Plant Archives Vol. 20 Suppliment 1, 2020 pp. 3738-3740 **e-ISSN:2581-6063 (online), ISSN:0972-5210**

PERFORMANCE OF *ANTHURIUM ANDREANUM* TO DIFFERENT GROWING MEDIA ON FLOWERING

Ajish Muraleedharan, K. Sha, S. Kumar, G. Samlind Sujin, J. L. Joshi* and C. Praveen Sampath Kumar*

Depart. of Horticulture,Faculty of Agriculture, Annamalai University, Annamalai nagar- 608002 (Tamilnadu), India
*Depart. of Genetics and Plant Breeding, Faculty of Agriculture, Annamalai University, Annamalai nagar- 608002. (Tamilnadu) India

ABSTRACT

Anthuriums are tropical plants gaining popularity due to higher returns per unit area and for their long lasting flowers and attractive foliage. They are very popular with flower arrangers because of bold effect and long lasting qualities of flowers. Anthurium plants require growing medium with good physical and chemical conditions for their proper growth and development. Proper selection of growing medium influences plant growth, flower production, quality and postharvest behaviour of flowers. Anthuriums reproduce vegetatively through suckers, the suckers are identical to the mother plant and to each other. Many anthurium cultivars do not produce suckers or produce very few. Vegetative propagation can also be achieved through by cuttings. In the commercial Anthurium production, propagation is mostly by tissue culture. Present research work was carried out to find out the best suited growing media for the production of Anthurium plants. The experiment was conducted with eleven different growing media with three replications. All the treatments were grown under uniform shade level of 75% by using shade nets. Among the different treatments, coco peat + FYM was found to be the best growing medium for anthurium cultivation, recorded maximum plant height, plant spread, number of flowers per plant, flower stalk length, spathe length and spathe breadth followed by rice husk + FYM.

Key words: growing medium, Anthurium

Introduction

Floriculture is the fast emerging industry and cultivation of flowers for commercial purpose is common to the world. It has become one of the high value agricultural business in many countries of the world (Taj, 2013). The demand for cut flowers production in India and international markets is increasing at a faster rate. Anthurium is a slow growing perennial belongs to the family araceae requires shady humid conditions as found in tropical forests, grown for their showy cut flowers and attractive foliage. It has gained importance as one of the 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. 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. Even though Anthurium is grown by many planters, there is very less scientific information on growing medium. Standardization of growing media is most important for obtaining higher plant growth, flower production, quality flowers and postharvest behaviour of flowers. Therefore, the present work is carried out with a view to find the best suited growing media for enhancing the growth and flowering of Anthurium plants.

Author for correspondence :

Materials and methods

The present study was carried out in Flora-tech floriculture unit at Kottarakara, kollam Dist, kerala state,

India during 2014 - 2016. The experiment was conducted with eleven different treatments. The treatments with three replications were carried out in completely randomized design. All the treatments were grown under uniform shade level of 75% by using shade nets. The variety of Anthurium (*Anthurium andreanum* L.) used in the experiment is 'Tropical'. The colour of the spathe is red, smooth, blistered, leathery and wavy in texture. The colour of the spadix is lemon yellow. Four months old tissue cultured uniform size plants were planted in 12 inch pots. Eleven different treatments are T_1 (rice husk), T_2 (coco peat), T_3 (perlite), T_4 (vermiculite), T_5 (leaf mould), T_6 (rice husk + FYM), T_7 (coco peat + FYM), T_8 (perlite + FYM), T_9 (vermiculite + FYM), T_{10} (leaf mould + FYM) and T_{11} (soil media). Plant height, plant spread, number of flowers per plant, flower stalk length, spathe length and spathe breadth were observed and recorded at 240 and 480 days after planting.

