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# Bougainvillea and Its Propagation

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**Introduction**:

Bougainvillea (Bougainvillea Commers.) is a popular ornamental shrub grown for its colourful and attractive bracts belongs to the family Nyctaginaceae. It is a native of tropical region of South America. It was introduced in India from Europein1860.Its wide adaptability into different agro climatic conditions. Blended with broad spectrum of recurring blooming habit has made bougainvillea commercially important plant in the nursery trade. The plant contains about 16 species. Out of 16 species, 4 have ornamental importance. There are around 1000 cultivars under different species available all over the world. Out of those, only three species namely *B. spectabilis*, Wild *B GlabraChoicy* and B.*peruviana Humb* & *Bompossess* color fullbacks for the ornamental values (Zadooet.al.1975a).These have a short history of domestication and have been cultivated about 150 years outside their natural habitats (Zadooet.al.1976).Due to its high demand in nursery trade and landscape use, the demand for new and novel cultivars is growing steadily. Breeders all over the world, especially from tropical countries, are putting hard efforts to develop new cultivars with special traits, mainly dwarf and thorn less varieties, to match the changing taste and lifestyle. With the changing lifestyle, housing pattern and new landscape usages, the demand for new and novel varieties is growing day by day.

In India, crop improvement work was started in early 20$^{th}$ century with the introduction of *B. spectabilis*in 1860 from Europe. However, the popularity really started with the introduction of cv. 'Mrs. Butt' from Royal Botanic Garden, Kew to The Royal Horticultural Society, Kolkata in 1923 (Swarup and Singh, 1995). Percy Lancaster, the renowned British horticulturist, has been credited for the development of first cultivar of Bougainvillea - 'Scarlet Queen' in 1920 and subsequently another excellent bicoloured

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cultivar 'Mary Palmer' developed by him paved the way for *Bougainvillea* cultivation in India. As a result, large scale breeding programmes have been initiated for the development of the new varieties. Mutation (Bud sports and induced mutations) has played an important role in the development of many new ornamental cultivars and multi-braced bougainvilleas.

**Flower morphology**

To understand the morphology of a flower is very important for the crop improvement programme of any crop. The flowers of *Bougainvillea* are hermaphrodite, tubular in shape with a constriction in the middle and borne in clusters of three, each flow- er subtended by a brightly coloured bract, which helps to attract insects for cross pollination. Bract colour in bougainvillea is contributed by betacyanins and betaxanthins *i.e.* betalains (Mabry and Dreiding, 1968).The tip of the flower is conspicuous with a star. There is a solitary carpel at the base surrounded by ring shaped nectar. During morning hours (around 10 am) anthesis takes place followed by another dehiscence and stigma receptivity. Butterflies visit the flowers attracted by the brightly coloured bracts and the nectar glands aids in cross pollination. The opened flowers remain so for a day, after which the upper part of the flower tube gets twisted in a spiral. Most of the Bougainvillea cultivars are diploid with a chromosome constitution 2n =34, irrespective of the species / hybrid group to which they belong (Zadoo*et al*., 1975). Xu*et al*., 2009 reported the occurrence of sixteen stages during bud and flower development in one inflorescence of *Bougainvillea*.

**Propagation:**

Bougainvillea is propagated by cuttings, leaf buds, grafting method, tissue culture by using young growing meristem and also by method of sexual or seeds.

**Cuttings:**

In this method we use softwood terminals, semi-hardwood and hardwood cutting for propagation. Softwood terminals or semi-hardwood cuttings are matured green and matured intermediate wood stem pieces can be used for propagation. Stem cuttings should be 1⁄8 inch or more thick and should have at least three to five nodes. Leaves may be left on the cuttings during rooting, but remove leaves from portions of the stem

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that are under the surface of the rooting medium. Softwood terminals of easy-to-root cultivars do not require a rooting hormone. With more mature wood (hardwood cuttings) , a rooting hormone such as IBA (3-indolebutryic acid) at 2000–3000 ppm is commonly used. Higher concentrations may be needed with more difficult-to-root cultivars. Intermittent misting is commonly used to prevent desiccation during rooting.

**Leaf-bud cuttings:**

Leaf-bud cuttings can be used when source material is limited. Each node can be used as a cutting. The cutting, taken from shoots that are partially matured, consists of a leaf-blade and short piece of stem (1-1/2 inches) with the attached auxiliary bud. Cut the stem section about ½–1 inch above and below the point of leaf attachment. Place the bud vertically in a rooting medium and lightly cover it (¼ inch) so that only the leaf blade cans be seen.

**Grafting**

Various kinds of Grafts may be used, including wedge, whip or tongue, or approach graft. Some cultivarst have little orno chlorophyllin their leaves are difficult to grow from cuttings and need to be grafted on to a vigorous root stock to be propagated.

Grafting is useful with delicate cultivars that have fragile root systems. It is also used when it is desired to have multiple cultivars on one plant. The scion should be free of disease. The rootstock could be a seedling or a rooted cutting of an existing, established plant. All cut surfaces should be covered with grafting wax once the join is made to prevent moisture loss. Removes hoots from the root stock. Put the grafted plant in a humid environment so the scion does not dry out.

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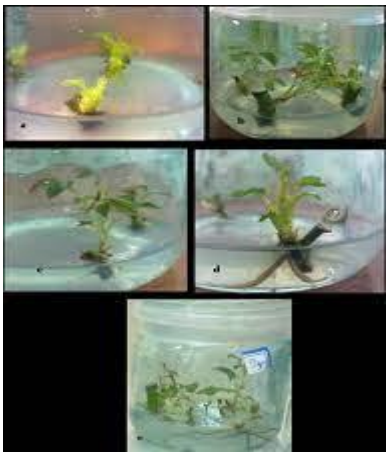
**Tissue culture**



By using growing young meristem of the plant as explants with the suitable culture media we can induce the shoot and root in lab conditions as in-vitro culture.

**Seeds:**

Seeds germinate readily and require no treatments to break dormancy. But plants do not set seed properly, by considering all of the above methods cuttings is the best method for multiplication as well as propagation.

**Conclusion**

Propagate this plant from cuttings; but propagation can be slow and difficult due to *Bougainvillea*'s extremely fine root system. Bougainvillea roots best from semi-hard wood cuttings 5-9 nodes in length. Take softwood cuttings if you are propagating when night temperatures are above $55^{o}$; hardwood cuttings when night temperatures are below$55^{o}$F. Treat cuttings with between 3000 and 6000 ppm IBA. Remove leaves from all portions of the stem that will be underground.