EFFECT OF FOLIAR SPRAY USING GROWTH REGULATORS ON THE GROWTH, QUALITY AND FLOWERING OF ANTHURIUM (*Anthurium andreanum*) CV. TROPICAL.

Ajish Muraleedharan*, P. Karuppaiah and S. Ramesh kumar

Department of Horticulture, Faculty of Agriculture, Annamalai University, Annamalai nagar, Tamil nadu, India - 608002.

***Author for correspondence – ajishm1000@gmail.com**

ABSTRACT

Anthurium ranks eleventh in the global flower trade and commands a respectable price both for its cut flower and whole plant. Anthuriums are gaining popularity due to higher returns per unit area and their beautiful and attractive long lasting flowers. They have gained popularity as one of the most important commercial ornamental crop of the modern world. They are very popular with flower arrangers because of bold effect and lasting qualities of flowers. Growth regulators are the chemical substance which alters the growth and development in plants and regulate the physiological process in an appreciable manner in plants when used in small concentrations. Present research work was carried out to study the effect of foliar spray using growth regulators on the growth, quality and flowering of anthurium (*anthurium andreanum*) cv. Tropical. The experiment was conducted with nine growth regulators *viz*. gibberillic acid, Triiodobenzoic Acid, Benzyladenine, Ethylene, Absicic acid, NAA, Salicilic acid, Cycocel and Control (No growth regulator). The treatments were replicated thrice. The plants were maintained under 75 per cent shade net and with a growing medium mixture of coir pith + coconut husk. Among the different treatment combinations, foliar spray of gibberillic acid 100 ppm gives maximum results in the growth, flowering and quality parameters.

Key words: Growth regulators, Anthurium.

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 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. . Plant growth regulators are a group of chemicals for controlling and enhancing the

natural plant growth processes (Mayak and Halevy, 1980).Plant hormones are produced naturally by plants and are essential for regulating their own growth. They act by controlling or modifying plant growth processes, such as formation of leaves and flowers, elongation of stems, development and ripening of fruit. People have established the benefits of extending the use of plant hormones to regulate growth of other plants. When natural or synthetic substances used in this manner, they are called Plant Growth Regulators (PGRs). The application of growth regulators show difference in the production, developmental process, yield and quality of flowers (Swapna, 2000 and Havale *et al*., 2008).

The positive effect of application of plant growth regulators in terms of increased number of flowers and lateral shoots per plant in the present study is inline with the reports of Imamura and Higaki(1988) and Henny and Hamilton (1992). Foliar feeding is a technique of feeding plants by applying liquid fertilizer directly to their leaves (George Kuepper, 2003). Plants are able to absorb essential elements through their leaves. The absorption takes place through their stomata and also through their epidermis. The productivity and quality of flowers are closely related to nutrient supplement. Even though Anthurium is grown by many planters, the use of growth regulators is most important to obtain higher yield and quality of the flower. Therefore, the present work is carried out with a view to find the effect of foliar spray using growth regulators on the growth, quality and flowering of anthurium (A*nthurium andreanum*) cv. tropical.

MATERIAL AND METHODS

The present study was carried out in Flora-tech floriculture unit at kottarakara , kollam Dist , kerala state, India during 2011- 2013. The experiment was conducted was conducted with nine types of growth regulators. The treatments with three replications were carried out in completely randomized design. The Anthurium (*Anthurium andreanum*) cv. Tropical was used, the colour of the spathe is red. Spathe is smooth, blistered, leathery and wavy in texture. The colour of the spadix is lemon yellow. Four months old tissue cultured plants were used. 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 360 days after planting. Different growth regulators used at the concentration of 100 ppm in the study are, T_1 - Ethylene, T_2 - Absicic acid, T_3 - Benzyladenine, T_4 - Salicilic acid, T_5 - Triiodobenzoic Acid , T_6 - Gibberellic acid,T_7 -Cycocel , T_8 – NAA and T_9 – Control (No growth regulator).

RESULTS AND DISCUSSION

The result indicated significant influence in overall performances of Anthurium plants due the interaction effect of growth regulators. Among the different treatments, the maximum plant height (52.19 cm), plant spread (74.99 cm), number of flowers per plant (8.31), flower stalk length (50.21 cm),

