

PROPAGATION OF *FICUS PUMILA* THROUGH CUTTING AT HORTICULTURE NURSERY PESHAWAR, PAKISTAN

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Abstract: An experiment was conducted on “*Ficus pumila* cuttings” at horticulture nursery the University of Agriculture Peshawar, Pakistan during 2022. Semi hardwood cuttings were taken from one year old shoots which were cut to have 4-5 nodes each in plastic bags. The plastic bags were filled with a mixture of sand, clay and FYM (2:1:2). Calculated final average length was 13.83cm represented and average of final data was recorded. Average of initial data was (12.9cm) and final data was (13.83cm). There was a significant difference between the two means. Results showed a great variation in length (93.65 %). It was concluded from the study that propagation showed variability in plant length. Therefore, recommended as best method in young plant in nursery.

Key words: *Ficus pumila*, Length, hardwood, nursery and Peshawar

INTRODUCTION

Ficus pumila belongs to the family Moraceae (Mulberry family). Its Latin name is *Ficus pumila* L. and common names is creeping fig, climbing fig, creeping rubber plant (GRIN 2002). The genus *Ficus* comprises thousands of species from pantropical and subtropical origins (Wagner *et al.* 1999). The common name, creeping fig, refers to the creeping habit of *F. pumila*.

F. pumila (creeping fig or climbing fig) is a flowering plant in the mulberry family, native to East Asia (China, Japan, Vietnam) and naturalized in parts of the southeastern and south-central United States (Wagner *et al.*, 1999). The genus *Ficus* has about 1000 species of trees, commonly called figs. It is distributed in tropical and sub-tropical regions. *Ficus* species, as *F. nitida*, *F. benjamina* and *F. Hawaii* have multiple uses as indoor plants and garden or roadside trees (Wagner *et al.*, 1999; Hadia *et al.*, 2008). *Ficus* is an important ornamental plant for the nurserymen. *Ficus* species are multipurpose, well adapted to harsh mountain terrain and used by rural populations as an evergreen source of fodder for ruminant livestock, for fuel and providing shade as well in ecological conservation in Nepal (Kshatri, 2001), and in Sahelian and Sudanian zones of Africa (Danthu, 2002).

Creeping fig closely appressed to substrate, shrubs loosely ascending, evergreen. Roots adventitious, nodal. Branches appressed-pubescent when young, glabrous in age. Leaves dimorphic; stipules 0.3-0.8 cm; petiole 1.5-2 cm. Leaf blade oblong to ovate-elliptic or obovate, 4-10 s 2.5-4.5 cm, those of appressed climbing stems distichous, appressed, smaller (than those of loose, extended, flowering stems), spreading, leathery, base obtuse to rounded, margins recurved,

apex obtuse to nearly acute; surfaces axially glabrous or purulent on veins, adaxially glabrous, prominently reticulate; basal part of veins 1; lateral parts of veins 3-6, straight; secondary veins prominent. Syconia solitary, pedunculate, green, oblong, obovoid, pyriform, or nearly globose, 3-4 x 3-4 cm, slightly pubescent but becoming glabrescent in age; peduncle thick, 8-15 mm subtending bracts ovate, 5-7 mm; ostiole closed by 3 bracts." (Flora of North America, 2002).

F. pumila, native from South China through Malaysia, is a creeping vine like fig plant that is commonly planted as an ornamental in Hawai'i and other warm climates of the world as a cover on rock walls, trees, and other structures. In Hawaii and most other places where *F. pumila* is cultivated, sexual reproduction of the plant does not occur because without its associated pollinator present, the seeds are not viable. Though not known to spread by seeds yet, *F. pumila* is capable of aggressive vegetative growth and can become a nuisance by climbing high into trees and growing beyond the desired area. If pollinator wasps were introduced, it is likely that breeding colonies would establish, leading to the naturalization and spread of *F. pumila*. Taking cutting from your favorite plants is one of the quickest and easiest ways to make more plants for free.

There are several types of cutting you can use to propagate your plants. These cuttings use different kinds of stems. Soft wood cuttings are from fresh, new growth, usually in spring or early summer. Plants such as butterfly bush and dogwoods root well from soft wood cutting. Green wood cuttings are from young stems that are starting to mature, but still in the first year. They are usually taken in early to midsummer. Plants such as gardenia and boxwood tend to root well from green wood cuttings. Hard wood cuttings are taken from woody stems that have gone dormant in late fall or winter. Trees and shrubs such as mock orange and viburnum often root well from hard wood cuttings. It is generally propagated by air layering and tip cuttings, the plants propagated through air layering are small quantity, need more skill and time. The easiest and economic method is mass production through cutting. Therefore, a key step in vegetative propagations is cutting. Adventitious root formation losses occur because of the poor quality of the root system or of the shoot and because of poor or slow rooting. The traditional method for growing fig consisted in taking cuttings from one or two year old shoots and directly planting them in soil to obtain new trees (Aljane, 2006).

