|---------|---------------------------------------|------------------------------------|---|---------------------|
| 1. | 'Begum Sikander' | Hybridization | 'Dr. B.P. Pal' x 'Jennifer Fernie' | 1969 |
| 2. | 'Shubhra' | Bud Sport or Spontaneous Mutation | 'Mary Palmer' | 1969 |
| 3. | 'Dr. B.P. Pal' | Colchiploidy | 'Shubhra' | 1969 |
| 4. | 'Tetra Mrs. McClean' | Colchiploidy | 'Mrs. McClean' | 1969 |
| 5. | 'Arjuna' | Induced Mutation (Gamma Radiation) | 'Partha' | 1972 |
| 6. | 'Archana' | Bud Sport or Spontaneous Mutation | 'Roseville's Delight' | 1973 |
| 7. | 'Mary Palmer Special' | Hybridization | 'Princess Margaret Rose' x 'Dr. B.P. Pal' | 1974 |
| 8. | 'Wajid Ali Shah' | Hybridization | 'Dr. B.P. Pal' x 'Mrs. Chico' | 1974 |
| 9. | 'Parthasarthy' | Bud Sport or Spontaneous Mutation | 'Partha' | 1977 |
| 10. | 'Shweta' | Bud Sport or Spontaneous Mutation | 'Trinidad' | 1979 |
| 11. | 'Chitra' | Hybridization | 'Tetra Mrs. McClean' x 'Dr. B.P. Pal' | 1981 |
| 12. | 'Surekha' | Bud Sport or Spontaneous Mutation | 'Scarlet Queen' | 1981 |
| 13. | 'Nirmal' | Bud Sport or Spontaneous Mutation | 'Mrs. McClean' | 1982 |
| 14. | 'Manohar Chandra Variegata' | Bud Sport or Spontaneous Mutation | 'Manohar Chandra' | 1985 |
| 15. | 'Pallavi' | Induced Mutation (Gamma Radiation) | 'Roseville's Delight' | 1987 |
| 16. | 'Hawaiian Beauty' | Bud Sport or Spontaneous Mutation | 'Hawaiin White' | 1990 |
| 17. | 'Los Banos Variegata' | Induced Mutation (Gamma Radiation) | 'Los Banos Beauty' | 1990 |
| 18. | 'Mahara Variegata' | Induced Mutation (Gamma Radiation) | 'Mahara' | 1994 |
| 19. | 'Los Banos Variegata - Silver Margin' | Induced Mutation (Gamma Radiation) | 'Los Banos Beauty' | 2002 |
| 20. | 'Mahara Variegata Abnormal Leaves' | Induced Mutation (Gamma Radiation) | 'Mahara' | 2002 |
| 21. | 'Los Banos Variegata Jayanti' | Chemical Mutagen Induced Mutants | 'Los Banos Beauty' | 2006 |
| 22. | 'Aruna' | Induced Mutation (Gamma Radiation) | 'Palekar' | 2008 |
| 23. | 'Pixie Variegata' | Chemical Mutagen Induced Mutants | 'Pixie' | 2009 |
| 24. | 'Abhimanyu' | Bud Sport or Spontaneous Mutation | 'Arjuna' | 2010 |
| 25. | 'Dr. P.V.Sane' | Induced Mutation (Gamma Radiation) | 'Dr. R.R. Pal' | 2011 |
| 26. | 'Dr.A.P.J. Abudl Kalam' | Bud Sport | 'Fantasi' | 2015 |



