Available online at www.ijpab.com

DOI: http://dx.doi.org/10.18782/2320-7051.4081

ISSN: 2320 – 7051

Int. J. Pure App. Biosci. **6 (5):** 108-113 (2018)

Research Article

International Journal of Pure & Applied Bioscience

OPEN ACCESS

Effect of Varied Levels of Fertigation on Performance of Two Different Cultivars of Anthurium (*Anthurium adreanum* L.) Under Shadehouse Condition

Tejaswini, H. R., Seetharamu, G. K., Suhas, Y. H. Nishchitha, N., Ashwini, B. K. and Nishchitha, M.

[1]College of Horticulture, Bengaluru-560065

[2]K.R.C. College of Horticulture, Arabhavi-591218

[3]M.Sc. (Hort.), College of Horticulture, Kolar-563101

[4]M.Sc. (Hort.), K.R.C. College of Horticulture, Arabhavi-591218

[5]M.Sc. (Hort.), College of Horticulture, Bagalkote-587103

[6]M.Sc. (Hort.), K.R.C. College of Horticulture, Arabhavi-591218

*Corresponding Author E-mail: hrtejaswini2@gmail.com

Received: 17.06.2017 | Revised: 28.07.2017 | Accepted: 9.08.2017

ABSTRACT

An experiment was laid out to study the effect of varied levels of fertigation on growth, yield and quality of anthurium (Anthurium andreanum L.) varieties under shadehouse condition at Floriculture section, Regional Horticultural Research and Extension Centre, University of Horticultural Sciences Campus, GKVK, Bengaluru during 2015-2016. The experiment consists of eight treatments viz., four fertigation levels (F_0-200:100:250 kg NPK/ha through soil application, F_1-150:75:187.5, F_2-200:100:250 and F_3-250:125:312.5 kg NPK/ha through fertigation) and two cultivars (V_1-Tropical and V_2-Xavia). The fertigation level F_3 (250:125:312.5 kg NPK/ha) was found to be the best than all other treatments expressing superior vegetative growth, yield and quality attributes such as plant height (109.88 cm), number of leaves per plant (10.41), leaf area (1459.69 cm^2), number of suckers (1.98), stalk length (68.20 cm), stalk diameter (7.60 mm), spathe length (18.33 cm), spathe width (12.61 cm), number of flowers per plant per year (8.75) and vase life (28.33 days). There was descending trend in values of these characters from F_3-F_0. Among the varieties, maximum plant height (104.42 cm), leaf area (1262.89 cm^2), number of suckers (1.18), stalk length (64.46 cm), stalk diameter (7.52 mm), spathe length (18.24 cm) and vase life (28.83 days) was recorded in cv. Xavia. Increased number of leaves per plant (10.01), spathe width (12.12 cm) and flower yield (7.63) was recorded in cv. Tropical. The treatment combination F_3V_1 was found to be the best among all other interactions with more number of flowers per plant (9.23).

Key words: *Anthurium, Cultivars, Fertigation, Shadehouse, Vase life*

Cite this article: Tejaswini, H.R., Seetharamu, G.K., Suhas, Y.H. Nishchitha, N., Ashwini, B.K. and Nishchitha, M., Effect of Varied Levels of Fertigation on Performance of Two Different Cultivars of Anthurium (*Anthurium adreanum* L.) Under Shadehouse Condition, *Int. J. Pure App. Biosci.* **6(5):** 108-113 (2018). doi: http://dx.doi.org/10.18782/2320-7051.4081

