



Some Ornamental plants and Their Propagation

KEYWORDS

Ornamental plants, Poly bags, Propagation, Vegetative parts

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ABSTRACT *There is a wide diversity of the plant species over the world. As per their genetic makeup as well as adaptability to their natural habitats the group of the individual plant species showing their presence in nature. On the basis of their utility plants are categorized as for Medicinal, Flowering, Ornamental plants etc. Loss of natural habitat, excess utilization, diseases etc are key factors playing a remarkable role in minimization of the plants. The number and variety may be variable based of plant tolerance capacity and related environmental condition. Nature has provided many modes to the plants for multiplication such as by Seeds and the plants which are not capable to produce seeds are having capacity for multiplication by another ways known as vegetative methods. Root, Stem, Leaf or their modified forms are capable to produce a second one copy of the same parental plants. Seed production rates, distribution pattern, capacity of germination in different environmental condition are leading factors for spreading of the plant species. The environmental condition which supports the root ignition and bud formation from vegetative parts of the plant is an urgent need for Plant growth. Present study aimed for propagation of various ornamental plants by all possible methods like seeds and by vegetative mode also. The plants were planted in the soil filled in poly bags separately and propagated for further utilization.*

INTRODUCTION

India is a rich center of plant diversity due to varied climatic conditions as well as soil qualities which provide a better platform for the diverse plant groups. In India around 45000 plant species are spread over the area (Mayers, 1988).

Variation in plant propagation can be observed in the nature like some plants are producing many seeds for future generation with their unique type of dispersal mechanism. Among a large diversity of the plants, many plants does not produces seeds and are equally distributed by propagating itself following another mode of propagation like by bud, bulb, rhizome, tuber, corm, stem cutting etc. Some plants are also capable to regenerate by both the methods like by their Seeds and Stem cutting. An ornamental plant acts as an interaction of the people towards them for their unique beauty. India is blessed with a numerous plant diversity of specified utility among them many of the ornamental plants are grown in small or in large scale in the country based on places as well as market demand.

Vegetative propagation of *Asculus indica* through stem cutting treated with plant growth regulators was recorded by Majeed et. al. (2009). Some plants stems are producing easily roots whereas some generating roots very difficulty. (Nanda, 1970). Studies on wild ornamental plants were made by Reddy et. al (2012). Man made activities are mainly responsible for loss of the plant species (Arora, 1993).

Nanda and Kochhar (1987) recorded that stem cutting as a popular plant propagation method. *Curculigo orchiodes* Gaertn – An endangered plants micro- propagation was observed by Bhavishwa et. al (2003). Patter P. V. and Jayraj M. (2012) studied on Rapid callogenesis and plant regeneration from nodal explants of *Sida cordifolia* L. an important medicinal plant.

Propagation of the node explants of Rose was studied by Farahani and Soodeh (2012). Ornamental plants cutting experiment done by Fazal and Shard (1991). In vitro studies on different plants were conducted by Bisth et. al (2011), Naz et. al (2012), Praveen and Rasheed (2013) and Shokri et. al (2012). Growth regulator effect on rooting of *Corylus colurina* was done by Kurtela et. al (2001).

The current study aimed for Propagation of the various ornamental plants with minimum prize and by simple technique.

MATERIALS AND METHODS

The current study was conducted during 2011 -2012 in the departmental nursery of rural technology at G.G.V. (A Central University) Bilaspur (C. G.). Several poly bags were filled with fertile soil collected from River basin Arpa. Each five poly bags were used for propagation of all the plants individually. The plant propagules/parts were used for multiplying them.

As per need of the plant/parts were supplied water and further weed, nutrient diseases etc. were managed by suitable technique over the study period. Plant parts used for propagation were collected from different sites of the Chhattisgarh state. More than half of the studied plants were propagated by using their stem cutting as were oblique deep in poly bags soil and in initial stage provided light irrigation.

RESULTS AND DISCUSSION

Results of the current study shown in Table – 1. Habits of the studied plants given in Table - 2. Table -3 is for Propagation mode of varied ornamental plants. Family wise distributions of the plants are given in Table - 4. Graphical representation of the studied plants habit, propagation mode and related families are also shown.

Table -1. List of the "Ornamental plants and their Mode of Propagation".