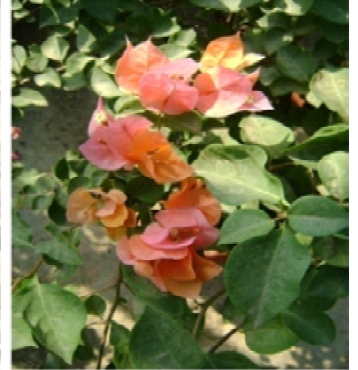
NBRI-Abhimanyu



NBRI-Arjuna



NBRI-Marya Palmer Special



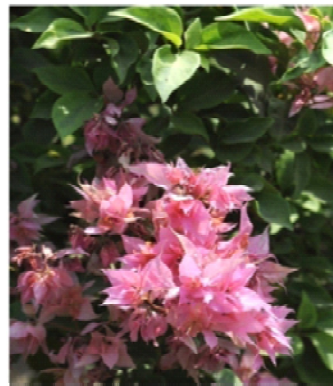
NBRI-Nirmal



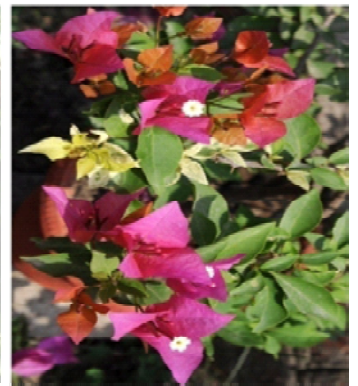
NBRI-Aruna



NBRI-Begum Sikander



NBRI-Pallavi



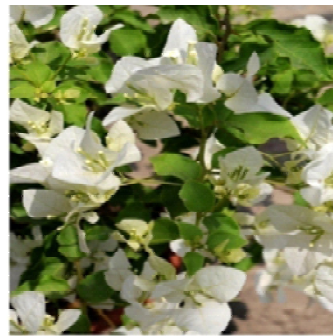
NBRI-Parthasarthy



NBRI-Chitra



NBRI-Dr. P.V. Sane



NBRI-Shubhra



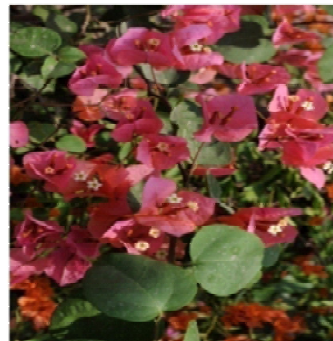
NBRI-Shweta



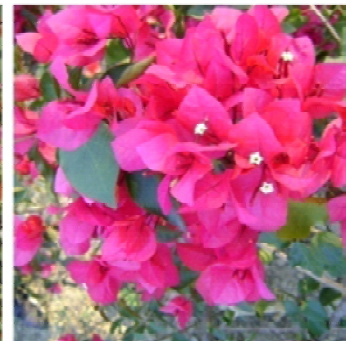
NBRI-Hawaiian Beauty



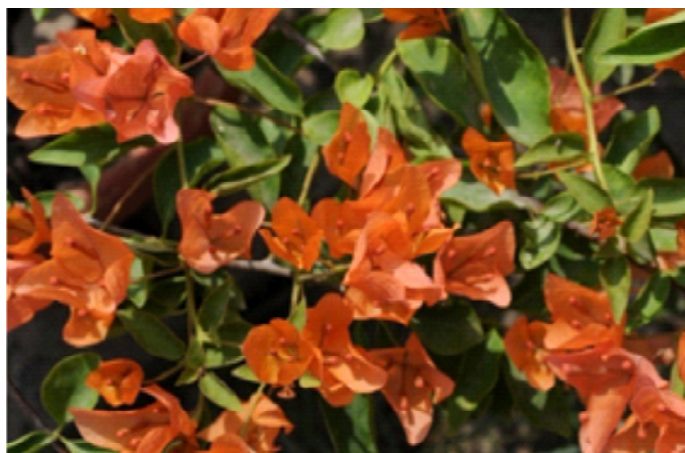
NBRI-Jayanti



NBRI-Tetra Mrs. Mc Clean



NBRI-Manohar Chandra Variegata



NBRI-Aruna



NBRI-Shubhra



NBRI-Dr. P.V. Sane



NBRI-Dr. A.P.J. Abdul Kalam

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ICAR-IARI (Indian Council of Agricultural Research – Indian Agricultural Research Institute, New Delhi, India)

Role of IARI:

IARI is a pioneering centre for germplasm collection, research and breeding of Bougainvilleas at the Division of Floriculture and Landscaping. Bougainvillea was originated in South America but approximately 50% of the present day cultivars were developed in India.

International Registration:

The institute has been recognized as the International Centre

for Registration Authority for Bougainvilleas (ICRA) by Royal Horticultural Society, U.K, since 1966. The division is also one of the major repository centres and wide range of genotypes of bougainvilleas is conserved. An international Check-list has been published by this Division which is an official document of variety developed and registered.

It is also a DUS (Distinct, Uniform and Stability) test centre of Bougainvillea recognized by Ministry of Agriculture & Farmers' Welfare, Govt. of India.

New Varieties:

The new varieties developed by IARI are – 'Dr. R.R.



