Original Research Article

PERFORMANCE OF PLEOMELE *(Dracaena reflexa)* VARIETIES IN DIFFERENT POTTING MEDIA UNDER PRAYAGRAJ AGRO- CLIMATIC CONDITIONS

ABSTRACT

The experiment was conducted in the Department of Horticulture, Naini Agricultural Institute, Sam Higginbottom University of Agriculture Technology and Sciences, Prayagraj (UP),during February, 2022 to May, 2022 with two varities of *Dracaena reflexa* and seven potting mix. The experiment was laid out in FCRD with 14(2×7) Treatment combination replicated thrice. The results revealed that treatment combination V_1T_7 i.e. Song of India in medium of - Cocopeat: sand: FYM: vermicompost: perlite(1:1:1:1:1v/v) – performed significantly better in terms of plant height, plant spread, number of leaves, root length, leaf width, leaf length and stem girth.

Keywords: *Dracaena reflexa,* Song of India, Cocopeat, sand, FYM, vermicompost, perlite

INTRODUCTION

Ornamental plants are highly appreciated for their attractive and delightful appearance. Foliage plants have great importance in cresting greenery in offices, houses, commercial centers etc, as they adapt easily to indoor conditions. Shade loving pot plants are suitable for the interior of a house which has little space for growing the plants. The most apparent use of these plants is their visual enticing effect as they give fresh look to the surroundings and soothe the eyes. Apart from enhancing the beauty, these plants contribute remarkably to the quality of life by cleaning the air that brings fresh energy and helps to breathe free. These plants not only add beauty and biological comfort but also improve the aesthetic outlook **(Mc Connell and Kobayashi, 2007)**. Indoor Air Quality is becoming an international health issue because most of the city dwellers spend 90% of their time indoors **(Tarran *et al* 2007)**. That is why it becomes even more important to incorporate such foliage plants indoors. The commercial production of ornamental plants is increasing worldwide and United States and European nations are leading both in its production and consumption

Dracaena (*Dracaena reflexa*), a member of the family Asparagaceae, is one of the important cut foliage crops used in our country. It is exported to different countries from India. It is native to Madagascar and other Indian ocean islands. It is also an important indoor and cut foliage crop of Rodriguez, Reunion, Italy, Belize, Central African Republic, Spain, Mauritius, Mozambique and Sri Lanka. This plant is fairly easy to grow and maintain. Its vibrant foliage character and long vase life have made it as a popular cut foliage. It is a popular ornamental plant, both in the landscape and home. It can be enjoyed as a specimen plant, accent or pruned to create a border.

Dracaena is widely grown as an ornamental plant and house plant, valued for its richly colored, evergreen leaves and thick, and irregular stems. The rich green lance-shaped arching leaves spiral the upright stems from base to tip. Mature plants may bear large clusters of greenish-white flowers. Grow this plant as a multi-stemmed shrub or as a small tree pruned to a short trunk. It is also called as song of India plant, pleomele and reflexed Dracaena is a species from the dracaena genus which has become a popular house plant. This plant is sometimes classified in Agavaceae and sometimes put in its own family called Dracaenaceae.

In present, soil, sand, cocopeat, perlite, coir pith,vermicompost and farmyard manure were used in different proportions. The cocopeat improves porosity, water holding capacity, cation exchange capacity and buffer swell,while that of perlite reduces the soil compaction, where on the hand vermicompost, increases the porosity of soil, provides good aeration,rich in humus and contains valuable vitamins, enzymes and hormones like auxins, gibberellins, etc. for better growth and development.

MATERIALS AND METHODS

Materials used and the methods adopted in the present study entitled "Performance of pleomele *Dracaena reflexa* varieties in different potting media under prayagraj agro- climatic conditions" was carried out during February 2022 to may 2022 in the Department of Horticulture, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj. The planting material was collected from Kerala Agricultural College, mannuthy, Thrissur. The plants were planted in 8 inch poly bags. The experiment comprised of 14(2×7) treatments and 3 replications. . The experiment was laid out in FCRD.

Table1. List of different treatment combination

Treatment no.	Treatment combinations
V1T1	Song of India ×Soil: sand: FYM (1:1:1v/v)
V1T2	Song of India ×Cocopeat: sand: FYM(1:1:1v/v)
V1T3	Song of India ×Cocopeat: sand: vermicompost(1:1:1v/v)
V1T4	Song of India ×Cocopeat: sand: FYM: perlite(1:1:1:1v/v)