Furthermore, farmers have used layering method for propagating of fig in orchards. It represents an important component of the foliage interior landscape (Abdou et al., 2004). This plant is propagated through vegetative method (Siddiqui and Hussain, 2007). Stenting is a vegetative method for quick propagation of plants. Cutting and grafting is performed simultaneously. The scion is grafted onto a non-rooted rootstock. The formation of the union and adventitious roots on the rootstock occurs simultaneously. Stenting is now being used worldwide by rose growers (Karimi, 2011) and is also a valuable technique in propagating species of conifers and also rhododendron, apple, plum and pear (Hartman et al., 2002). The objective of the research was to analyze suitable propagation methods, by combining indigenous technical knowledge of local farmers and relevant scientific information.

MATERIAL AND METHODS

An experiment was conducted on "*Ficus pumila* cuttings" at horticulture nursery the University of Agriculture Peshawar, Pakistan during 2022. Semi hardwood cuttings were taken

from one year old shoots which were cut to have 4-5 nodes each in plastic bags. The plastic bags were filled with a mixture of sand, clay and FYM (2:1:2). The length of cuttings used for planting was 20-22 cm. Semi hardwood cuttings were taken from the current season's growth. The leaves were removed from the selected cuttings of *Ficus pumila* and were trimmed to the required length by removing the terminal portions just above a bud. The cutting which is used for planting was 20-22cm length. The basal end of the cuttings was given a slanting cut to expose maximum absorbing surface for effective rooting. As *F. pumila* is a very thirsty plant and needs plenty of water in the summer so the plants were flooded with water at each alternate day 820 medium size plastic bags were selected and 9-12 small holes across were made by a punching machine, in order to make sure that drainage of water is perfect. *Ficus pumila* cuttings were elevated for shoot length and growth rate of planted cuttings. After that the bags were all covered with a plastic cover and water was sprayed on the cover. Initially 10 sample cuttings were selected randomly and their length was noticed. After 70 days data on shoot length was collected on 10 randomly selected cuttings.

Success percentage

Numbers of cuttings survived were counted for each treatment and percentage was calculated by the following formula.

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

In success percentage number of cuttings survived were those which were succussed and show good growth rate. Total number of cuttings were the cuttings which were planted.

Length of cutting per plant:

Length of cutting plant is considered to be an important attribute in this experiment. *F. pumila*. 820 plants were selected in experiment, in which 10 plants were taken as sample plants. Length of sample plant was taken in two stages i.e., initial length and final length of sample plants were measured by using the ruler in cm scale.

RESULTS AND DISCUSSION

An experiment was conducted on "growth rate of *Ficus pumila* cutting" at horticulture nursery The University of Agriculture Peshawar path in the year 2022.

Success percentage

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

$$\text{Success percentage} = 768/820 \times 100$$

$$\text{Success \% age} = 93.65$$

In this experiment the success percentage was recorded 93.65 %.

Length of cutting per plant

Length for each sample was recorded. In this experiment initial length recorded as given in table (1) is for Sample S1(15cm), S2 (13cm), S3 (12cm), S4 (10), S5 (10.5cm), S6 (16cm), S7 (14cm), S8 (11cm), S9 (14.4cm) and S10 (13.5cm). Similar results were observed by (Siddiqui and Hussain, 2007) and Patel *et al.* (2017) was also recorded that cutting is directly affected the length of the plant. The calculated average of initial data which is taken in experiment was 12.94cm, and final length was taken is represented in table (2) is for sample S1 (16cm), S2 (13.3cm), S3 (12.8cm), S4 (11cm), S5 (10.9cm) S6 (16.3cm) S7 (15.5cm), S8 (13.5cm), S9 (15cm) and S10 (14cm). Calculated average was 13.83cm represented in table (B) and average of final data is recorded. The same results were recorded by Okunlola *et al.* (2016) and Topacoglu *et al.* (2016) was observed the same results. Aljane and Sabrine (2014) also noted the same results that propagation showed variability in plant length.

Average of initial data (12.9cm) and final data (13.83cm). There is a significant difference between the two means.

Table.1. Primary data:

Sample	Initial Length
S 1	15 cm
S 2	13 cm
S 3	12 cm
S 4	10 cm
S 5	10.5 cm
S 6	16 cm
S 7	14 cm
S 8	11 cm
S 9	14.4 cm
S 10	13.5cm
Average	12.94 cm

Table.2. Secondary data:

Sample	Final Length
S 1	16 cm
S 2	13.3 cm
S 3	12.8 cm
S 4	11 cm
S 5	10.9 cm
S 6	16.3 cm
S 7	15.5 cm
S 8	13.5 cm
S 9	15 cm
S 10	14 cm
Average	13.83 cm

CONCLUSION

It is concluded from the study that propagation showed variability in plant length. So propagation is best method in young plant in nursery.

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