S. No.	Botanical Name	Family	Habit	Propagation Parts	Mode of Propagation
1.	<i>Asparagus racemosus</i> Willd.	Liliaceae	Shrub/Climber	Seed/Tuber	Poly Bags
2.	<i>Bougainvillia glabra</i>	Nyctaginaceae	Shrub	Stem cutting	Poly Bags
3.	<i>Caladium bicolor</i> Vent.	Araceae	Herb	Bulb	Poly Bags

4.	<i>Canna indica</i> Linn.	Zingiberaceae	Herb	Rhizome	Poly Bags
5.	<i>Cestrum nocturnum</i> Linn.	Solanaceae	Herb	Stem cutting	Poly Bags
6.	<i>Chrysanthemum indicum</i> Linn.	Asteraceae	Herb	Stem cutting	Poly Bags
7.	<i>Coleus blumei</i> Benth.	Lamiaceae	Herb	Seed/Stem cutting	Poly Bags
8.	<i>Deffenbachia bowmannii</i> Carriere.	Araceae	Herb	Stem cutting	Poly Bags
9.	<i>Dracaena dermemensis</i> Cvs.Engl.	Agavaceae	Herb	Stem cutting	Poly Bags
10.	<i>Duranta erecta</i> Linn.	Verbenaceae	Herb	Seed/Stem cutting	Poly Bags
11.	<i>Epipremnum aureum</i> L.	Araceae	Herb	Stem cutting	Poly Bags
12.	<i>Hibiscus rosa sinenses</i>	Malvaceae	Shrub	Stem cutting	Poly Bags
13.	<i>Ixora coccinea</i> Linn.	Rubiaceae	Herb	Stem cutting	Poly Bags
14.	<i>Jasmiun sambac</i> (L.) Aiton.	Oleaceae	Herb	Stem cutting,	Poly Bags
15.	<i>Mirabilis jalapa</i> Linn.	Nyctaginaceae	Herb	Seed/ Stem cutting	Poly Bags
16.	<i>Nerium indicum</i> F. Le. Makino	Apocynaceae	Herb	Seed/ Stem cutting	Poly Bags
17.	<i>Nyctanthus arbortristis</i> Linn.	Nyctaginaceae	Shrub	Stem cutting	Poly Bags
18.	<i>Polyanthus tuberosa</i> Linn.	Amaryllidaceae	Herb	Bulb	Poly Bags
19.	<i>Quisqualis indica</i> Linn.	Combrataceae	Herb/Climber	Stemcutting	Poly Bags
20.	<i>Rosa indica</i> Linn.	Rosaceae	Herb	Stem Cutting	Poly Bags
21.	<i>Tabernaemontana verticata</i>	Apocynaceae	Shrub	Stem cutting	Poly Bags
22.	<i>Tabernaemontana diverticata</i>	Apocynaceae	Shrub	Stem cutting	Poly Bags
23.	<i>Tagetes erecta</i> Linn.	Asteraceae	Herb	Seed	Seed Collection
24.	<i>Tagetes patula</i> Linn.	Asteraceae	Herb	Seed	Seed Collection
25.	<i>Tradischantia pallida</i> (Rose D. R.) Hunt.	Commelinaceae	Herb	Bud	Poly Bags

Table – 2. Habits of the Propagated Ornamental Plants.

S. No.	Habit	Number	Percentage
1.	Herb	18	72
2.	Herb/Climber	01	04
3.	Shrub	05	20
4.	Shrub/Climber	01	04
Total		25	100

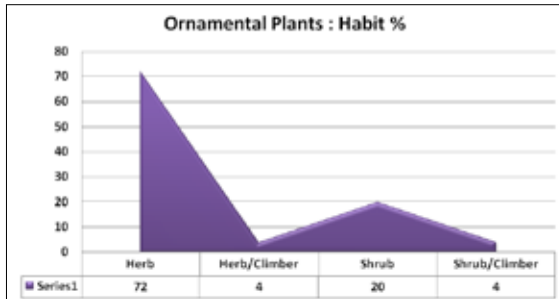


Table – 3. Propagation Mode of various Ornamental Plants.

S. No.	Propagation Mode	Number	Percentage
1.	Bulb	02	08
2.	Bud	01	04
3.	Rhizome	01	04
4.	Seed	02	08
5.	Stem cutting	14	56
6.	Seed/Stem cutting	04	16
7.	Seed/Tuber	01	04
Total		25	100

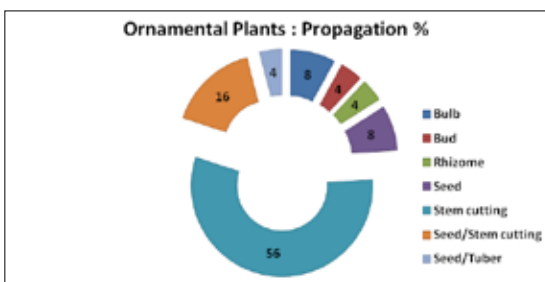
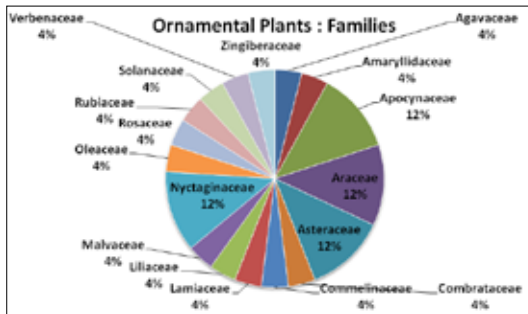


Table – 4. Ornamental Plants related to their Family.