IARI - Spring Festival



IARI - Stanza



IARI-Summer Time



IARI- Vishakha



IARI-Sonnet



IIHR-Dr. H.B. Singh

Pal', 'Stanza', 'Summer Time', 'Sonnet', 'Spring Festival' and 'Vishakha'. A walk and learn path has been developed for easy identification of varieties and species at the repository for the benefit of the students and the visitors.

ICAR-IIHR (Indian Council of Agricultural Research - Indian Institute of Horticultural Research, Bangalore, India)

Role of IIHR:

Maintaining live germplasm collection of Bougainvillea for research and ornamental purpose. Undertakes breeding work for the development of new varieties.

It is also a DUS (Distinct, Uniform and Stability) test centre of Bougainvillea recognized by Ministry of Agriculture & Farmers' Welfare, Govt. of India.

New Varieties:

Following new varieties have been developed by IIHR - 'Chitravati', 'Dr. H.B. Singh', 'Jawaharlal Nehru', 'Purple Wonder', 'Sholay', 'Usha'.

First Patented Bougainvillea Variety:

The first Indian variety of ornamental plant that secured a foreign patent is Bougainvillea. A variety, Bougainvillea 'Dr. H.B. Singh', developed at the IIHR, Bangalore won admiration in Australia. It was patented in Australia in the name of 'Krishna'. The variety is exclusively used as a potted plant and gained considerable popularity.

S/CAUs (State & Central Agricultural Universities of India)

In India, there are around 50 state and central agricultural universities located in various parts of the country. Under the subject horticultural research, Bougainvillea is taught and grown as an ornamental crop. Live collection is maintained besides research work on various aspects is also carried out including development of new varieties. By that way, the S/CAUs contribute significantly for the popularization of Bougainvillea.

CPWD (Central Public Works Department), New Delhi, India

This Govt. Department has been doing a magnificent work by maintaining large parks in India where Bougainvilleas are grown as ornamental plants in various ways. Moreover, Bougainvilleas are planted in road dividers as well as mixed plantation along the avenues being hardy and pollution tolerant. Therefore, display of Bougainvillea varieties and their popularization in ornamental gardening has taken care of by CPWD.

BARC (Bhabha Atomic Research Centre), Mumbai, India

The BARC, India is the premier nuclear research centre surrounded by the Trombay hills on three sides with the fourth side facing the Arabian Sea. In addition to the nuclear research, the centre has a unique collection of ornamental plants specially native trees, bougainvillea, canna etc.

Bougainvillea Garden - A germplasm collection of well identified 150 varieties laid out in an informal way is centre of attraction of the Bougainvillea growers.

New Varieties Developed - The centre has developed four new varieties viz. 'Suverna', 'Silver Top' etc.



The Bougainvillea Society of India

The Bougainvillea Society of India (BSI) is one of the oldest Societies in Delhi, with its Headquarter located at the Division of Floriculture and Landscaping, Indian Agricultural Research Institute (IARI), New Delhi. This Society performs many societal functions for the benefit of the Bougainvillea growers, nurserymen, farmers by disseminating the latest agro-technology developed by IARI and other R&D organizations by organizing shows, training programmes, interactions etc. Late Dr .B.P. Pal a great visionary and an articulated technocrat who always worked for the benefit of the farmers and making the environment clean founded this Society in 1962 under societies act XXI 1860.

The main objectives are as follows:

1. To inculcate love for Bougainvilleas and to encourage planting.
2. To create public awareness for promoting bougainvillea by organizing lectures, Shows, exhibitions, seminars, workshops.

3. Popularization of Bougainvillea by publication of newsletters for updating technical information on Bougainvillea growing and its commercialization in horticultural nursery trade.
4. To coordinate with other societies / institutes / organizations of India to take up collaborative work for the promotion of Bougainvillea.
5. To promote all round development of Bougainvillea through out India by undertaking various societal activities.



Display of Bougainvillea Specimens

Bougainvillea Festival

The Society organizes Bougainvillea Festival every year March-April when the plants are in full bloom. A competitive show is conducted in various sections and prizes are awarded. Nurserymen, private entrepreneurs, Govt. departments participate in large scale. The main purpose of the Festival is to promote culture of Bougainvillea at the national level.



Visitors of the Bougainvillea Festival

For further queries, please contact:

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