Future of Genetic Engineering and Bougainvillaea flowers in Sindh, Pakistan

By Mrs. Farzana Panhwar, May 2005

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The plant is named after French navigator de Bougainvillaea who carried it to in the ship to fame. It belongs to Four-Q-Clock family (Nyctaginaceae). The genous bougainvillaea, contains several species but only three are important. It is an ornamental climber. It also called paper flower.

Bougainvillaea (pukanawila) is a woody vine. It is common both in tropical and sub-tropical regions of the world. Usually it needs pruning to give a shape of hedge, small tree, shrub, with single trunk which can be go up to 20 feet diameter. After pruning it produces heavy flowers. Although flowers pattern is affected with day length and temperature. The plant produces flowers, only at temperature 21 - 30°C.

The common bougainvillaea found in the Philippines, Kenya, tropical and sub-tropical regions is called bougainvillaea spectabilis (purple colour flower) having two variant Bougainvillaea glabra having large magenta or purple bract and Bougainvillaea Peruviana bracket with lavender to rosy-round purple bracts.

Flowers.

It produces flowers which are hermaphrodite of purple, red, orange and white colours, each flower have three bract, in which veins are connected with tubular flowers. Each flower is a perfect flower having petal, stamens and pistil surrounded by a long tube. Fruit is small dry 5-ribbed achene.

Some flowers have double bracts. Double forms tends to carry their blooms near the end of the stem rather than distributing them evenly over the plant. Some flowers of Bougainvillaea have hard texture, can retain their shape after drying, while those flowers having soft texture will shrivel up after drying. Flowering period in Sindh is throughout the year except in May to July but, big flush comes March to April and October-November.. Moderate temperature plus longer night result into more flower flush.

Varieties.

The common varieties in Pakistan are: Bougainvillaea glabra, B. Louis Wathin, Mrs. Butt (Bilatereta) spectabilis splendens, white Bougainvillaea while other varieties are:

California Gold, Vickie, Juanita Hatten, Barbara Karst, Jamaica White, Sundown, Double Pink, Texas Dawn, Surprise, Rosenka (shrub-3 feet). Bougainvillaea (Bougainvillaea Spectabilis) and B. Brasiliensis has of bright magenta, pink, white, gold, orange and purple flowers, red, scarlet and lavender colour.

Bougainvillaea is divided on the basis of colour into following groups:

Pink, rose blends.

- Bridal Bouquet: vigorous, double (multiple bracts), pale green and pale pink.
- B. Paultonii: moderate grower, large bracts open orange and turns pink.
- Carmencita: double (multiple bracts), magenta rose (patented) which are further divided as:
    - Indian Flame: vigorous, large leaves, heavy flower, large bracts open orange and turn dark pink.

  - Lemmer's Special: moderate vigour, soft leaves, large faded-rose bracts.
  - Lyamunga No.2: shrubby, low grower, magenta bracts.
  - Muriel Fitzpatrick: upright, large pink bracts.
  - Mary Palmer: vigorous when established, large bracts, both white and pink in same inflorescence (patented as 'Surprise').
- Miss Manila: vigorous, large bracts open orange and turn rose.
- Pink Champagne: double (multiple bracts), rich pink.
- Rhodomine: vigorous, large leaves, bright magenta bracts.
- Rose Pink: small plant, bracts open orange and turn pink.

Gold, orange blends.

- California gold: rank grower, rich golden bracts.
- Doubloon: vigorous, double (multiple bracts), orange-gold having five groups namely:
  - Lady Marry Baring: vigorous, heavy flower, small golden-orange bracts.
  - Orange King: flowers in shade.
  - Rosa Catalina: moderate in flowering habit, large orangish bracts, young stems fuzzy like B. Pectabilis types.
  - Rose Pink: small plant, bracts open orange and turn pink.
  - Yellow Glory: vigorous.

White.

Jamaica White (Snow-white): extremely vigorous, medium-sized white bracts, often with pink tinge (patented).

Dead bracts remain on plant, making it unsightly.

Red.

- Barbara Karst: brilliant cerise bracts, vigorous grower.
- Close burn: good inflorescence structure, light brick-red bracts, young stems fuzzy.
- Crimson Lake: large brilliant crimson bracts.
- Kille Campbell: vigorous, large red bracts.

- Lacquer Red: vigorous red bracts (a good strong red, no purplish tinge), orange flowers.
- Red Glory: strong grower, good foliage, red bracts, medium sized.
- San Diego Red: bright red bracts, flowers sparse.
- Temple Fire: low growing, sparse red bracts, used as ground cover.
- William Paulton: low grower, twiggy, small red bracts.

