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Studies on the effect of shade and growing media on the growth and yield of Anthurium (*Anthurium andreanum*) cv. Tropical.

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ABSTRACT

Investigation was carried out to study the effect of shade and growing media on the production of Anthurium (Anthurium andreanum) cv. Tropical. The experiment was conducted in Factorial completely randomized block design with three levels of shade under 85, 75 and 65per cent shade net conditions and four levels of growing media viz. coir pith + coconut husk, coir pith + brick pieces, coconut husk + brick pieces and control (soil media) combined in 12 different treatments. The treatments were replicated thrice. Among the different treatment combinations, shade level of 75 per cent and growing media with coir pith + coconut husk envisaged maximum plant height, plant spread, number of flowers per plant, flower stalk length, spathe length and spathe breadth. The number of days taken for flower bud appearance was also earlier in this treatment.

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Keywords: *Shade management, Growing media, Anthurium, Coirpith*

INTRODUCTION

Anthuriums are tropical plants grown for their showy cut flowers and attractive foliage. It has gained the importance as major cut flower of the modern world. Anthurium growing is a potential source of commercial farming and it makes best use of ready market for cut flowers with high returns both for its cut flower and whole plant. Anthurium is a slow growing perennial that requires shady, humid conditions as found in tropical forests. It includes more than 100 genera and about 1599 species, chiefly from tropics (Higaki *et al,* 1994). The Anthurium plant possesses an underground rhizome with adventitious roots, with low creeping habit of growth, using aerial roots for anchorage. Anthurium plants require good growing medium in good physical and chemical conditions for their proper growth and development. Highly organic, well aerated medium with good water retention capacity and drainage is needed. The plant produces blooms throughout the year, one bloom emerging from the axil of every leaf. Flowers are usually harvested once a week at three quarters maturity. Anthurium production in traditionally growing countries has declined since 1986, due to bacterial blight (Laws and Galinsky, 1996) and the new production centres in other geographical areas are now contributing to the production of Anthurium cut flowers. Even though Anthurium is grown by many planters, there is very less scientific information on shade and growing medium. Standardization of shade management and growing media is most important to obtain higher yield and quality of the flowers. Therefore, the present work is carried out with a view to find the optimum shade level and growing media for enhancing the growth and flowering.

MATERIAL AND METHODS

The present study was carried out in Flora-tech floriculture unit at Kottarakara, kollam Dist , kerala state, India during 2007- 2009. The experiment was conducted with three levels of shade under shade net conditions and four types of growing media combined in 12 treatment combinations. The treatments with three replications were carried out in factorial completely randomized design. The Anthurium (*Anthurium andreanum*) cv. Tropical was used for the study with 12 different treatment combinations given here, T_1 (85% shade & coir pith + coconut husk), T_2(85% shade & coir pith + brick pieces), T_3 (85% shade & coconut husk + brick pieces), T_4(85% shade & soil media), T_5 (75% shade & coir pith + coconut husk), T_6(75% shade & coir pith + brick pieces),T_7(75% shade & coconut husk + brick pieces), T_8(75% shade & soil media), T_9(65% shade & coir pith + coconut husk), T_{10}(65% shade & coir pith + brick pieces), T_{11}(65% shade & coconut husk + brick pieces) and T_{12}(65% shade & soil media). Plant height, plant spread, number of flowers per plant, flower stalk length, spathe length, spathe breadth and number of days taken for flower bud appearance were observed and recorded at 480 days after planting.

RESULTS AND DISCUSSION

The result evinced significant influence in overall performances of Anthurium plants due to *per se* and interaction effect of shade and growing media. Among the different treatment combinations, the maximum plant height (48.82 cm), plant spread (72.55cm), number of flowers per plant (5.13), flower stalk length(43.39 cm), spathe length(9.47 cm) and spathe breadth(9.66 cm) were recorded in T_5 (75% shade × coir pith + coconut husk), this was followed by T_6 (75% shade × coir pith + brick pieces) with plant height of 45.56 cm, plant spread of 68.84 cm, 4.72 flowers per plant, Flower stalk length of 40.21 cm ,spathe length of 8.88 cm and 9.06 cm of spathe breadth. Days taken for flower bud initiation were also early in T_5 with 102.91 days, followed by T_6 with109.67 days. The least plant height (23.88 cm), plant spread (44.12 cm), number of flowers per plant (2.01), flower stalk length(19.02 cm), spathe length(4.98 cm) and spathe breadth(5.08 cm) were recorded in T_{12}(65% shade x soil media). Days taken for flower bud initiation were late in T_{12}, which took 154.65 days for bud appearance (Table-1).

