Pure Appl. Bio., 2(1): 24-27, March- 2013.

Research Article

EFFECT OF PLANTING TIME ON CUTTINGS OF RANGOON CREEPER (*QUISQUALIS INDICA*)

Saeed Ahmed[a], Nasir Mahmood[a], Mushtaq Ali[a], Nazeer Ahmad[b], Muhammad Junaid[c], & Abdus Samad[d]

[a]Department of Horticulture, The University of Agriculture, Peshawar-Pakistan.

[b]Department of Entomology, The University of Agriculture, Peshawar-Pakistan.

[c]Department of Plant Breeding & Genetics, The University of Agriculture, Peshawar

Pakistan.

[d]Department of Soil & Environmental Science, The University of Agriculture, Peshawar-Pakistan.

*Corresponding author: **Saeeddikhan@gmail.com**

Abstract

The experiment was conducted on the "Effect of planting time on the cuttings of different "*Quisqualis indica*" at Ornamental Nursery, Department of Horticulture, The University of Agriculture, Peshawar, during 2009. It was observed that the planting time had significant effect on all the parameters studied. Similarly, cuttings also showed significant effect on all the parameters with the exception of number of cutting sprouted. Maximum days to sprouting (34 days) were recorded for hard wood and (31 days) for semi hard wood and (20 days) for soft wood cuttings in plastic tunnel. Maximum sprouting percentage (60 %) was recorded for hard wood, 22.22 % for semi hard wood and 13.50 % for soft wood cuttings. Numbers of leaves per sprout i.e. 10.30, 6.66 and 11.60 were recorded respectively for hard wood, Semi hard wood and soft wood cuttings. Number of roots per cutting 8.0, 15.0 and 35.60 were recorded for hard wood, semi hard wood and soft wood cuttings, and the survival percentage 13 %, 46 % and 22 % respectively for hard wood, semi hard wood and soft wood cuttings. Root weight 0.2 g, 0.5g and 1.0 g were recorded respectively for hard wood, semi hard wood and soft wood cuttings

Introduction

Quisqualis indica also known as the Chinese honeysuckle or Rangoon creeper. It is a creeper with red flower clusters belongs to family Combretaceae and is found in Asia. It is found in many other parts of the world either as a cultivated ornamental or run wild.The Rangoon creeper is Ligneous vine 2.5 m long or more; petioles 3-10 mm long, these curved with display of blades; petioles 6-8 mm long; leaf blades 3.5-15 cm long, 1.5-5.5 cm wide, elliptic to oblong or ovate to lanceolate, rather abruptly acuminate apically, obtuse to rounded basally; flowers in panicles 10-15 cm long, on peduncles 2-6 cm long; bracts lance-subulate; hypanthium 3-6 (7) cm long, brightly colored; calyx lobes 1.5-2.5 mm long; petals opening white, turning red, 8-16 mm long; fruit 30-35 mm long, 10-12 mm thick, ovate-elliptic in profile, 5-winged, uncommonly produced [1].

Quisqualis indica is an evergreen (in warmer climates) creeping shrub that can reach as much as 70 feet in tropical climates. Rangoon Creeper flowers throughout the summer with fragrant blossoms (especially at night) that open white darken to pink and eventually red. This plant needs support for growing and is very useful in covering fences, trellis supports, and walls.The plant is mainly used for traditional_medicine. Decoctions of the root, seed or fruit can be used as antihelmintic or for alleviating diarrhea. Fruit decoction can also be used for gargling and to combat nephritis. Leaves can be used to relieve pain caused by fever. The roots are used to treat rheumatism. The seeds of this and related species, *Q. fructus* and *Q. chinensis*, contain the chemical Quisqualic acid, which is an agonist for the AMPA receptor, a kind of glutamate receptor in the brain. The chemical is linked to excitotoxicity (cell death) [2, 3]. The growth rate is generally fast, and the plant does not make heavy fertilizer demands. *Quisqualis indica* does like medium to bright light. Under good conditions it will be necessary to prune the plant to keep it in bounds. Under too right conditions the plant might become invasive. The thorns on a *Quisqualis* are formed when a leaf drops but the petiole remains. In a little time this petiole stiffens, grows stronger, and becomes a very effective climbing hook. While not sharp, like a cactus thorn, these can make pruning a bit tedious, and can draw blood on impatient gardeners. Under control, on a trellis or pergola or allowed to form a big mound *Quisqualis indica* can be a beautiful addition to a planting.

In our climatic condition, *Quisqualis indica* does not produce seeds so it is generally propagated by layering and cutting. Both these propagation practices are performed in different ways and times. The plants which are produced by air layering are small in quantity. Need more skill and laborers. The easiest and economic method is multiplication through cutting but the problem lies in very low or undesirable percentage of success at different times.