Copyright © Sept.-Oct., 2018; IJPAB

INTRODUCTION

Anthurium (*Anthurium andreanum* L.) commonly called as tail flower belongs to family Araceae, native to America and is traditionally grown for its colourful long lasting unique flower and shining foliage. It is perennial, semi-terrestrial, evergreen and herbaceous plant with heart shaped leaves and spathe. The flower consists of a colourful modified leaf called the spathe and hundreds of small spirally arranged bisexual flowers on a pencil like structure called spadix, arising from the base of the spathe. The anthurium is grown in the states of Kerala, Karnataka, Maharashtra, North-Eastern states, parts of Madhya Pradesh, Jharkhand, Himachal Pradesh and Chhattisgarh. The area coverage under anthurium in India is 130 hectares and with a production of 2500 MT of cut flowers (Anon., 2014). The flower has good demand in domestic and international market, which makes it economically viable crop. These plants require generous watering and adequate amount of nutrients for its proper growth and flowering. Deficiencies of nutrients are associated with low yield, reduced stem length and small flowers. Fertigation is the technique of applying nutrients along with irrigation water directly at the site of active root zone resulting in higher yields, better quality produce and helps in easy absorption and its efficient utilization. Keeping in view the socio economic value of the anthurium flowers and the positive effects of fertigation, the present experiment was designed to compare the response of two anthurium cultivars *viz*., Tropical and Xavia to the different fertigation levels on growth, quality and yield of flowers.

MATERIAL AND METHODS

The experiment was carried out at Floriculture section, Regional Horticultural Research and Extension Centre, University of Horticultural Sciences, Bagalkot campus, Gandhi Krishi Vignana Kendra, Bengaluru-560065 from June 2015 to May 2016 under 75 per cent shadehouse with an area of 280 m^2 area. The investigation was conducted on two year old plants, planted at a spacing of 45 cm × 30 cm using cocopeat, farm yard manure and sand in the ratio 2:1:1 as a substrate. The mean annual minimum and maximum temperature and relative humidity during study was 15-35 degree centigrade and 60-90 per cent, respectively. The experiment was laid out in factorial randomized complete block design (FRCBD) with critical difference (CD) 5% and replicated three times. The treatment consists of four levels of fertigation: F_0-200:100:250 kg NPK/ha through soil application (control), F_1-150:75:187.5, F_2-200:100:250 and F_3-250:125:312.5 kg NPK/ha through fertigation and two cultivars *viz*., V_1-Tropical and V_2-Xavia. $CaCO_3$ was given as foliar spray (5 g/plant) every month and fertigation was given at fortnightly interval through water soluble fertilizers like 19:19:19, potassium nitrate and urea.

RESULTS AND DISCUSSION

The data on effect of varied levels of fertigation on plant height, number of leaves per plant, leaf area, suckers per plant, stalk length, stalk diameter, spathe length, spathe width, number of flowers per plant and vase life of two varieties of anthurium were recorded. Statistically analyzed data is presented in Table 1. The effect of fertigation levels varied from fertigation levels F_0-F_3 in increasing order. The best results were observed in F_3.

Maximum plant height (109.88 cm), number of leaves (14.40), leaf area of 1459.69 cm^2 and number of suckers (1.98) were recorded in fertigation level F_3 followed by in fertigation level F_2 and F_1 and minimum was recorded in control. This might be due to availability of more nutrients, inducing plants to grow taller and increase the length of the leaves, width of the leaves and in turn it increases leaf area and higher number of leaves per plant. The present findings are in accordance with Jadhav *et al*[4].,; Gurjar *et al*[3].,; Dufour *et al*[2]., and Jawaharlal *et al*[5]., in anthurium.

Maximum stalk length of 68.20 cm was recorded in F_3 followed by F_2 and F_1 whereas, shortest stalk length of 57.37 cm was

obtained in control. Highest stalk diameter (7.60 mm), spathe length (18.33 cm) and vase life (27 days) was recorded in F_3 followed by F_2 and F_1 and it was lowest in control. Spathe width (12.61 cm) and number of flowers per plant per year (8.75) was produced maximum in F_3 followed by F_2 and F_1 and it was minimum in control. Better uptake of nutrients increases photosynthesis activity and subsequently translocation of assimilates to the sink leads to production of higher yield and quality flowers compared to control. These results are in accordance with the findings of Jadhav *et al*[4]., Jawaharlal *et al*[5]., Dufour *et al*[2]., and Karuna *et al*[6]., in anthurium also recorded same findings.

