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EFFECT OF DIFFERENT MEDIA ON THE GROWTH OF *Hamelia patens* PROPAGATING THROUGH CUTTING

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Abstract

An experiment entitled "the effect of different media on the growth of Hamelia patens propagating through cutting" was conducted at the Commercial Ornamental plant nursery, the University of Agriculture Peshawar during 2009. In this experiment Complete Randomized Design (CRD) was used. Cutting were sown on July 2009 to medium size plastic bags containing three different types of media i.e. M1(mushroom + silt + garden soil), M2 (farm yard manure + silt + garden soil) and M3 (leaf mold + silt + garden soil). Data were recorded on number of sprouted leaves, number of branches, length of branches, number of root per plant, root length, and percentage of survival. The data revealed that media of farm yard manure + silt + garden soil gave the best result with respect to number of sprouted leaves per plant (14.66), number of branches per plant (4.66), length of branches per plant (25.16 cm), number of roots per plant (18.00). root length per plant (16.33 cm) and survival percentage (100.00 %).While media of leaf mold + silt + garden soil gave the poorest or minimum value with regard to number of sprouted leaves per plant (11.66), number of branches per plant (3.00), length of branches per plant (23.7cm), number of roots per plant (17.03),root length per plant (12.3 cm) and survival percentage (97.7%). It can be concluded that media of farm yard manure + silt + garden soil are best for Hamelia patens propagating through cuttings.

INTRODUCTION

The firebush (*Hamelia patens*) belong to the Rubiaceae family. Firebush is a shrub native to southern Florida, the West Indies, and portions of Central and South America (Standley, P.C. 2002). The plant has attractive foliage and brilliant orange-red tubular flowers that are produced in abundance throughout the growing season. Firebush is highly heat tolerant and, once established, is relatively drought tolerant. Furthermore, the plant can be grown in a variety of soils. Because of these characteristics, firebush has potential value as a resource efficient, landscape plant. Firebush is not tolerant of heavy freezes, and as a result can only be used as a shrub or roothardy perennial in the southernmost portions of the U. S. In more northern climates, firebush appears to have considerable potential as a bedding plant (Salee, K. 1990). Different kind of media can be used. Best media is the one which is well drained, aerated and free from insect pests such as leaf cutting insects and snails. Hamelia paten can be grown in a variety of soil. Soil media play very important role in the growth and development of all plants species. The same species or even the same variety grown on different soil give extremely different results. Some media e.g. sandy soils are loose and easy leaching of nutrients and water can occur; on the other hand clay soil particles have less aeration. Generally it has been observed that root systems of plant growing in clay soil are usually stunted, the roots are shorter and multi branched. The size of soil particles also affected the growth of root system. It is evident from the literature that heavy soil particles are obstacles for normal root growth, in contrast to this root can easily push the lighter soil particles, which result in vigorous root growth .The size of pore-space also affected the performance of root system. Vigorous root growth takes place in media with bigger pore-spaces as compared to media with smaller pore-space (Ishtiaq et al. 1992). Root system is hidden plant part and for this particular reason, very little research work has been carried out on this underground plant part. The growth of aerial plant part exclusively depends upon the subterranean plant part. So for normal growth and development of aerial plant part proper and suitable environment must be provided to root system. Because root serves the same function as the mouth serves for animal kingdom (Ishtiaq et al 1995a). Keeping in view the importance of different media on the cutting of Hamelia paten cuttings. The present research was conducted to study in order to find out the ideal media for planting of hamelia cuttings.

MATERIALS AND METHODS

To Study the "effect of different media on the growth of *Hamelia patens* propagated through cutting"

was conducted at the Ornamental plant nursery, The University of Agricultural Peshawar during 2009. In this experiment the cutting of mother plant was planted in three different media that include, Ml (Mushroom + Silt + Garden soil), M2 (Leaf mold + Silt + Garden soil), M3 (Farm yard manure + Silt + Garden soil). There were 10 cuttings per treatment in each replication. Total number of cuttings was 90 for the whole experiment. Experiment was replicated three times. Semi Hard Wood cuttings from partially mature, but tender woody shoots of 6 to 7cm were taken. Cuttings were taken early in the morning because at that time the cells were fully turgid. The cutting was then inserted in bags filled with three different types of media. The place which was selected for that project was shady. All the cuttings of *Hamelia paten* were covered with plastic sheet to increase temperature and humidity inside the plastic sheet. The data was recorded on the following parameters, Number of sprouted leaves per plant, Number of branches per plants, Length of branches (cm), Number of roots per plant, Root length (cm), Survival Percentage (%).

RESULTS AND DISCUSSION

Number of sprouted leaves per plant: The mean data regarding number of sprouted leaves per plant are presented in Table I which shows that maximum number of sprouted leaves per plant (14.66) was recorded in plants grown in Farm yard manure + silt + garden soil, followed by the plants growing in mushroom + silt + garden soil with a mean value (14.3 3).The minimum number of leaves per plant (11.66) were recorded in plant grown in leaf mold + silt + garden soil. The greater number of leaves in farm yard manure + silt + garden soil may be attributed to excellent root system which was established as a result of suitable environment provided by this media that facilitated proper root respiration and nutrients and water uptake leading to better growth of the plant. Moreover, the tallest stature of plant in this media offered more area for leaf production and hence gave rise maximum number of leaves. Like vise, the shortest stature of plant provided less surface area for leaf production leading to minimum number of leave in leaf mold + silt+ garden soil. These result are in line with (lshtiaq *et al.* 1995) who recommended a mixture of sand + clay + farm yard manure for the cutting of *Ficus pzimulia, Ficus retus, Ficus macraphyla* and *Ficuc elastica* species.