spathe length(9.88 cm), spathe breadth (9.96 cm) and early flower bud appearance of 92.41 days were recorded in T_6 (Gibberellic acid), this was followed by T_8 (NAA) with plant height of 51.37 cm, plant spread of 73.47 cm, 7.70 flowers per plant, flower stalk length of 46.01cm, spathe length of 9.74 cm and 9.90 cm of spathe breadth. The least observations were recorded in T_9 (control). The increased results in T_6 (Gibberellic acid) may be due to appropriate shade of 75 percent and growing media comprising of coir pith and coconut husk along with foliar spray of gibberellic acid. The present result is inline with the following results. According to Dufour and Gue`rin (2005) in Anthurium nutritional status affects yield and quality. Henny *et al* 1999 reported that a single foliar spray of GA 250ppm to 2000 ppm helped the *Syngonium podophyllum* variety White butterfly belonging to Araceae family to flower within 86 days. The increase in flower number has been reported by Von Henting (1960) even at 10 ppm GA. Abou Zied and Bakry (1978) also reported increase in duration of flowering and decrease in inflorescence diameter with different GA concentrations. According to Anand and Jawaharlal (2004) flowering behaviour of Anthurium plants has been drastically modified by the foliar spray of growth regulators. Quality characters like flower longevity, vase life and visual scoring was also increased with the application of GA concentration of 100 ppm.

Table 1: Effect of foliar spray using growth regulators on the growth, quality and flowering of anthurium cv. tropical.

Treatments	Plant height	Plant spread	Number of leaves per plant	Fresh weight of plant (g/plant)	Number of flowers per plant	Flower stalk length
T_1 - Ethylene	38.83	61.00	6.98	57.31	4.30	36.87
T_2 - Absicic acid	35.78	57.52	6.63	51.66	3.89	33.67
T_3 - Benzyladenine	32.70	54.01	6.34	46.32	3.51	30.69
T_4 - Salicilic acid	48.82	72.55	6.04	40.93	3.12	27.68
T_5 - Triiodobenzoic Acid	45.56	68.84	7.63	68.98	5.13	43.39
T_6 - Gibberellic acid	52.19	74.99	8.31	73.28	5.72	50.21
T_7 - Cycocel	39.22	61.61	6.99	57.37	4.30	36.91
T_8 - NAA	51.37	73.47	7.70	72.18	4.93	46.01
T_9 - Control	23.88	41.12	4.98	32.52	2.09	21.41
SE (d)	1.33	1.74	0.14	2.51	0.17	0.57
CD (p=0.05)	2.86	3.48	0.29	5.18	0.35	1.15

Among the various growth regulators tested GA was found to reduce the time taken for flowering in Anthurium andreanum var. Temptation under 75 % shade net house conditions. Sekar and Sujata (2001) concluded that the plants grown on coir pith substrate and sprayed with GA 200 ppm twice at monthly intervals commencing from 90 days after planting gave high yield of good quality flowers in gerbera. Considering the above facts and results of the present investigation, it could be concluded that the treatment given with foliar spray of Gibberellic acid and grown in green house with 75 percent shade and growing media comprising of coir pith and coconut husk shown the best result in growth, quality and yield.

Table 2: Effect of foliar spray using growth regulators on the growth, quality and flowering of anthurium cv. tropical.

Treatments	Number of days taken for flower bud appearance	Number of days taken for flower opening	Spathe length	Spathe breadth	Spadix length (cm)
T_1 - Ethylene	111.66	32.01	8.27	8.43	5.08
T_2 - Absicic acid	118.79	34.56	7.67	7.82	4.70
T_3 - Benzyladenine	127.25	37.52	7.12	7.26	4.35
T_4 - Salicilic acid	135.79	40.50	6.56	6.69	4.00
T_5 - Triiodobenzoic Acid	103.38	25.61	9.47	9.66	5.85
T_6 - Gibberellic acid	92.41	23.77	9.88	9.96	6.08
T_7 - Cycocel	111.78	32.04	8.28	8.44	5.09
T_8 - NAA	97.99	29.91	9.74	9.90	5.75
T_9 - Control	144.43	48.10	5.50	5.63	2.96
SE (d)	-3.98	-1.39	0.20	0.22	0.18
CD (p=0.05)	-8.21	-2.87	0.41	0.46	0.35

Fig 1: Effect of foliar spray using growth regulators on flower longevity of anthurium cv. tropical.