Purple, mauve blends.

B. glabra 'Indica': large purple bracts, large leaves.
B. glabra cypheri: similar to 'Indica' but a smaller plant with smaller leaves and bracts.
B. glabra magnifica: very large magenta-purple bracts, with good arrangement of inflorescences on branch (long peduncles), foliage dark, glossy green.
B. spectabilis: vigorous, small leaves, small purple bracts.

Convent: low grower, leaves linear and small, purplish bracts.

Dulci Dayborn: similar to B. glabra, no flowers in shade.

Elizabeth Angus: large purple bracts.

Hugh Evans: pinkish mauve bracts.

John Latin: vigorous, mauve to pink bracts, old bracts do not abscise.

Lilac Queen: vigorous, low grower, heavy flower, pink-lilac bracts.

Some other cultivars.

- Afterglow.
- Betty Hendry.
- Bois de Rose.
- Buttiana.
- Dream.
- Easter Parade.
- Fascelles Purple.
- Gillian Greensmith.
- India.
- Golden Glow.
- Gopal .
- Hugh Evans.
- Jane Snook.
- Jubilee.
- Lady Hudson.
- Lateritia.
- Mrs. Butt.
- Mrs. Helen McLean.
- New River.
- Orange King.
- President.

- Purple Prince.
- Scarlet O'Hara.

Bougainvillaea is ideal for Bonsai species used for it are as under:

B. razilinesis: Pink Pixie bougainvillaea.

B. buttiana: Golden Glow bright yellow bracts which fade to apricot.

B. buttina:Louis Wathen: orange bracts.

B. buttina 'Mrs. Butt' - crimson bracts.

B. buttina 'orange king'.

B. glabra: Paper flower, lesser bougainvillaea - The most common species used for bonsai. It has shiny green, slightly hair leaves and magenta colour bracts.

B. glabra 'Magnifica'-rose pink bracts.

B. glabra 'snow white' - white bracts.

B. peruviana - rosy pink bracts.

B. spectabilis - pink or mauve bracts.

Plant requirements.

It needs N:P:K fertiliser at the rate of 20:20:20. Bougainvillaea is grown at a distance of 3-15 feet depend upon the plant requirement. Leaves are alternate, petiolate, oblong, narrow at both ends, smooth with entire margin.

Propagation.

Vegetative growth period is the time of pruning it should be cut at the base of the leaf. This will promote the plant to produce new shoot.

The method of propagation is cuttings of April and May in which 6 inch piece of diameter of pencil, is dipped into indolebutyric acid 0.5% or naptholenacetic acid 0.5%) and inserted into rooting medium of pure vericultite, or black sand or composted saw dust. After 6-weeks roots develop. This method is highly successful, although air-layering also develop rooting but this method is not practised usually.

Uses.

In Pakistan plant is used for training on porches, arbours, pergolas, gates, arches, pillars, house corners, walls, in grounds and parks.

Diseases and Disorders.

The only insect which affect the bougainvillaea is caterpillar (Asciodes gordialis). Although plant is resistant to cold but freezing results die-back and plant burns.

Genetic Engineering.

- Most of work done to develop dwarf varieties, Dwarf varieties only 1.5 m (5 feet) tall, these are Bambino Zuki, Bambino Bokay, Bambino Pedro and Bambino Shala, Bambino Majik, Bambino Miski and Bambino Krishna.
- Newly developed hybrids are Jamica white, Scarlet O'Hara (orange-red) and Orange-king.
- Other genetically evolved hybrid are; Majik, Miski, Nonya and Suki.
- Genetic engineering is used to develop flower having double (multiple flower) bract it developed new vigorous growing clones to flower earlier.
- It is used to develop new array of tools, such as mutagensis, hybridisation selection, photo-period control, chromosome analysis, giensa and fluorescence bonding for promoting floriculture.
- It is used to over power propagation in which we use somaclonal variation and biochemical aspect of morphogensis, aiming at plant development methods for rapid multiplication and creation of varieties and germplasm preservation.
- It helps in mass propagation through tissue culture technology.

Conclusion.

More work is needed to study its taxonomy, biodiversity research in diverse aspect of botany like its morphological study, taxonomical study, its ways of conservation the germplams, ethano-botanical studies to find seed biology, plant pathology, entomology, plant propagation and its breeding and other related aspects of its.

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