Number of branches per plant: The mean data pertaining number of branches per plant are placed in Table 1 which shows that in media of farm yard manure + silt + garden soil the mean value was maximum (4.66) followed by the plants grown in mushroom + silt + garden soil with a mean value (3.66). The minimum number of branches per plant (3.00) was recorded in plants grown in leaf mold + silt + garden soil. The maximum number of branches in farm yard manure + silt + garden soil may be due to unique combination of different property of both soil separates. The medium had nutrients and water in balanced amount and allow proper aeration. Leaves are considered as food factory of plants and plants in this media had maximum number of leaves which prepared sufficient food for plant growth. While minimum number of branches per plant in leaf mold + silt + garden soil may be due to loss of water and inadequate root system. These results are not relevant to the work of Elsallami (1996), who noticed the performance of *Fbhanuba oblates* best in the media of clay + peat.

Length of branches per plant (cm): The mean data related length of branches per plant are given in Table 1.The mean value of data indicated maximum length of branches per plant (25.16 cm) in farm yard manure + silt + garden soil, followed by plants grown in mushroom + silt + garden soil with a mean value (25.Ocm).The minimum length of branches per plant (23.7cm) was recorded in leaf mold + silt + garden soil. The best performance of length of branches per plant in farm yard manure + silt + garden soil may be attributed to nutritionally better mixture and excellent root system in the medium which enhanced the branches to grow vigorously. Moreover this media had organic matter which increased photosynthesis of plant resulted in making plants healthy. Minimum length of branches per plant may be due to minimum number of leaves leading to less food supply which resulted in minimum length of branches per plant. These result are not in agreement with the work of Rahman and Ishtiaq (1996)a and Rahrnan and Ishtiaq (1996)'.

Table 1. Effect of different media on number of sprouted per plant, number of branches per plant, length of braches per plant.

Media	No of leaves per plant	No of branches per plant	Length branches per plant (cm)
Mushroom + silt + garden soil	**14.33**	**3.66**	**25.0**
FYM+ silt+ garden soil	**14.66**	**4.66**	**25.16**
Leaf mold+ silt+ garden soil	**11.66**	**3.00**	**23.7**

Number of roots per plant: The mean data about number of roots per plant are presented in Table 2. The mean data showed that maximum number of roots per plant was (18.00) when farm yard manure ± silt ± garden soil media were used, followed by the plants in mushroom + silt + garden soil with mean value of 17.33. Minimum number of root per plant (17.03) was observed in leaf mold + silt + garden soil media. The maximum number of root per plant may be due o sufficient air, water, and nutrients availability. While minimum root per plant in leaf mold + silt + garden soil was may be due to less availability of water and non-suitable environment. Different result was drawn by (Fazil *et al*. 1996).

Root length per plant (cm): The mean data regarding length of root per plant are given in Table 2. The mean value of different soil media revealed that maximum root length per plant (16.3cm) was observed in medium farm yard manure + silt + garden soil, followed by plants grown in mushroom + silt + garden soil, with a mean value of (12.4cm). Minimum root length (12.3cm) was recorded for plant grown in leaf mold + silt + garden soil. The longest roots in farm yard manure + silt + garden soil may be attributed to porosity, good aeration, better nutritional status and ability of organic matter to increase root length. The minimum root length in leaf mold + silt + garden soil might be due to less amount of water. These result are not in agreement with the work of (Shah *et aI*,1996) and (Fazil *et aI*.1996).

Survival percentage (%): The mean data pertaining survival percentage are placed in Table 2. Maximum survival percentage was noted (100.00%) in media of farm yard manure ± silt ± garden soil and mushroom + silt + garden soil. While minimum survival percentage was recorded (97.7%) in leaf mold + silt + garden soil. Total plants remain alive in farm yard manure + silt + garden soil and mushroom + silt + garden soil. It may be due to sufficient nutrients, better root system, better photosynthesis system and better distribution of food to all plant parts. Minimum survival percentage was noted in leaf mold + silt + garden soil media. Maybe due to less water availability, Poor root system and non suitable photosynthesis system this restricted plant growth. According to Ishiiaq *et al* (2000) that media had significant effect on bud break, percent plant survival, plant height and plant thickness.

Table 2. Effect of different media on number of roots per plant, root length per plant, survival percentage (%).

Media	No of roots per plant	Root length per plant (cm):	Survival percentage (%)
Mushroom + silt + garden soil	**17.3**	**12.4**	**100.00 %**
FYM+ silt+ garden soil	**18.00**	**16.3**	**100.00**
Leaf mold + silt+ garden soil	**17.03**	**12.3**	**97.7**

CONCLUSION

The *Hamelia patens* cuttings performed well in the media of farm yard manure + silt + garden soil and showed best result in all parameters. It is recommended that farm yard manure + silt + garden soil can be use for the cuttings of *hamelia petens* plant.

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