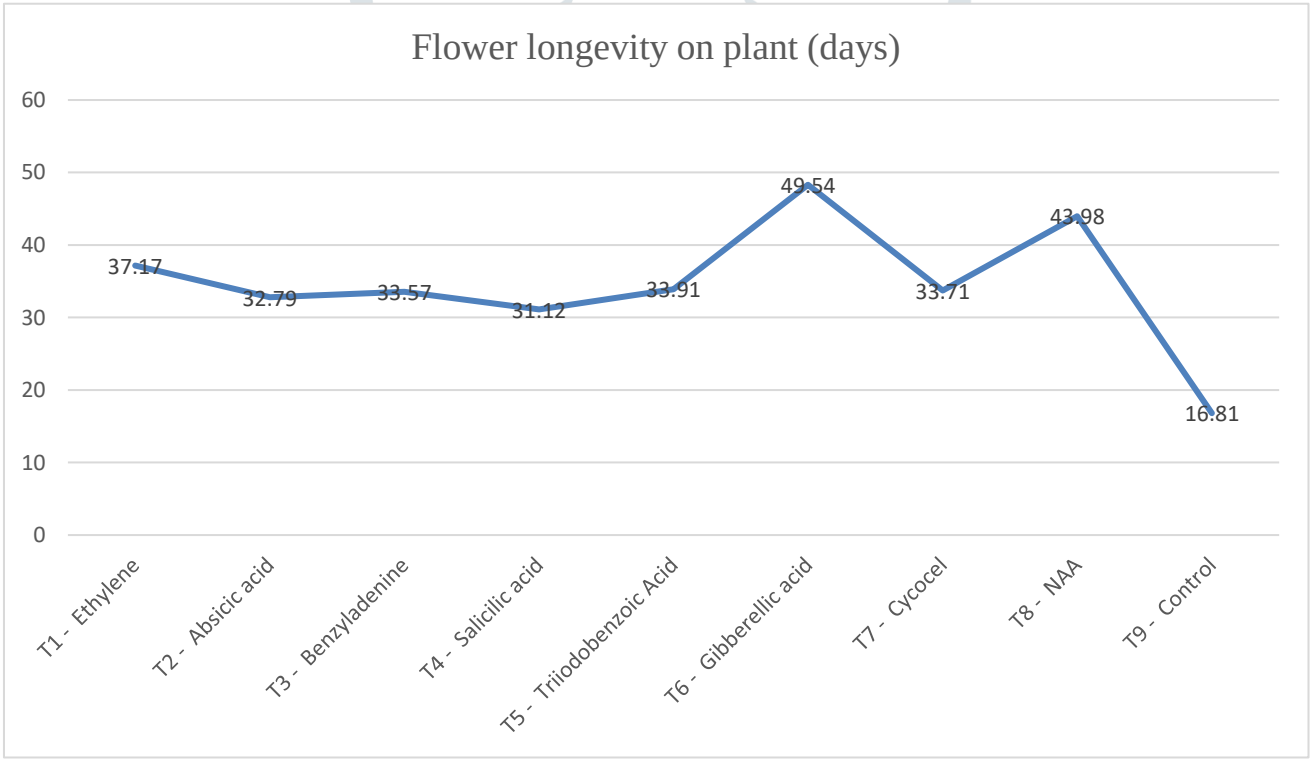


Fig 2: Effect of foliar spray using growth regulators on flower vase life of anthurium cv. tropical.

