

Review Article

<https://doi.org/10.20546/ijcmas.2021.1003.232>

Propagation of Hibiscus through Cutting and Grafting-A Review

D. B. Chatse* and D. P. Kedar

Section of Floriculture and landscape Architecture, Dr. Panjabrao Deshmukh Krishi
Vidyapeeth, Akola, (M.S), India

*Corresponding author

ABSTRACT

Keywords

Hibiscus,
Cutting and
Grafting

Article Info

Accepted:
15 February 2021
Available Online:
10 March 2021

The propagation of the hibiscus may be carried out with cutting and grafting. Stem cutting and cleft grafting are the most important method of vegetative propagation. The cuttings treated with high concentration of IBA, performed the best in rooting and survival percentage, whereas, the mist house growing condition was found effective in increasing the success rate of the cuttings. Semi-hardwood cuttings gave the best result in terms of rooting and survival performance. This review article deals with various methods used in the propagation of hibiscus, which are commercially adopted, and the recent progress and trends related to it.

Introduction

Hibiscus rosa-sinensis L. of the family Malvaceae is native to East Africa. Locally known as Gurhal, this species has been officially honoured as the National Flower of Malaysia on 28 July 1960. This plant is native to tropical and south eastern Asia (China), this plant is commonly found throughout the tropics and as a house plant throughout the world. It requires porous soil, moderate temperature and severely high humidity.

The tropical Chinese hibiscus, or China rose (*Hibiscus rosa-sinensis*), which may reach a height of 4.5 metres (15 feet), rarely exceeds 2 metres in cultivation. It is grown for its

large somewhat bell-shaped blossoms. Cultivated varieties have red, white, yellow, or orange flowers. The East African hibiscus (*H. schizopetalus*), a drooping shrub with deeply lobed red petals, is often grown in hanging baskets indoors.

Many species of Hibiscus are grown for their showy flowers or used as landscape shrubs. Hibiscus has also medicinal properties and takes part as a primary ingredient in many herbal teas. This plant is popular landscape shrub, creates a bold effect with its bed-textured, glossy dark green leaves and with 4-6 inch wide and up to 8 inch long, showy flowers, produced throughout the year and grows up to 7-12. Sometimes its demand time

to time increases during different Puja festivals. Hibiscus is propagated through vegetative methods by cutting and grafting for produce quality planting material on large scale.

Cutting is most convenient method of propagation. The cutting should be taken from new growth or softwood. Softwood is branches on the hibiscus that have not yet matured. The hibiscus cutting should be 4 to 6 inches (10 to 15 cm.) long. Remove everything but the top set of leaves. A slant cut give at the base of the cuttings and each cutting. A transverse cut give at top of each cutting. Dip the bottom of the hibiscus cutting in rooting hormone then place the cutting in well drained soil and in partial shade. The cuttings should be rooted in about eight weeks.

Works of Mukhopadhyay and Bose (1972) revealed that retention of four leaves developed per cent rooting and more number of roots (22.00) per cuttings of *Hibiscus rosasinensis* L. with IBA 3000 ppm as compared to control.

Bhattacharjee and Balkrishna (1986) conducted experiment on the standardization of propagation of hibiscus (*Hibiscus rosa-sinensis* L.) and found that fifteen centimeter tip cutting with four leaves of hibiscus treated with 4000 ppm IBA and planted in sand under mist give best performance in rooting and survival of rooted cuttings.

Gupta (1989) conducted an experiment to investigate rooting potentiality of semi-hard wood cuttings of Snow Flake cultivar of *Hibiscus rosa sinensis* L. under intermittent mist with the application of auxins and concluded that IBA at 4000 ppm induced higher percentage of rooting (80), greater number of roots (18.25) per rooted cutting and also produced longer roots (73.23 mm).

Ahir and Parmar (2007) studied on the rooting in *Hibiscus rosa-sinensis* L. Hawaii by air Layering with the aid of IBA, NAA and different colored polythene found that IBA at 3000 mg^l⁻¹ with black polythene wrappers was the most effective in early root initiation and increasing the rooting percentage, increasing the sprouting of rooted layers.

Ali Mohammadi Torkashvand and Vahid Shadparvar (2012) have conducted an experiment on rooting in Hibiscus by IBA and rooting substrates and obtain highest no. of roots in sand-perlite substrate with concentration of 4000 ppm mg/l IBA.

Savaliya Rohitkumar Rameshbhai (2016) studied on efficiency of IBA on different types of cutting for rooting in hibiscus (*Hibiscus rosa-sinensis* L.) cv. local found that maximum percentage of rooting by hardwood cutting with IBA 1000 mg/l

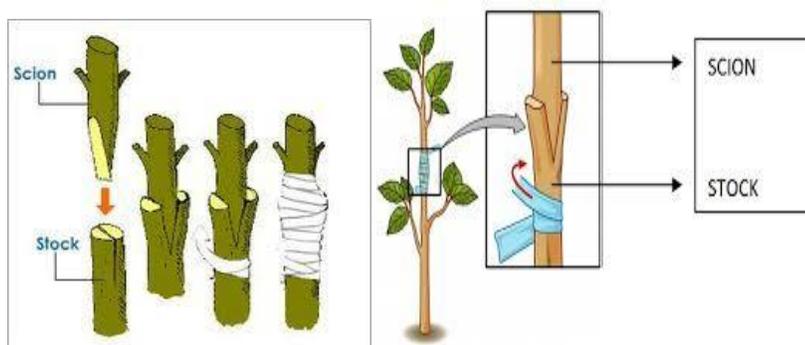
Chowdhuri, T. K *et al.*, (2017) studied on the effect of different growth regulators on propagation of china rose (*Hibiscus rosa-sinensis* L.) in subtropical zone of West Bengal found that NAA at all concentrations (1000-3000 ppm) may taken for rooting of china rose, but higher doses is more beneficial in this aspect during rainy season in subtropical zone, the second best growth regulator is IBA at 3000 ppm. Semi hardwood cutting is better than tip cutting for propagation of China rose.