Among the varieties, maximum plant height (104.42 cm), leaf area (1262.89 cm^2), number of suckers (1.92), stalk length (64.46 cm), stalk diameter (7.52 mm), spathe length (18.24 cm) and vase life (28.83 days) was recorded in cv. Xavia. Increased number of leaves per plant (10.01), spathe width (12.12 cm) and flower yield (7.63) was recorded in cv. Tropical. The differences in plant height among the varieties may be attributed to the inherent genetic character associated with the genotypes, also due to growing environmental conditions as reported by Rajeevan *et al*[7]., Agasimani *et al*[1]., Srinivasa[9] and Srinivasa and Reddy[8] in anthurium.

The interaction effect of F_3V_2 showed the best performance in growth, yield and quality than rest of the treatment combinations. Significantly highest number of suckers per plant (2.26) and spathe length (18.99 cm) was observed in the same combination while the spathe width (13.35 cm) was found maximum in F_3V_1 treatment combination. This was due to sufficient nutrients available to the plants and better performing ability of the cultivar. The same results were observed by Jadhav *et al*[4]., and Vallasalkumari *et al*[10].

Table: 1. Effect of different levels of fertigation and varieties on performance of two different cultivars of anthurium

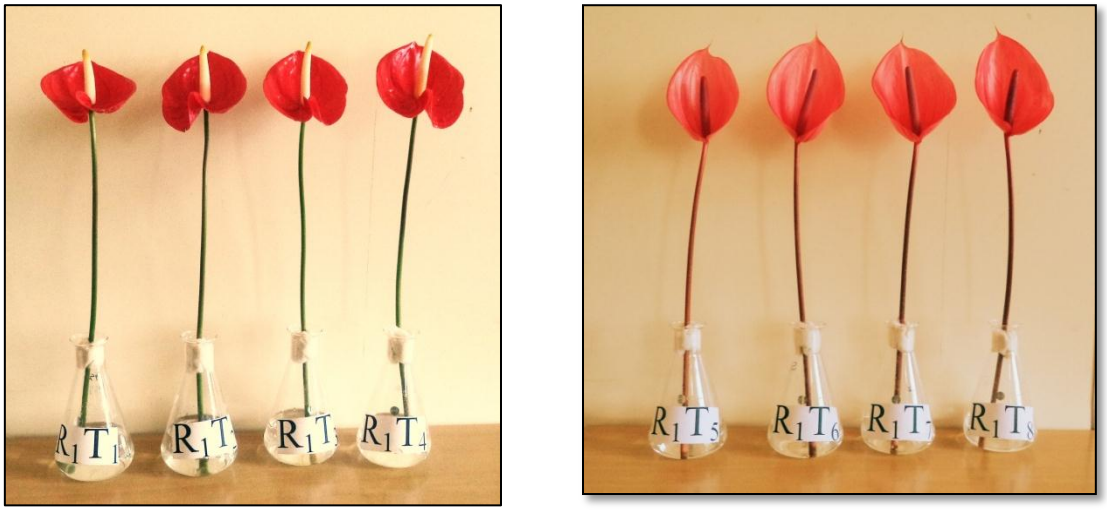
Treatments	Plant height (cm)	No. leaves/ plant	Leaf area (cm^2)	No. suckers/ plant	Stalk length (cm)	Stalk diameter (mm)	Spathe length (cm)	Spathe width (cm)	Flowers/ plant/ year	Vase life of flowers (days)
Fertigation levels										
F_0	94.81	13.36	1050.45	0.93	57.37	6.52	16.72	10.21	5.85	20.50
F_1	98.95	13.68	1194.50	1.43	60.92	7.04	17.36	10.99	6.71	22.66
F_2	103.84	14.05	1316.70	1.75	64.35	7.35	17.83	11.75	7.68	25.16
F_3	109.88	14.40	1459.69	1.98	68.20	7.60	18.33	12.61	8.75	27.00
C.D. (P=0.05)	3.54	0.30	70.50	0.13	2.78	0.31	0.64	0.26	0.52	2.22
Varieties										
V_1 (Tropical)	99.32	14.03	1247.78	1.12	60.95	6.74	16.88	12.12	7.63	21.83
V_2 (Xavia)	104.42	13.71	1262.89	1.92	64.46	7.52	18.24	10.66	6.86	25.83
C.D. (P=0.05)	2.50	0.21	NS	0.09	1.97	0.21	0.45	0.18	0.37	1.57
Interactions (Fertigation levels x Varieties)										
$F_0 \times V_1$	92.97	13.46	1043.23	0.46	55.21	6.23	16.09	10.66	6.13	18.33
$F_1 \times V_1$	95.43	13.80	1185.82	0.96	59.51	6.77	16.66	11.76	7.06	20.00
$F_2 \times V_1$	101.30	14.26	1304.60	1.36	63.02	6.96	17.09	12.72	8.10	23.33
$F_3 \times V_1$	107.58	14.60	1457.46	1.70	66.05	6.98	17.67	13.35	9.23	25.66
$F_0 \times V_2$	96.65	13.26	1057.67	1.40	59.51	6.81	17.36	09.76	5.56	22.66
$F_1 \times V_2$	102.46	13.56	1203.18	1.90	62.34	7.13	18.06	10.23	6.36	25.33
$F_2 \times V_2$	106.39	13.83	1328.80	2.13	65.68	7.71	18.56	10.78	7.26	27.00
$F_3 \times V_2$	112.18	14.20	1461.93	2.26	70.34	8.24	18.99	11.87	8.26	28.33
C.D. (P=0.05)	NS	NS	NS	0.18	NS	NS	0.90	0.37	NS	NS