The increased results in T_5 (75% shade x coir pith + coconut husk) may be due to appropriate shade percent and growing media comprising of coir pith + coconut husk. Plants grown in containers have their root system confined to a limited volume of media. For optimal growth of plants, media must contain enough water and air, mainly depends on the physical properties of medium. Most of the light weight, soilless media are combinations of two or more components formulated to achieve desirable physical and chemical properties. The present results are inline with the following results. Early flowering in Dendrobium was recorded with coconut fibre was also reported by Cibes *et al.* (1957). Savithri and Khan (1994) find out the growth promotive effect of coco peat was reported in a series of annual crops and same findings were done by Mirzaev (1988) in carnation. Coco peat in combination with tree fern is most suitable due to optimum water holding capacity, better drainage and aeration (Griffis *et a,l* 1983).

Leffering(1975) concluded that Anthuriums grow best under shading of 73 to 80 % and flower production is significantly influenced by temperature and irradiance. According to

Arumugam and Jawaharlal (2004) among the various shade levels, 75 % shade recorded maximum plant height, number of days taken for flowering, and length of spike. Similar kind of observations were also reported by Sabina George and Mohan Kumaran(1999). According to Nuchhungi khawlhring *et al (*2012) the Anthurium plants grown under shade house results in better consistant growth. Fan *et al*, (1998) reported that shaded plants showed increased growth and number of leaves as compared to open conditions. Generally, flowering pot plants species prefer net house and shade of tree for their growth and flowering, than open conditions Jadav *et al*, (1996). Considering the above facts and results of the present investigation it could be concluded that the treatment combination of 75% shade along with growing medium of coir pith + coconut husk as the best for the growth and yield of Anthurium (*Anthurium andreanum*) Cv. Tropical.

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Treatments	Plant height (cm)	Plant spread (cm)	Number of flowers per plant	Flower stalk length (cm)	Spathe length (cm)	Spathe breadth (cm)	Days taken for flower bud appearance
T_1 - 85% shade & coir pith + coconut husk	42.14	64.92	4.30	36.87	8.27	8.43	116.56
T_2 - 85% shade & coir pith + brick pieces	38.83	61.00	3.89	33.67	7.67	7.82	121.59
T_3 - 85% shade & coconut husk + brick pieces	35.78	57.52	3.51	30.69	7.12	7.26	127.92
T_4 - 85% shade & control (soil media)	32.70	54.01	3.12	27.68	6.56	6.69	134.31
T_5 - 75% shade & coir pith + coconut husk	48.82	72.55	5.13	43.39	9.47	9.66	102.91
T_6 -75% shade & coir pith + brick pieces	45.56	68.84	4.72	40.21	8.88	9.06	109.67
T_7 - 75% shade & coconut husk + brick pieces	42.19	64.99	4.30	36.91	8.28	8.44	116.67
T_8 - 75% shade & control (soil media)	39.22	61.61	3.93	34.01	7.74	7.90	122.82
T_9 - 65% shade & coir pith + coconut husk	32.37	53.47	3.09	27.41	6.50	6.63	132.96
T_{10} - 65% shade & coir pith + brick pieces	32.34	53.41	3.09	27.38	6.49	6.62	132.83
T_{11} - 65% shade & coconut husk + brick pieces	29.38	50.04	2.72	24.48	5.96	6.08	138.98
T_{12} -65% shade & control (soil media)	23.88	44.12	2.01	19.02	4.98	5.08	154.65
SE (d)	1.43	1.64	0.18	1.40	0.26	0.26	-2.98
CD (p=0.05)	2.96	3.38	0.37	2.89	0.53	0.54	-6.14