V1T5	Song of India ×Cocopeat: sand: vermicompost: perlite(1:1:1:1v/v)
V1T6	Song of India ×Cocopeat: sand: FYM: vermicompost(1:1:1:1v/v)
V1T7	Song of India ×Cocopeat: sand: FYM: vermicompost: perlite(1:1:1:1:1v/v)
V2T1	Song of Jamaica ×Soil: sand: FYM (1:1:1v/v)
V2T2	Song of Jamaica ×Cocopeat: sand: FYM(1:1:1v/v)
V2T3	Song of Jamaica ×Cocopeat: sand: vermicompost(1:1:1v/v)
V2T4	Song of Jamaica ×Cocopeat: sand: FYM: perlite(1:1:1:1v/v)
V2T5	Song of Jamaica ×Cocopeat: sand: vermicompost: perlite(1:1:1:1v/v)
V2T6	Song of Jamaica ×Cocopeat: sand: FYM: vermicompost(1:1:1:1v/v)
V2T7	Song of Jamaica ×Cocopeat: sand: FYM: vermicompost: perlite(1:1:1:1:1v/v)

RESULTS AND DISCUSSION

Significantly the taller plant**(**28.57 cm) were observed in V1T7 – Song of India in Cocopeat: sand: FYM: vermicompost: perlite 1:1:1:1:1v/v, which was at par with V2T1 (28.53cm) – Song of Jamaica in Cocopeat: sand: FYM: vermicompost: perlite 1:1:1:1:1v/v while shorter plant height was observed in the treatment V1T1- Song of India in Cocopeat: sand: FYM: perlite 1:1:1:1v/v (27.50cm). This increase in plant height might be due to high amount of organic matter, nitrogen, potassium, and optimum range of EC and pH of growing media. These results are consistent with previous work of (**Mehmood *et al.*, 2013**).

Significantly the longest plant spread**(**14.86cm**)** were observed in V1T7 - Song of India in Cocopeat: sand: FYM: vermicompost: perlite(1:1:1:1:1v/v, which was at par with V1T6 (14.64cm) - Song of India in Cocopeat: sand: FYM: vermicompost: perlite1:1:1:1:1v/v while shorter plant spread was observed in the treatment V1T1-Song of India in Soil: sand: FYM 1:1:1v/v (12.83cm). Presence of cocopeat and sand improves the oxygen content in substrate there by increase plant spread. Vegetative growth was recorded higher in cocopeat based medium compositions by **Thakur *et al.* (2018)**. Vermicompost contains nutrients in the readily available form to the plants

such as nitrate, exchangeable P, K, Ca and Mg and also plant growth promoting hormones likes auxins and gibberellins by **Theunissen *et al.* (2010).**

Significantly most number of leaves were observed with V1T7 (39.88cm) – Song of India in Cocopeat: sand: FYM: vermicompost: perlite 1:1:1:1:1v/v, which was at par with V2T2 - Song of Jamaica in Cocopeat: sand: FYM 1:1:1v/v (39.00) while lowest number of leaves was observed in the treatment V1T1- Song of India in Soil: sand: FYM v/v1:1:1 (37.78). More number of leaves was due to aeration made available by sand and nutrient status provided by both cocopeat and vermicompost. More number of leaves reflect good vigor and their suitability to environment and growth media. Increased number of leaves on media amended with vermicompost in lilium Asiatic Asiatic hybrid 'Navona' has reported by **Moghadam *et al.*, 2012**).

Significantly the longest root length(cm) were observed in V1T7 (21.93cm) -Song of India in Cocopeat: sand: FYM: vermicompost: perlite 1:1:1:1:1v/v, which was at par with V1T5 - Song of India in Cocopeat: sand: vermicompost 1:1:1v/v (21.66cm) while shorter root lengh was observed in the treatment V2T3- Song of Jamaica in Cocopeat: sand: vermicompost 1:1:1v/v (13.66 cm). Vermicompost is a rich source of mineral nutrition and its addition to media increases quality by increasing microbial activity and microbial biomass which are the key components in nutrient cycling and production of plant growth regulators. This might have resulted in increased length of root. Similar result was reported by **Thammaih *et al.*, (2001)** in dwarf poinsettia (Euphorbia pulcherrima) recorded maximum root development with vermicompost and sand.

Significantly the longest **leaf length(cm)** was observed in V1T7 (12.34cm) - Song of India in Cocopeat: sand: FYM: vermicompost: perlite 1:1:1:1:1v/v, which was at par with V1T6 - Song of India in Cocopeat: sand: FYM: vermicompost: perlite1:1:1:1:1v/v (12.12cm) while shorter leaf length was observed in the treatment V1T1- Song of India in Soil: sand: FYM 1:1:1v/v) (10.99cm. Significantly greater **leaf width** (2.80cm) was observed in V1T7 - Song of India in Cocopeat: sand: FYM: vermicompost: perlite 1:1:1:1:1v/v which was at par with V1T6 - Song of India in Cocopeat: sand: FYM: vermicompost: perlite1:1:1:1:1v/v (2.74cm) while shorter leaf width was observed in the treatment V1T1-Song of India in Soil: sand: FYM (1:1:1)(2.63cm). Leaf length and width is a vital parameter that has a direct influence on the quality of the cut foliage. The reason is due to the high organic matter content which increases the water and nutrient holding capacity of the medium and also due to the presence of high N content. This might be associated with essential nutrients present in coco peat and vermicompost (**Vettical *et al.*, 2016**).