S. N.	Family	Number
1.	Agavaceae	01
2.	Amaryllidaceae	01
3.	Apocynaceae	03
4.	Araceae	03
5.	Asteraceae	03
6.	Combrataceae	01
7.	Commelinaceae	01
8.	Lamiaceae	01
9.	Liliaceae	01
10.	Malvaceae	01
11.	Nyctaginaceae	03
12.	Oleaceae	01
13.	Rosaceae	01
14.	Rubiaceae	01
15.	Solanaceae	01
16.	Verbenaceae	01
17.	Zingiberaceae	01
Total		25

A total number of 25 plant species belonging to 17 families were used for the propagation. The plants were of four different habits like Herb, Herb and Climber, Shrub, and Shrub and Climber. The plant parts which were used for propagation were of seven different modes like Bulb, Bud, Rhizome, Seed, Stem cutting, Seed/Stem cutting and Seed/Tuber. Maximum percentage of propagation was 56 for the mode of Stem cutting used for the study. Seed/ Stem cutting registered second position as a plant propagating parts and other parts have shown their intermediate stages for propagation.

Plants were distributed in 17 families including varied number of their members. Maximum number 3 included in the family Apocynaceae, Araceae, Asteraceae and Nyctaginaceae whereas rest of the 13 families includes single species in the experiment. Four families include 12 % each of the plant member and others had 4 % for individual plant species. Finally it is concluded that the plants for ornamental purpose having efficient capabilities to regenerate by their different plant parts in suitable environmental condition. It was a prime step to multiply them for future plantation and is also a step for to conserve them.



REFERENCE

1. Arora, J. S. 1993. Introductory Ornamental Horticulture. Kalyani publishers, Ludhiana. | 2. Bhavisha, B. Wala and Yogesh T. Jasraj, 2003. Micropropagation of an endangered Medicinal plant : *Curculigo orchioides* Gaertn. *Plant Tissue Cult.* 13 (1) : 13 – 19. | 3. Bisht, H., Vinay P. and Nautiyal, A. R. 2011. In vitro plant propagation for rapid multiplication and conservation of *Fraxinus micrantha*: A Himalayan tree species of high medicinal value. *International Research Journal of Biotechnology.* 2(9) : 220-227. | 4. Farahani, F. and Soodeh S. 2012. Propagation and growth from cultured single node explants of *Rosa* (Rosa miniature). *African Journal of Plant Science.* 6 (10), pp. 277-281. | 5. Fazal, S. and Sharad C. P. 1991. Propagation of Sterile Ornamental Pepper by Cuttings and in Vitro Shoot-tip Culture. *HORTSCIENCE.* 26 (8):1078. | 6. Kurtela, mihaela, K., Aleksander, S., Ines, V., Ksenija, K. 2001. Effect of growth regulator on adventitious rooting of *Corylus colurna*. *Proceedings of 9th International Conference of Horticulture.* 3 : 524-529. | 7. Majeed A., Khan M. A. and Mughal A. H., 2009. Vegetative propagation of *Asculus indica* through stem cutting treated with plant growth regulators. *Journal of Forestry Research* 20 (2) : 171 – 173. | 8. Mayers, N. 1988. Threatened biotas : Hotspots in tropical forests. *Environmentalist* 8 : 187 – 208. | 9. Nanda, K. K. 1970. Investigation on the use of Auxin in vegetative reproduction of Forest plants. Final report PL – 480, Research Project, p 215. | 10. Nanda, K. K. and Kochhar, V. K. 1987. *Vegetative propagation of Plants. Principles and Practices*, India Book Trust. | 11. Naz, S. Naz, F., Amina Tariq, A. Aslam, F. Ali, A and Athar, M. 2012. Effect of different explants on in vitro propagation of gerbera (*Gerbera jamesonii*). *African Journal of Biotechnology.* 11 (37) : 9048-9053. | 12. Parveen, A. and Rasheed, S. 2013. In vitro clonal propagation of *Fuchsia magellanica* Lam. *African Journal of Biotechnology.* 12(7) : 670-678. | 13. Patter, P. V. and Jayraj M. 2012. Rapid callogenesis and plant regeneration from nodal explants of *Sida cordifolia* L. an important medicinal plant. *Journal of Phytology* 4 (3) : 40 – 44. | 14. Reddy S. R., Reddy A. M. and Yasodamma N. 2012. Exploration of wild ornamental flora of YSR District, Andhra Pradesh, India. *Indian Journal of Fundamental and Applied Life Sciences.* 2 (1) 192 – 199. | 15. Shokri, S., Zarei, H., Alizadeh, M. 2012. Evaluation of rooting response of stem cuttings and in vitro micro-cuttings of bottlebrush tree (*Callistemon viminalis*) for commercial mass propagation. *Wudpecker Journal of Agricultural Research.* 1(10) : 424 - 428, |