Original Research Article

EVALUATION OF DIFFERENT ORNAMENTAL FICUSUNDER SHADENET CONDITIONS OF PRAYAGRAJ

ABSTRACT

An experiment entitled **Evaluation of different ornamental ficusunder shadenet conditionsof prayagraj** was conducted in shadenet house, Department of Horticulture, Naini Agricultural Institute, SHUATS, Prayagraj during July-October 2022 on ficus. The experiment was conducted in Completely Randomized Design (CRD) with eight varieties replicated thrice.The varieties used were *Ficus microcarpa* golden, *Ficus microcarpa* moclame, *Ficus microcarpa* crassifolia, *Ficus triangularis variegata*, *Ficus benjamina* exotica, *Ficus benjamina* reginald, *Ficus benjamina* starlight, *Ficus benjamina* safari .The results revealed that better performance was seen in *Ficus microcarpa* golden in all parameters like plant height at 90 days (56.33cm), no. of leaves at 90 days (94.43cm), leaf length at 90 days (10.13 cm), leaf breadth at 90 days (4.53 cm), no. of primary branches at 90 days (11.23 cm), plant spread at 90 days (36.93 cm), leaf petiole length (1.6 cm).

Key words-*Ficus,Ficus microcarpa* golden,*CRD,* ornamental

1.INTRODUCTION

Ficus a genus of about 850 spieces woody trees, shrubs, vines,epiphytes and hemiepiphytes in the Family Moraceae Collectively known as fig trees or figs, they are native throughout the tropics with a few species extending into the semi-warm temperate zone.

The maximum diversity of the genus exhibits in Asiatic mainland (170 spp.), New Guinea (132 spp.) and Borneo (129 spp.). Many species of Ficus L. are very common in different biogeographic regions. Although, the great majority of the species grow in lowlands but some of them reach up to about 2,000 m altitudes. Ficus is also considered one of the most diversified genera with regard to its habits (deciduous and evergreen trees, shrubs, herbs, climbers and creepers) and life forms (free standing tree, epiphytes, semi-

epiphytes in the crevices, rheophytes and lithophytes).

Ornamentalplants or garden

plants are plants that are primarily grown for their beauty but also for qualities such as scent or how they shape physical space. Many flowering plants and garden varieties tend to be specially bred cultivars that improve on the original species in qualities such as color, shape, scent, and long-lasting blooms. There are many examples of fine ornamental plants that can provide height, privacy, and beauty for any garden. These ornamental perennial plants have seeds that allow them to reproduce. One of the beauties of ornamental grasses is that they are very versatile and low maintenance. Almost any types of plant have ornamental variety/varieties: trees, shrubs, climbers, grasses, succulents, aquatic plants, herbaceous perennials and annual plants. Non-botanical classifications include houseplants, bedding plants, hedges, plants for cut flowers and foliage plants. The cultivation of ornamental plants comes under floriculture and tree nurseries, which is a major branch of horticulture.

Ficus benjamina is a tree reaching 30 m (98 feet) tall in natural conditions, with gracefully drooping branchlets and glossy leaves 6–13 cm , oval with an acuminate tip. The bark is light gray and smooth. The bark of young branches is brownish. The widely spread, highly branching tree top often covers a diameter of 10 meters. It is a relatively small-leaved fig. The changeable leaves are simple, entire and stalked. The petiole is 1 to 2.5 cm (3⁄8 to 1 inch) long. The young foliage is light green and slightly wavy, the older leaves are green and smooth; the leaf blade is ovate to ovate-lanceolate with wedge-shaped to broadly rounded base and ends with a short dropper tip. The pale glossy to dull leaf blade is 5 to 12 cm long and 2 to 6 cm wide. Near the leaf margins are yellow crystal cells ("cystolites"). The two membranous, deciduous stipules are not fused, lanceolate and 6 to 12 mm (1⁄4 to 1⁄2 inch) (rarely to 15 mm or 9⁄16 inch) long.

F. benjamina is monoecious. The inflorescences are spherical to egg-shaped, shiny green, and have a diameter of 1.5 cm (1⁄2 inch).

Ficus microcarpa is a tropical tree with smooth light-gray bark and entire oblanceolate leaves about 2–2.5 inches (5.1–6.4 centimetres) long which in Mediterranean climates grows to about forty feet (twelve meters) tall and with an equal spread of banyan habit (tropical and humid subtropical) numbers of prop roots.