Results and diiscussion

Among the different treatments used in this experiment, Coco peat + FYM significantly influenced overall performances of Anthurium plants. Maximum plant height, plant spread, number of flowers per plant, flower stalk length, spathe length and spathe breadth were recorded in the growing medium coco peat + FYM, this was followed by rice husk + FYM and least results were recorded in soil media on the 240th and 480th days (Table 1 & 2). The increased results from the medium used in T_7 (coco peat + FYM) may be due to its better physical characteristics, aeration and water holding capacity, these are probably the most important factors, while among the chemical characteristics, nutritional status, and salinity level have a crucial role on plant development (Dewayne *et al*., 2003, Singh *et al.*, 2003). Prabhu *et al*., 1983 and Nagarajan *et al*., 1985 found that coir pith a byproduct from coir industry should be a potential wealth and could be converted into valuable organic manure using biotechnological methods which contain N 0.26 per cent, P_2O_5 0.01 per cent, K_2O 0.78 per cent and high lignin.

Coco peat can hold large quantities of water, just like a sponge. It can be used as a replacement for soil mixtures or as a soilless substrate for plant cultivation (John Mason, 2003). For optimal growth of plants, media must contain enough water, air and mainly with good physical and chemical properties. 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 reported by Cibes *et al.*, (1957). Savithri and Khan (1994) find out the growth promotive effect of coco peat was

Table 1: Performances of the Anthurium plants grown on different rooting media at 240 days after planting.

Treatments	Plant height (cm)	Plant spread (cm)	No. of flowers/ plant	Flower stalk length (cm)	Spathe length (cm)	Spathe breadth (cm)
T_1 (rice husk)	17.92	22.01	2.80	24.81	4.99	5.11
T_2 (coco peat)	16.99	21.03	2.27	23.45	3.57	3.49
T_3 (perlite)	16.87	20.89	2.07	21.71	3.12	3.65
T_4 (vermiculite)	15.65	20.78	2.31	23.52	3.23	3.12
T_5 (leaf mould)	17.56	22.32	2.12	24.99	4.17	4.56
T_6 (rice husk + FYM)	18.31	23.21	2.81	28.98	5.02	5.01
T_7 (coco peat + FYM)	19.89	25.91	2.97	29.02	5.11	5.32
T_8 (perlite + FYM)	16.43	20.93	2.19	21.93	4.32	4.36
T_9 (vermiculite + FYM)	15.23	21.83	2.10	27.41	3.01	3.13
T_{10} (leaf mould + FYM)	15.47	21.32	2.16	27.38	3.11	3.32
T_{11} (soil media)	13.07	18.32	1.47	22.07	2.23	2.41
SE (d)	0.74	1.12	0.10	1.15	0.14	0.15
CD (p=0.05)	1.51	2.23	0.21	2.21	0.27	0.29

Table 2: Performances of the Anthurium plants grown on different rooting media at 480 days after planting.

Treatments	Plant height (cm)	Plant spread (cm)	No. of flowers/ plant	Flower stalk length (cm)	Spathe length (cm)	Spathe breadth (cm)
T_1 (rice husk)	42.14	64.92	4.30	36.87	8.27	8.43
T_2 (coco peat)	38.83	61.00	3.89	33.67	7.67	7.82
T_3 (perlite)	35.78	57.52	3.51	30.69	7.12	7.26
T_4 (vermiculite)	32.70	54.01	3.12	27.68	6.56	6.69
T_5 (leaf mould)	40.52	62.23	4.21	32.71	7.12	7.87
T_6 (rice husk + FYM)	45.56	68.84	4.72	40.21	8.88	9.06
T_7 (coco peat + FYM)	46.45	71.85	5.46	42.84	9.32	9.43
T_8 (perlite + FYM)	39.22	61.61	3.93	34.01	7.74	7.90
T_9 (vermiculite + FYM)	32.37	53.47	3.09	27.41	6.50	6.63
T_{10} (leaf mould + FYM)	32.34	53.41	3.09	27.38	6.49	6.62
T_{11} (soil media)	30.47	51.75	2.47	24.67	5.29	5.45
SE (d)	1.31	1.71	0.12	1.36	0.24	0.14
CD (p=0.05)	2.62	2.41	0.23	2.71	0.47	0.27

