Performance of different Dieffenbachia (*Dieffenbachia seguine*) varieties under Prayagrajagro-climatic conditions

ABSTRACT

The present investigation entitled 'Performance of different dieffenbachia (*Dieffenbachia seguine*) varieties under Prayagrajagro-climatic conditions' was under taken in the Department of Horticulture, Naini Agricultural Institute,Sam Higginbottom University of Agriculture, Technology And Sciences, Prayagraj duringAugust, 2023 to February, 2024. The experiment was laid out in Completely Randomized Design with eight different dieffenbachia varieties,*viz. V*1(Tropic Marianne), V2(Star Bright), V3(Picta), V4(Sterling), V5(Tropic Snow), V6(Green Magic), V7(Perfecta), V8 (Chandra), replicated thrice, under 50% shade net conditions. The variety V5 (Tropic Snow) recorded significantly betterperformance compared to other varieties, in terms of growth parameters like plant height (54.6 cm), number of leaves (11.2), plant spread (46.31 cm^2), stem girth (11.6cm), leaf area (210.41 cm^2), minimum leaf production interval (15 .3 days), plant growth index based on height of the plants (0.045), survival percentage (100%).

***keywords*:** *Dieffenbachia seguine,shade net, varieties, rooted cuttings.*

1. INTRODUCTION

Foliage plants can act as a backdrop, highlighting the attributes of other plants and they can provide a variety of interesting textures and shapes. They add multi-season color and leaf hues can complement and contrast. Foliage plants are generally grown for their attractive foliage and can be kept forlonger periods under indoor conditions. There is a great demand for foliage plants for bothdomestic and export markets. Among a large number of foliage plants available for interiordecoration, dieffenbachia is an important and popular herbaceous, evergreen ornamental withattractive foliar variegation and tolerance to low light. There are about 135 species of dieffenbachia mostly occurring in central and South America [3]with spotted, striped or speckled with cream, white, yellow, gold, silver, or a combination of these coloured leaves. Dieffenbachia is cultivated as an ornamental plant in temperate shade gardens and as a potted house. Dieffenbachia is a perennial herbaceous plant with straight stem, simple and alternate leaves containing white spots and flecks making it attractive as indoor foliage. Due to their attractive foliarvariegation,toleancetolowlightlevels,andeaseofproduction,dumbcaneshavebeenproducedasornamentalfoliageplantsforinteriordecorationorgrownasgroundcoverforshadedsitesintropical regions [2].Dieffenbachia propagation can be done in two ways – stem cuttings and air-layering.Stemcuttings is a fairly straight-forward and one of the most common processesto re-produce a plant.

2. MATERIALSANDMETHODS

The present investigation carried out in shade net house (50%),during 2023-2024. The experimental material consisted of 8 Dieffenbachia varieties *viz.*, Tropic Marianne, Star Bright, Picta, Sterling, Tropic Snow, Green Magic, Perfecta, Chandra was planted on polybags. The bags were filled with a mixture of soil, FYM, vermicompost, and cocopeat in the ratio of 1:1:1:1 (v/v). Observations ongrowth parameters were recorded upto180 days at every 30 days interval. The experiment was laid out in Completely Randomized Design with eight different dieffenbachia varieties and each variety was replicated thrice. The data recorded during the experiment were subjected to statistical analysis by using analysis of variance (ANOVA).

3. RESULTS AND DISCUSSION

From the present investigation, it is concluded that significant variations were observed among the EIGHT dieffenbachia varieties studied across all the growth parameters and the data is presented in Table 1.

Significantly taller plants (54.6 cm) were observed in variety V5 (Tropic Snow) followed by variety V6 (Green Magic, 44.18 cm) while shorter plant height (24.13 cm) was recorded in variety V2 (Star Bright) compared to all other varieties.Such a wide variability for plant height among the varieties is mainly due to genetic nature, environmental condition of the plant**.** The similar report was found indendrobium [7].

Significantly a greater number of leaves (11.2) were observed in variety V5 (Tropic Snow) followed by varietyV3 (Picta, 10.0) while lesser number of leaves (4.9) were recorded in variety V2 (Star Bright) compared to all varieties.The variation in number of leaves per plant among the different varieties is driven by variation in the rate of vegetative growth among the genotypes, which is due to genetic makeup and may also have been influenced by agro climatic conditions. Similar results were reported by [8] in lilium, [9] in dahlia and [10] in orchids.