Grafting is a propagation technique usually employed to improve the quality of the nursery stock or to produce seedlings that carry the plus qualities of a mother plant. It is carried out by bringing together two vegetative parts from two different plants of a same species and joining them together to grow as a single plant. Usually the stem branches are used for the purpose of grafting (Fig. 1 and 2).

Fig.1 Propagation through cutting



Fig.2 Propagation through grafting



The plant part that receives another plant part is called the stock, while the plant part that serves as the graft is called the scion. When these two are joined together, graft union takes place. The scion always carries the positive qualities of the mother plant while the stock serves as the root system for the seedling. After the graft union is taken place, scion becomes the upper part while the stock becomes the basal part of the new plant. The stock plant is usually a plant that is already established and growing. During the process of grafting, certain portion of the stem from the stock plant is removed. The selected scion is brought either as a whole plant or as a part and inserted on to the stock plant so that the cut portion of the stock and the scion remain in contact. The stock and scion are tied together with the help of a tape to ensure the union. The graft is maintained in that condition for a specified time period. After the graft union is ensured, the remaining

portion of the stock plant above the graft union is removed and the scion is encouraged to grow after this, the graft is ready for planting.

Ibrahim and Darwish (2010) conducted experiment on response of *hibiscus sp.* Plants to different types of cleft grafting reported that hibiscus root stock cultivar “Fire Track” was the best and for scion cultivar “Cooperi” and “Fire Truck” were best and they increased survival percentage, the length /scion, stem, diameter and fresh weight.

Swaminathan and R. Arunkumar (2017) conducted study on four exotic rootstock (EC 755655, EC755656, EC755657, EC755658) were grafted on to Akra Anamika, PA 4, Bihar local- 3, Pusa sawani scions in which EC 755658 + Arka Anamika grafts had highest grafting success rate rootstock graft union 8.07 days and 89.00 percentage.

In conclusion all the above investigation shows that stem cutting and grafting are the most important method of vegetative propagation. The cuttings treated with high concentration of IBA, performed the best in rooting and survival percentage. Semi-hardwood cuttings and cleft grafting gave the best result in terms of rooting and survival performance.

So, Increasing the quality planting material of hibiscus, cutting and grafting are the easy propagation method for developing the hibiscus plant as soon as possible.

References

- Ahir M.P., Parmar B.R and Punj F.G (2007). Rooting studies in *Hibiscus rosa-sinensis* L. Hawaii by Air Layering with the aid of IBA, NAA and different colored polythene. *International Journal of Bioscience* 5(1): 137-139.
- Ali Mohammadi Torkashvand and Vahid Shadparvar, (2012) Rooting in *Hibiscus rosa-sinensis* L.(yellow double Hybrid) by IBA and rooting substrates. Volume-2, Issue-2, pp. 194- 197, www.ijpaes.com
- Bhattacharjee S.K. and Balkrishana M., (1986). Standardization of Propagation of *Hibiscus rosa-sinensis* L. from stem cuttings AGRIS, IIHR, Volume: 34, pp.158-159
- Chowdhuri, T.K., Sadhukhan, R., Mondal, T. and Das, S. (2017) studied on the effect of different growth regulators on propagation of china rose (*Hibiscus rosa-sinensis* L.) in subtropical zone of West Bengal (2017) Volume-07, pp.15122-15125, <http://www.journalijdr.com>
- Gupta, v .N.(1989). Effect of intermittent mist and auxins on the rooting potentiality of *Hibiscus rosa-sinensis*, L. Cv. 'Snow Flake' by semi-hard wood cuttings. *South Indian Hort.*. 37 (4): 250-251.
- Ibrahim A. M., Darwish M.A. (2010) Response of *Hibiscus* Sp. Plant to different types of Cleft grafting. Bulletin of faculty of Agriculture, Cairo University 2010. Vol.61, No. 3, pp.-324, <https://www.cabdirect.org>
- Mukhopadhyay, T. P. and Bose, T. K. (1972). Standardization of propagation from cuttings under mist. *Punjab Hart.*12 (4): 98-101.
- Savaliya Rohitkumar Rameshbhai. (2016) on efficiency of IBA on different types of cutting for rooting in hibiscus (*Hibiscus rosa-sinensis* L.) cv. Local submitted to College of Agriculture, Junagad.
- Swaminathan, V. and R. Arunkumar (2017) standardization of grafting in Okra on tolerant rootstock. *Int. J. pure App. Bioscience* (S): 419-427, www.ijpab.com

How to cite this article:

Chatse, D. B. and Kedar, D. P. 2021. Propagation of Hibiscus through Cutting and Grafting – A Review. *Int.J.Curr.Microbiol.App.Sci.* 10(03): 1850-1853.
doi: <https://doi.org/10.20546/ijemas.2021.1003.232>