reported in a series of annual crops and same findings were done by Mirzaev (1988) in carnation. Coco peat has been considered as a renewable sphagnum peat substitute for the use in horticulture (Pisanu *et al*., 1994, Yau and Murphy and 2000 Henry and Norman, 2001). Noguera *et al*., (2000) studied the importance of coco peat as a growing medium due to its high porosity (95%), nutritive value and slightly acidic nature. The coco peat has a bulk density of 0.1 g/c and a particle density of 1.3 g/c with 96% porosity. Lower bulk density and particle density of the coco dust based media as compared to other medium was observed by Wilson *et al*., (2002). The pH of 100% coco peat medium is slightly acidic and most of the ornamental crops prefer acidic pH. Abad *et al*., (2002) recorded the pH of 4.9-6.14 for different sources of coir dust.

Conclusion

Considering the above facts and results it could be concluded that the treatment combination of growing medium with (T_7) coco peat + FYM has resulted as the best for the growth and flowering of Anthurium plants . This may be due sufficient air and oxygen supply by the coco peat medium for cell respiration, aeration and water holding capacity are probably the most important factors while, among the chemical characteristics, nutritional status, and salinity level have a crucial role on plant growth. The bulk density and particle density decreased with increase of coco peat and this might be due to light weight of coco peat and increased porosity.

References

Abad, M.P., R. Noguera Puchades, A. Maquieira and V. Nogsuera (2002). Physico-chemical and chemical properties of some coconut coir dusts for use as a peat substitute for containerized ornamental plants. *Bioresource Technology.*, **82(2)**: 241 - 245.

Cibes.H.R , C. Cernuda and A.J. Loustalot (1957). New orchid medium towers the production cost. *American Orchid Society Bulletin*, **26**: 409 – 411.

Dewayne, L.I., W.H. Richad and H.Y. Thomas (2003). Growth media for container grown ornamental plants. The Environmental Horticulture Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences. *University of Florida. Bulletin,* 241.

Henry, R.J. and D.J. Norman (2001). Anthurium "show biz". *Hort. Sci.*, **36(6)**: 1140 – 1141.

Higaki, T., J.S. Lichty amd D. Moniz (1994). Anthurium culture in Hawaii. University of Hawaii, HITAHR Res. *Ext. Ser.*, **152**: 22p.

John, Mason (2003). Sustainable Agriculture. Landlinks Press. 192.

Mirzaev M.M (1988). the effectiveness of rising meristematic carnation plants in soilless substrates. *Biotekhnologiya-v-Sadovodstve-i-Vinogradarstve*, **5**: 31 – 34.

Nagarajan, R., J.S. Manickam, G.V. Kothandaraman, K. Ramasamy and G.V. Palaniswamy (1985). Manurial value of coir pith. *Madras Agric. J.*, **72**: 533 - 535.

Noguera, P., M. Abad and V. Noguera (2000). Coconut coir waste, a new and viable ecologically-friendly peat substitute. *Acta Hort.*, **517**: 279 - 283.

Pisanu, B., M. Carletti and S. Leoni (1994). *Gerbera Jamesonii* cultivation with different inert substrates. *Acta Hort.*, **361**: 590 - 602.

Prabhu, R., D.M. Mahishi and G. Shivashankar (1983). Studies on use of coconut coir dust as rooting medium. *Curr. Res.*, **17**: 157-158.

Savithri, P. and H.H. Khan (1994). Characteristics of cocopeat and its utilization in agriculture. *Journal of Plantation Crops*, **22**: 1–18.

Singh, D.R., S.A. Nair and V.B. Pandey (2003). Standardization of potting media for an endemic orchid *Eulophia andamanensis*. *Journal of Ornamental Horticulture*, **6**: 149 - 150.

Taj Sajida (2013). Price spread and marketing of cut rose in Punjab, Pakistan. *Pakistan J. Agric. Res.*, **26(1)**: 6-23.

Wilson, S.B., P.J. Stoffella and D.A. Gratez (2002). Development of compost based media for containerized perennials. *Scientia Hort.*, **93**: 311 - 320.

Yau, P.Y and R.J. Murphy (2000). Biodegraded coco peat as a horticultural substrate. *Acta Hort.*, **517**: 275 - 278.