2.MATERIALS AND METHODS

The investigationwas carried out at the shadenet, Department of Horticulture, Naini Agricultural Institute, Sam Higginbottom University of Agriculture, Technology And Sciences, Prayagrajduring the year July-October, 2022. The experiment was conducted in completely randomized design

with 8 varieties in three replications viz. V_1*Ficus microcarpa* golden, V_2*Ficus microcarpa* moclame, V_3*Ficus microcarpa* crassifolia, V_4*Ficus triangularis* variegata, V_5*Ficus benjamina* exotica, V_6*Ficus benjamina* reginald, V_7*Ficus benjamina* starlight, V_8*Ficus benjamina* safari was planted in eight inches pots holes on both sides was done at 30, 60, 90 Days after emergence. The data was recorded for the following parameters *viz* Plantheight(cm),Number of leaves, Leaf length(cm),Leaf breadth (cm), No. of primary branches per plant, Plant spread (cm), Leaf petiole length (cm).

3.RESULTS AND DISCUSSION:

3.1 Vegetative characters

3.1.1 Plant height

Plant height varies significantly between different Varieties. Longer plant height at 90days after planting was found in variety V_1 *Ficus microcarpa* golden (56.33cm) followed by 54.33cm in V_5 *Ficus benjamina* exotica whereas shorter plant height 33.7cm was recorded in V_8*Ficus benjamina* safari in Table no.1.

In plants higher auxin transport just below the apical meristem zone might have increased the plant height by cell elongation. The plants grown under low light level were found to be more apical dominant than those grown under high or full light intensities.

The results are in conformity with findings of Thangam and Thamburaj, (2008) who stated that partial shading improves the plant height than full sunlight, which compared the plant growth under shadenet condition.

3.1.2Number of leaves

Number of leaves varies significantly between different Varieties. Highest number of leaves at 90days after planting was found in variety V_1 *Ficus microcarpa* golden (94.43 cm) followed by 90.23 cm in V_5 *Ficus benjamina* exotica whereas lowest number of leaves 64.86 cm was recorded in V_8*Ficus benjamina* safari in Table no.1. As light capturing ability and chlorophyll content is high in shade condition, at this condition N leads to increase numbering of leaves.

3.1.3 Leaf length

Leaf length varies significantly between different Varieties. Longer leaf length at 90days after planting was found in variety V_1 *Ficus microcarpa* golden (10.13cm) followed by 9.56 cm in V_5 *Ficus benjamina* exotica whereas shorter leaf length leaf length 4.93cm was recorded in V_8*Ficus benjamina* safari in Table no.1.

The number of leaves is an important parameter to consider because it donate health status ofplant (Noaland[13]). The various physiological functions like photosynthesis,transpiration and capability totolerate air pollution etc depend on number of leaves in a plant.

3.1.4 Leaf breadth

Leaf breadth varies significantly between different Varieties. Longer leaf breadth at 90days after planting was found in variety V_1 *Ficus microcarpa* golden (4.53cm) followed by 4.16 cm in V_5 *Ficus benjamina* exotica whereas shorter leaf breadth 2.76cm was recorded in V_8*Ficus benjamina* safari in Table no.1.

The boundary layers help to improve leaf growth and photosynthetic activity under low red: far red ratio which elongates leaf breadth.

The results were in agreement with Das (2010) who stated the leaf breadth was influenced by low light irradaince.

3.1.5 Number of primary branches

Number of primary branches varies significantly between different Varieties. Highest number of primary branches at 90days after planting was found in variety V_1 *Ficus microcarpa* golden (11.23cm) followed by 10.26 cm in V_5 *Ficus benjamina* exotica whereas shorter number of primary branches 5.33cm was recorded in V_8*Ficus benjamina* safari in Table no.1.

Shade netting that increases light scattering and has been shown to increase branching and vegetative growth.

Similar results were obtained by Brand (1997) studied the effect of shade during nursery production on the growth, no. of branches and foliage colour. Results showed that shade improved no. of branches effectively and the best ornamental quality was also obtained.

3.1.6 Plant spread

Plant spread varies significantly between different Varieties. Maximum plant spread at 90days after planting was found in variety V_1 *Ficus microcarpa* golden (36.93cm) followed by 33.0 cm in V_5 *Ficus benjamina* exotica whereas minimum plant spread 19.5cm was recorded in V_8*Ficus benjamina* safari in Table no.1.

Plant spread is an important character considering the ficus for interior plantscaping. The minimum the spread, more compact will be the plants and this makes them suitable for indoors. The plants with more branches/laterals were found to have more spread and plants with vertical growth rather than lateral were having lesser spread. Such differences in plant spread were also observed by Russ and Pertuit (2001) in different foliage plant species.