Matreials and Method

Experiment on "Effects of planting time on the cuttings of *Quisqualis indica*" was conducted at Ornamental Nursery, Department of Horticulture, KP The University of Agriculture, Peshawar- KPK during 2009. The experiment was conducted in plastic tunnels. Three types of cuttings were taken from the *Quisqualis indica* i.e. hard wood cutting, semi hard wood cutting and soft wood cutting. The above mentioned cuttings were taken and the branches were cut in 20 cm long pieces. The cuttings were planted in mixed media of garden soil, farmyard manure and canal silt at proportion (1: 1: 1) ratio. They were kept under plastic tunnel in shade house. Plastic tunnel was 75 inches in length, 35 inches width and 30 inches height.

There were 45 cuttings in each treatment with 15 in each replication over all 135 cuttings were used in the experiment. The experiment was laid out in Randomized Complete Block Design (RCBD). Treatments were replicated three times. The plants were regularly observed and data were recorded. The parameters studied were:

Days to sprouting:

Numbers of days from the date of planting to sprouting were counted for each treatment in each replication and average was calculated.

Sprouting percentage:

Numbers of cuttings sprouted were counted for each treatment and percentage was calculated by formula.

$$\text{Sprouted \% age} = \frac{\text{Number of cuttings sprouted} \times 100}{\text{Total number of cutting planted}}$$

Number of sprout per cutting:

From each treatment in each replication five plants were randomly selected, their sprouts were counted and average was calculated.

Number of leaves per plant:

Leaves of five randomly selected plants from each treatment in each replication were counted and average was calculated.

Number of roots per cutting:

Five cuttings of each treatment in each replication were randomly selected and were uprooted carefully and washed. Then the number of roots of each cutting was counted. Then the average was calculated.

Percent plant survival:

The number of survived plants was counted for each cultivar planted at the same time in each replication and the percentage was calculated by the formula.

$$\text{\% plant survived} = \frac{\text{Number of plants survived} \times 100}{\text{Total number of cuttings sprouted}}$$

Root weight (g):

All the roots were cut off from the stem, washed and dried and then weighed with the help of electrical balance and average was calculated for all treatments in each replication.

Results and Discussion

Days to sprouting:

The data regarding days to sprouting are presented in Table1. This shows that environmental conditions have significant effect on the sprouting of *Quisqualis indica*. However the hard wood cuttings were sprouted in 20 days while the semi hard wood and soft wood cuttings sprouted in 31 and 34 days respectively.

Spouting percentage

The data regarding sprouting percentage are presented in Table 1. Though cultivars had no significant effects on number of cuttings sprouted however, the means shown in Table-1, revealed that maximum sprouting (60.00 %) was attained in the hard wood cuttings, followed by the semi hard wood cuttings showed (22.2 %) sprouting and soft wood cuttings showed (13.1 %) sprouting. This result suggested the findings of Beel and Schelstrate [4] who worked on propagation of *Quisqualis spp* by cuttings and reported that tip cuttings of *Quisqualis indica* spectabilis and *Quisqualis indica* glabra cv. Alexandra rooted which was hard wood better than those taken of semi hard wood and soft wood taken from lower portion of the stem.

Number of sprout per cutting

The data regarding numbers of sprouts per cutting are presented in table 2. Which show that the planting time had significant effect on the number of leaves per sprout of *Quisqualis indicia*. The number of leaves of hard wood cuttings per sprout (10.3) while the semi hard wood and soft hard cuttings were showed no of leaves per sprout (6.66) and (10.6) respectively. These findings are similar to that of Panwar *et al.* [5] who told that hard wood cuttings

IBA at 2000 ppm was the best treatment, resulting in significantly more sprouting of cuttings, more roots, longer root length and higher percentage of rooting than the other treatments.

Number of Roots Per Cutting

The data regarding the number of roots per cutting are presented in table 3. which show that the planting time of *Quisqualis indicia* had significant effect on the number of roots per cutting of *Quisqualis indica*. A cutting of Soft wood and semi hard wood has highest number of roots per sprout (35.60), (15.0) respectively and while the cutting of hard wood cuttings has showed number of roots per sprout 8.10.This result revealed the previous work of Gupta and Kher [6] who worked on shoot tip cuttings, cm long and with 4-6 leaves, taken from cv. Garnet Glory, a cultivar that does not root readily when propagated by cuttings. They concluded that soft wood cutting of IBA at 4000 ppm gave the best rooting (highest root numbers and greatest root length). All of the treatments induced better rooting than those of other cuttings.