F_0 - 200:100:250 kg NPK/ha (soil application) F_1 -150:75:187.5 kg NPK/ha

F_2 -200:100:250 kg NPK/ha F_3 - (250:125:312.5 kg NPK/ha)

V_1 -Tropical V_2 -Xavia NS - Non Significant

Plate 1. Anthurium varieties used in the experiment



Tropical **Xavia**

Plate 2. Vase life (days) as influenced by varied levels of fertigation in anthurium varieties

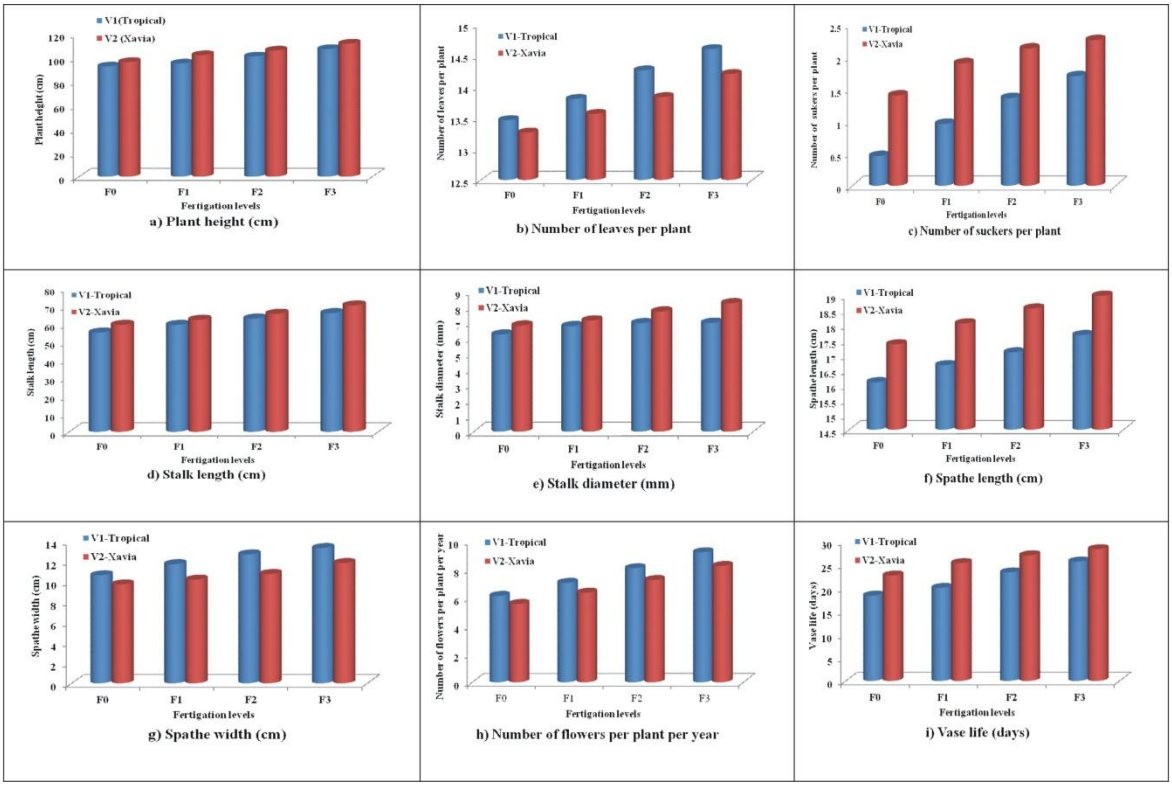


Fig. 1: Effect of different levels of fertigation and varieties on performance of two different cultivars of anthurium

CONCLUSION

From these findings, it can be concluded that cv. Tropical yielded better quality flowers in F_3 fertigation level whereas, cv. Xavia recorded maximum vase life days with F_3 fertigation level as compared to cv. Tropical.

REFERENCES

1. Agasimani, A.D., Patil, V.S., Basavraj, B., Uppar, D.S., Patil, B.C. and Biradar, M.S., Performance of anthurium varieties under greenhouse, *Karnataka J. Agric. Sci*. **23(3):** 540-541 (2010).
2. Dufour, L., Horst, W.J., Schenk, M.K. and Burkert, A., Optimization of *Anthurium andreanum* mineral nutrition in soil less culture under tropical conditions, *International Plant Nutrition colloquium*, Hannover, Germany, pp. 784-785 (2001).
3. Gurjar, R.A., Dhaduk, B.K., Chawla, S.L. and Singh, A., Standardization of foliar nutrients (NPK) spray in anthurium cv. Flame, *Indian J. Hort.*, **69(3):** 390-394 (2012).