Significantly greatest **Stem girth** were observed with V1T7 (2.78cm) - Song of India in Cocopeat: sand: FYM: vermicompost: perlite 1:1:1:1:1v/v which was at par with V1T6 - Song of India in Cocopeat: sand: FYM: vermicompost: perlite1:1:1:1:1v/v (2.78 cm) while shorter stem girth was observed in the treatment V1T1- Song of India in Soil: sand: FYM 1:1:1v/v (1.68 cm). The increase in stem girth might be due to the reason that the growing media improve proper aeration, water holding capacity, supplying substantial amount of nutrients through root absorption which converts in photosynthates helps in cell division and cell elongation results in higher stem girth. Similar findings have been reported by **Mehwish *et al.* (2007)** in dahlia.

Table 2. Performance of pleomele varieties of Dracaena reflexa in different potting media on vegetative growth

Treatments	Plant height			Plant spread			Number of leaves			Root length			Leaf width			Leaf length			Stem girth		
	V1	V2	M(T)	V1	V2	M(T)	V1	V2	M(T)	V1	V2	M(T)	V1	V2	M(T)	V1	V2	M(T)	V1	V2	M(T)
T1	27.5	28.5	28.0	12.8	13.6	13.2	37.7	38.6	38.2	21.1	21.1	21.1	2.6	2.7	2.6	10.9	12.0	11.5	1.6	2.4	2.0
T2	28.4	28.4	28.4	13.3	14.1	13.7	38.7	39.0	38.8	20.4	20.6	20.5	2.7	2.6	2.7	11.8	11.2	11.5	2.6	2.1	2.3
T3	28.3	28.0	28.1	14.2	14.1	14.1	38.4	38.7	38.5	20.6	13.6	17.1	2.7	2.7	2.7	11.6	11.8	11.7	2.4	2.6	2.5
T4	28.3	27.7	28.0	14.2	14.2	14.2	38.6	38.4	38.5	20.5	20.8	20.7	2.7	2.6	2.7	12.0	11.6	11.8	2.3	2.5	2.4
T5	28.2	28.1	28.1	13.8	13.5	13.7	38.7	38.5	38.6	21.6	21.2	21.4	2.6	2.7	2.7	11.2	11.9	11.5	2.5	2.6	2.5
T6	28.0	28.4	28.2	14.6	13.3	14.0	38.3	38.8	38.6	20.2	20.7	20.5	2.7	2.7	2.7	12.1	11.8	11.7	2.7	26	2.7
T7	28.5	28.5	28.5	14.8	12.9	13.8	39.8	38.5	39.2	21.9	20.1	21.0	2.8	2.7	2.7	12.3	11.8	11.9	2.7	2.7	2.7
M(V)	28.21	28.2		14.1	13.5		38.6	38.6		20.9	19.7		2.7	2.7		11.7	11.7		2.4	2.5	
	$CD_{0.05}$		S.Em(±)	$CD_{0.05}$		S.Em(±)	$CD_{0.05}$		S.Em(±)	$CD_{0.05}$		S.Em(±)	$CD_{0.05}$		S.Em(±)	$CD_{0.05}$		S.Em(±)	$CD_{0.05}$		S.Em(±)
varieties			0.06	0.306		0.105			0.076	0.31		0.70			0.008			0.057			0.061
treatments	0.33		0.11	0.573		0.197	0.415		0.143	0.59		1.31	0.045		0.015	0.312		0.107	0.334		0.115
Factor (V× T)	0.47		0.16	0.811		0.278	0.587		0.202	0.83		1.85	0.063		0.022	0.441		0.151	0.472		0.162

CONCLUSION

From the present investigation entitled ***Performance of pleomele varieties of Dracaena reflexa in different potting media under Prayagraj agro-climatic conditions*** it is concluded that different potting media rendered their significant effect on almost all the growth characters of *Dracaena reflexa*. Treatment combination V_1T_7 i.e. Song of India in medium of - Cocopeat: sand: FYM: vermicompost: perlite(1:1:1:1:1v/v) was found superior in terms of plant height, plant spread, number of leaves, root length, leaf width, leaf length and stem girth. Hence, *Dracaena reflexa* variety 'Song of India' should be grown in cocopeat: sand: FYM: vermicompost: perlite(1:1:1:1:1v/v) medium under Prayagraj agro – climatic conditions for better plant growth and development.

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