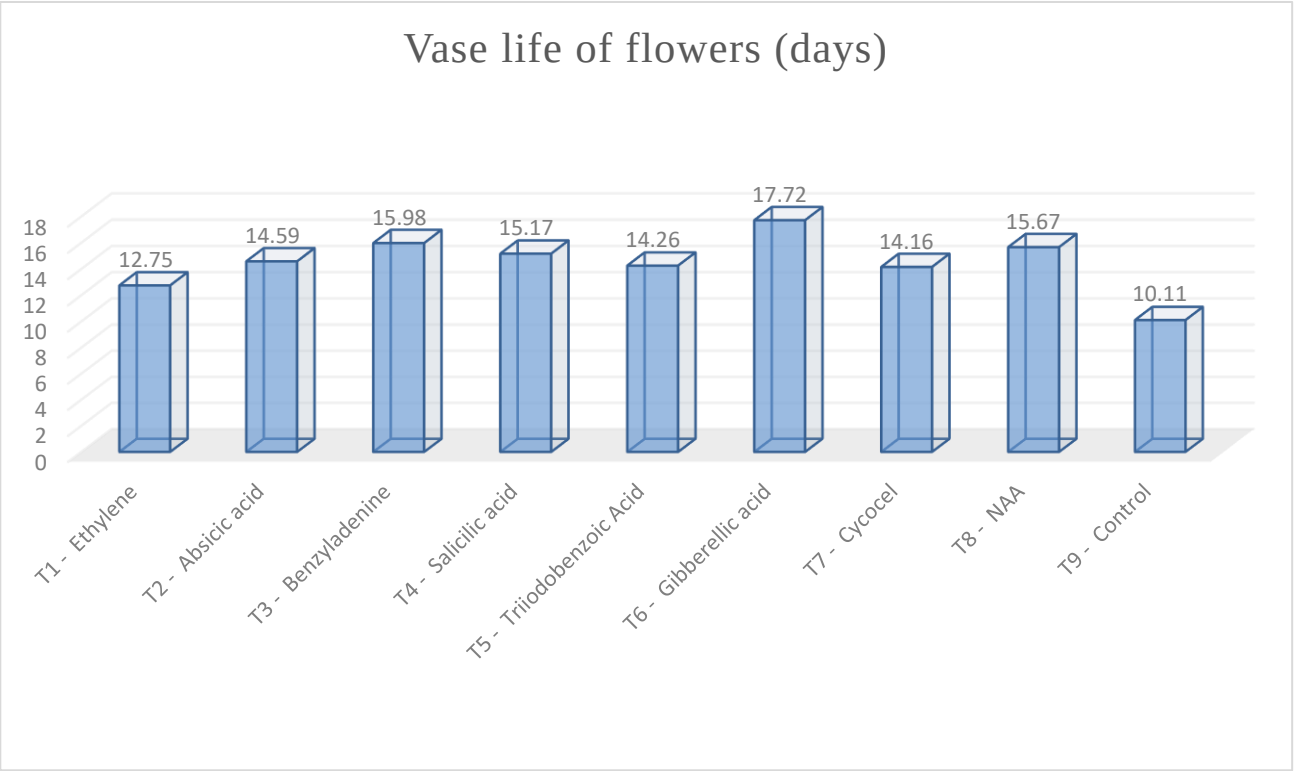
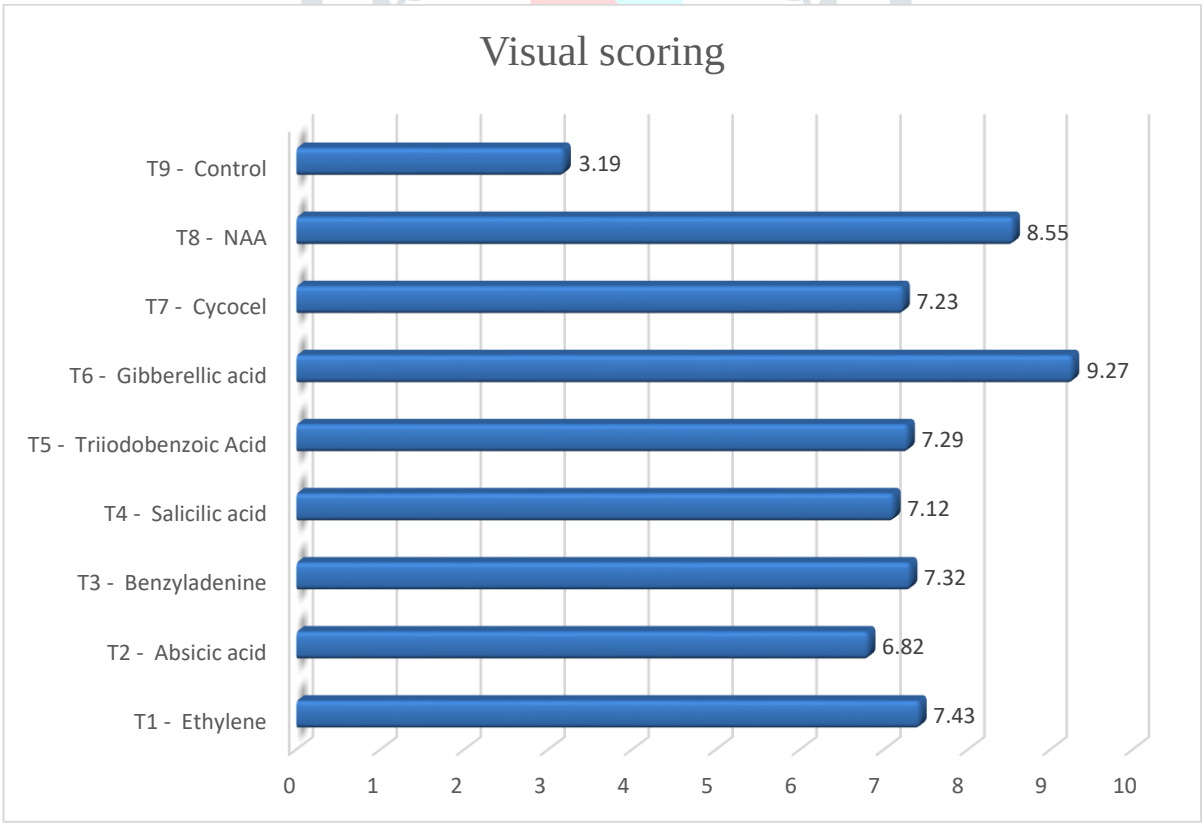


Fig 3: Effect of foliar spray using growth regulators on flower visual scoring of anthurium cv. tropical.



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