3.1.3 Leaf petiole length

Leaf petiole length varies significantly between different Varieties. Longer leaf petiole length at 90days after planting was found in variety *Ficus microcarpa* golden (1.6cm) folllowed by 1.3 cm in V_5 *Ficus benjamina* exotica whereas shorter leaf petiole length 0.36cm was recorded in V_8 *Ficus benjamina* safari in Table no.1.

3.2 Leaf characters

Leaf texture, leaf margin, leaf arrangement, leaf shape, leaf type, leaf venation, pigmentation are taken as qualitative

characters as it helped to identify the morphological characters ofleaf. The data estimated on qualitative leaf characters were recorded and significant differences were observed at 90 days after planting shown in Table no. 2.

4. CONCLUSION

Based on the results of the present investigation entitled “Evaluationof different ornamental ficus under shadenet conditions of prayagraj”it was concluded that the variety V_1*Ficus microcarpa* golden reported significantly better performance in all of the parameters like plant height(cm), No. Of leaves, leaf length (cm), leaf breadth (cm), no. Of primary branches, plant spread(cm), leaf petiole length(cm) .Hence the variety Ficus microcarpa golden could be recommended for the prayagraj agro-climatic condtions

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Table 1.Plant height, no.ofleaves, leaflength, leaf breadth, no. ofprimary branches, plant spread, leaf petiole length, ofdifferent ficus ornamentalplantsfor 90days.

Varieties	Plantheight	No.of leaves	Leaf length	Leaf breadth	No. ofprimarybranches	PlantSpread	Leaf petiole length
Ficus microcarpa golden	56.33	94.43	10.13	4.53	11.23	36.93	1.6
Ficus microcarpa moclame	54.06	87.4	8.93	3.8	9.66	31.06	1.23
Ficus microcarpa crassifolia	50.96	78.53	7.7	3.5	7.56	26.4	1.11
Ficus triangularis variegata	46.56	71.86	6.6	3.3	6.6	25.63	1.0
Ficus benjamina exotica	54.33	90.23	9.56	4.16	10.26	33	1.3
Ficus benjamina reginald	53.06	84.5	8.2	3.53	8.56	28.6	1.18
Ficus benjamina starlight	35.1	67.4	5.6	3.1	6.13	25	0.81
Ficus benjamina safari	33.7	64.86	4.93	2.76	5.33	19.5	0.36
Mean	48.01	79.90	7.70	3.5875	8.17	28.26	1.06
F-Test	S	S	S	S	S	S	S
SE(M)	0.60	1.04	0.13	0.07	0.20	0.90	0.07
CDat5%	1.82	3.12	0.40	0.21	0.61	2.72	0.21
CV	2.19	2.25	3.05	3.46	4.35	5.57	11.57

Table 2.Leaf texture, leaf margin, leaf type, leaf arrangement, leaf venation,leaf shape,pigmentation of different ficusornamentalplantsfor90days

Varieties	Leaf texture	Leaf margin	Leaftype	Leaf arrangement	Venation	shape	Pigmentation
Ficus microcarpa golden	Leathery	Entire	Simple/ Unifoliate	Alternate	Pinnate	Oval-Elliptic	Younger leaves tend to be more yellowish or golden. Mature leaves tend to be yellow/ golden green.
Ficus microcarpa moclame	Leathery	Entire	Simple	Alternate	Pinnate	Ovoid lanceolate	Green
Ficus microcarpa crassifolia	Leathery,thick, waxy.	Entire	Simple	Alternate	Pinnate	Oblong-Elliptic-Ovate	Young/immature: Bronze to yellow-green. Mature: Bright medium green to dark green.
Ficus triangularis variegata	Smooth,glossy, waxy.	Entire	Simple	Alternate	Pinnate	Obovate (Triangle shaped)	The triangular leaf has irregular yellowish-white edges, with shades of green sections in the centre.

Ficus benjamina exotica	Both sides waxy, smooth and leathery.	Entire	Simple	Alternate	Pinnate	Oblong-Elliptic	Young/immature: Light green. Mature: Bright medium green to dark green.
Ficus benjamina reginald	Leathery	Entire	Simple	Alternate	Pinnate	Elliptic	Yellow-green leaves that have irregular dark green markings around the midrib.
Ficus benjamina starlight	Smooth, glossy/ shiny	Entire	Simple/ Unifoliate	Alternate	Pinnate	Ovate-Elliptic	Leaves are glossy green with irregularly white margins.
Ficus benjamina safari	Leathery	Entire	Simple	Entire	Pinnate	Vine	The leaf has irregular yellowish-white edges, with shades of green sections in the center.