4. Jadhav, G., Ambad, S.N., Hongal, S. and Hiremath, V., Effect of different levels of fertigation on performance of cultivars of anthurium, *Asian J. Hort.*, **7(2):** 276-280 (2012).
5. Jawaharlal, M., Joshua, J.P., Arumugam, T., Subramanian, S. and Vijaykumar, M., Standardization of nutrients and growth regulators to reduce pre blooming period and to promote growth and flowering in anthurium (*Anthurium andreanum* L.) under protected shade net house. *South Indian Hort*., **49:** 342-344 (2001).
6. Karuna, K., Patil, R., Narayanswamy, P and Kale, R.D., Stimulatory effect of each earth worm body fluid (vermiwash) on Crinkle red variety of *Anthurium andreanum. Crop Res.*, **17:** 253-257 (1999).
7. Rajeevan, P.K., Vallasalakumari, Rao, P.G.H., Liji, P.V. and Sujatha, M., Performance evaluation of cut flower varieties of anthurium under two agro climatic conditions. *J. Orn. Hort*., **10(3):** 177-180 (2007).

8. Srinivasa, V. and Reddy, T.V., Evaluation of different varieties of anthurium under hill zone of Coorg District, Karnataka. *Mysore J. Agric. Sci*., **39(1):** 70-73 (2005).
9. Srinivasa, V., Influence of GA_3 on growth and flowering in anthurium cv. Mauritius red. *Crop Res*., **30(2):** 279-282 (2005).
10. Vallasalkumari, P.K., Addussammed, K.P., Rajeevan, P.K. and Geetha, C.K., Shade and nutrient management in *Anthurium andreanum*. *South Indian J. Hort*., **49:** 326-331 (2001).