Percent plant survival

The data regarding the survival percentage of hard wood, semi hard wood and soft wood cuttings are presented in Table 4. It shows that the survival is also maximum in the plants of *Quisqualis indica* hard wood cuttings (13%), semi hard wood (46%), and Soft wood cuttings (22%) respectively. These finding showed by Mishra and Singh [7] who noted that *Quisqualis indica* glabra and *Quisqualis indica* butiana cultivars rooted better plant survival than those of other cuttings.

Root weight (g):

The data recorded for root weight are presented in Table 5, which show that heaviest root weight of 1.0 g was observed in Soft wood cuttings followed by Semi hard wood cutting 0.5 g and hard wood cuttings were 0.2 g. These finding are similar to the work of Aldrich and Norcini [8] studied the response of root systems of Barbara Karst *Quisqualis indica* cuttings to 100_g Cu $(OH)_{2\ /}$ litre in latex paint applied to the interior surface of square 66-, 120- or 280- ml plastic pots were determined in more root weight in soft wood then that of hard wood and semi hard wood.

Conclusion

It is conclude from the experiment that the cuttings of hard wood, semi hard wood and soft wood performed best when planted in 2nd September under plastic/ polyethylene tunnels.

Table-1: Effect of planting time on days to sprouting and sprouting percentage of *Quisqualis indica* cuttings.

Cuttings	Days to sprouting	Sprouting %age
Hard wood	20	60.2
Semi hard wood	31	22.2
Soft hard wood	34	13.5

Table-2: No. of sprouts/ cutting and leaves/ sprouts affected by planting time of *Quisqualis indica* cuttings.

Cuttings	No of sprouts/ cutting	No of leaves/sprouts
Hard wood	10.3	60.0
Semi Hard wood	6.66	22.2
Soft hard wood	10.6	13.1

Table-3: No. of roots/ cutting affected by planting time of *Quisqualis indica* cuttings.

Cuttings	No. of roots/ cutting
Hard wood	8.10
Semi hard wood	15.0
Soft wood	35.60

Table-4: Effect of planting time on percent plant survival among the sprouted cuttings of *Quisqualis indica*.

Cuttings	% Survival
Hard wood	13
Semi hard wood	46
Soft wood	22

Table-5: Effect of planting time on root weight (gm) of *Quisqualis indica* cuttings.

Cuttings	Root weight (gm)
Hard wood	0.2
Semi hard wood	0.5
Soft wood	1.0

Recommendations

On the basis of results recorded, the following recommendation can be generalized. 2nd September was noted the best planting time for the plantation of cuttings of Hard wood, Semi hard wood and Soft wood, since most of the parameters were maximum in three cuttings.

Cuttings of Semi hard wood showed maximum and rapid growth among the tested cuttings and hence is recommended as a ground covers, for the beautification of ugly sites and for raising nurseries.

References

1. Welsh SL (1998) Flora Societensis: A summary revision of the flowering plants of the Society Islands. E.P.S. Inc., Orem, Utah. 420 pp.
2. Murphy TH, Schnaar R L, Coyle JT and Sastre A (1988) Glutamate cytotoxicity in a neuronal cell line is blocked by membrane depolarization. Brain Research 460(1):155-160.
3. Munir M, Lu L and Mcgonigl P (1995) Excitotoxic cell death and delayed rescue in human neurons derived from NT2 cells, Journal of Neuroscience 15 (12):7847-7860
4. Beel E and Schelstracte A (1982) Vegetative propagation of *Quisqualis indica* Verbondsnieuwsvoor de Belgische sierteett. 25(17): 765-786. (Hort. Abst. 52 (6). No. 4195).
5. Panwar RD , Gupta AK, Sharma JR and Rakesh SK (1994) Effect of growth on rootings on regulators rooting in *Quisqualis indica* Var. Alok. Intl. J. Tropical Agric. 12 (3): 255-261. (CAB Abst. AN: 950314718).
6. Gupta VN and Kher MA (1991) A note on the influence of auxin in regeneration of roots in the tip cuttings of *Quisqualis* sp. Var. Garnet Glory under intermittent mist. Haryana J. Hort Sci. 20 (2):85-87. (CAB Abst. AN: C099598).
7. Mishra HP and Singh KP (1984) Varietal difference in rooting of *Quisqualis indica* stem cutting. South Indian Hort. 32(2): 113-114. (Hort. Abst. 54(12): 9376).
8. Aldrich JH. and Norcini JG (1994) Copper hydroxide-treated pots improve the root System of *Quisqualis* cuttings. 107th Annual meetings of the Florida State Hort. Soc. Orlando, Florida, USA. Proc.Florida State Hort. Soc. 107 (8): 215-217. (CAB Abst. 1996-1998/07, AN: 960303053).