Significantly maximum spread (46.31cm^2) was observed in V5 (Tropic Snow) followed by variety V6 (Green Magic, 42.51cm^2) while minimum spread (29.76cm^2) was observed in V2 (Star Bright)compared to all varieties.The variation in plant spread (cm^2) of different dieffenbachia varieties might be due to the branch, number of leaves and Such as wide variability for plant height among the varieties is mainly due to genetic nature, growing situation and environmental condition of the plant. Similar report was observed [7]inDendrobium. Cane length a varietal character which varies from variety to variety. The varieties with longer branches, they spread more because, the length of the branches increases, resulting in higher plant spread due to the effect of genetic makeup and environmental effects. Similar results were noted in China aster by [5].

Significantly maximum stem girth(11.6cm) was observed in V5 (Tropic Snow) was followed by variety V7 (Perfecta, 9.16cm) minimum girth (5.95cm) was observed by

V2 (Star Bright) compared to all varieties.Variation in girth of dieffenbachia varieties is due to the varietal character which varies from variety to variety and the morphological traits and adaptability of the variety to the prevailing climatic conditions. Similar result was noted in [12]in dahlia.

Significantly maximum estimated leaf area (210.41cm^2) was observed in V5 (Tropic Snow) was followed by V6 (Green Magic, 174.51cm^2) while lesser estimated leaf area (85.83cm^2) was observed in V2 (Star Bright) compared to all varieties.Variation in leaf area indicates additive gene effects would be effective in gerbera [6], [4] and[11] in dahlia.

Minimum days for leaf production interval (15.3) was observed in variety V5 (Tropic Snow) followed by V4 (Sterling, 19.0), maximum days for leaf production interval (32.33) was observed in variety V6 (Green Magic) compared to all varieties.Variations in leaf production could be expected among the cultivars as the attribute to a genetic character. These results are in conformity with the reports of[1].

Significantly higher plant growth index based on height of the plant was recorded in variety V5 (Tropic Snow, 0.045) followed by variety V7 (Perfecta, 0.041) minimum was observed inV2 (Star Bright, 0.027) compared to all varieties.

Significantly higher survival and establishment percentage observed in variety V5 (Tropic Snow, 100%) followed by V8 (Chandra, 93.66%), while lower survival and establishment percentage observed in variety V2 (Star Bright, 52.16%) compared to all varieties. Variation in survival and establishment percentage of different varieties might be attributed to adaptability of different varieties having different genetic makeup which give different response to a given environmental condition of a specific location.

Notation	Variety	Height (cm)	No. of leaves	Plant spread (cm^2)	Stem girth (cm)	Leaf area (cm^2)	Leaf production interval	Plant growth index (height)	Survival percentage
V1	Tropic Marianne	35.5	5.7	38.9	8.0	154.41	26	0.0324	73.56
V2	Star Bright	24.1	4.9	29.7	6.3	85.83	21	0.0270	52.16
V3	Picta	33.7	10.0	40.8	6.5	125.41	28.66	0.0350	93.26
V4	Sterling	31.4	6.9	37.6	7.8	142.58	19	0.0331	86.2
V5	Tropic Snow	54.6	11.2	46.3	11.6	210.41	32.33	0.0454	100
V6	Green Magic	44.1	7.3	42.5	8.2	174.51	15.33	0.0386	86.36
V7	Perfecta	35.9	9.3	41.2	8.8	159.16	20	0.0411	80.5
V8	Chandra	41.0	8.3	39.5	7.1	156.41	24	0.0366	93.66
F-TEST		**S**	**S**	**S**	**S**	**S**	**S**	**S**	S
SE.d (±)		1.03	0.39	1.12	0.23	6.78	0.91	0.002	73.56
CD0.05		2.20	0.83	2.40	0.50	14.49	1.95	0.004	52.16
CV		3.36	5.98	3.47	3.59	5.49	4.80	6.774	93.26

Table 1. Growth parameters of different dieffenbachia varieties.

4. CONCLUSION

On the basis of the research trial conducted on dieffenbachia (*Dieffenbachia seguine*)under 50% shade net conditions, it is concluded that varietyV5TropicSnowperformed significantly better in terms of plant height, number of leaves, spread of plant, girth, leaf area, chlorophyll content, plant growth index based on plant height per plant, plant growth index based on number of leaves, survival rate and establishment. Hence, Variety V5 (Tropic Snow) could be recommended for Prayagrajagro climatic conditions.

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