Effect of Different Planting Medium on the Growth and Floral Yield of the Two Cultivars Anthurium (*Anthurium adreanum L.*)

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Abstract
The study was laid out in a 2 x 6 factorial experiment in Complete Randomized Design (CRD) to determine the effect of different planting medium on the growth and floral yield of the two cultivars of anthurium; to find out the potential of growing anthurium in garden soil; determine the interaction effect of the different planting medium and the cultivars and to identify the insect pest and diseases occurrence of growing anthurium in different planting medium.

Two cultivars of anthurium grown in 50% vermicast + 50% aged rice hull and to 75% vermicast + 25% chop coconut husk obtained significantly the longest and widest leaf, numerous leaves, early to initiate flower consequently early to bloom which is statistically comparable to garden soil with expressing superior vegetative growth and floral yield. While anthurium grown in 25% vermicast + 25% rice hulls + 50% coconut husk got the narrowest and shortest leaf size.

The average plant height (cm), average number of suckers, length of flower stalk and spathe of anthurium showed no significant difference in different planting medium. But numerically, anthurium grown in garden soil + urea obtained the tallest plant, numerous leaves, more suckers, longer flower stalk and spathe. However, floral yield, width of the spathe and length of the spadix was significantly different in both cultivars. The widest spathe was noted in Nieta orange (V1) while the longest spadix was found in Kaumana Red (V2).

No interaction effect between two factors in both growth and floral yield performance of two varieties of anthurium was recorded.

Nieta orange (V1) was noted susceptible to leaf spots, bacterial blight and stem rot compared to Kaumana red (V2). On the other hand, short horned grasshopper was recorded in both varieties. Other arthropods pest like mites was noted to infest the experimental plants.

Keywords: vermicast, anthurium, coconut husk, carbonized rice hull, aged rice hull

1. Introduction

Anthurium (*Anthurium adreanum L.*) is one of the top ten (10) cut flower with potential demand both domestic and global markets. The Bureau of Plant Industry (BPI) reported an increasing demand for cut flowers. The total demand for selected cut flowers in the National Capital Region (NCR) alone reached 3.6 million dozen in 1999 and increasing on 2007. (PSA, 2007) and anthuriums is the most preferred cut flowers. Anthurium is a soil less plant and responsive to inorganic fertilizer. However, due to crises arising like expensive cost of commercial fertilizer, poor soil fertility, and low income, farmers/growers seek a more cost-efficient type of organic fertilizer. Vermicomposting is a biological process by which worms

are used to convert organic materials (usually wastes) into a humus-like material known as vermicompost or vermicast (Shak,et.al. 2014). It was proven by science as a good enhancer for plant growth due to very rich in humus that improves the physical structure and the biological properties of the soil, enrichment of micro-organism with an addition of growth hormone such as auxin, gibberellic acid and enzymes such as phosphate, cellulase. (Chaoui et al., 2003[2], Guerrero, 2010[4]). Keeping the potential and economic value of anthurium flowers and the significant impact of the organic soil medium to the growth and floral yield of the two varieties of anthurium.

2. Material and Methods:

The experiment was conducted at the UEP Horticulture Center, University of Eastern Philippines, Catarman, Northern Samar under a 75% protected shade. Different planting medium was prepared, following the specified combination. (M1) 25%. vermicast + 25% rice hulls and 50% coconut husk. (M2) 50% vermicast, 25% rice hull and 25% charcoal rice hulls. (M3) was 50%. vermicast and 50%aged rice hulls. (M4) 50% vermicast and 50% coconut husks. (M5) 75% vermicast and 25%rice hulls and (M6) garden soil only + weekly application of urea at a rate of 1 tbsp. per gallon of water. Two thirds (2/3) of the perforated polyethylene bags were filled up with prepared medium to assured that the growing point was not covered with the organic medium. Anthurium suckers was planted individually to the designated bags. Cultural management practices such as weeding, fertilization, pruning and watering was made as the need arises.

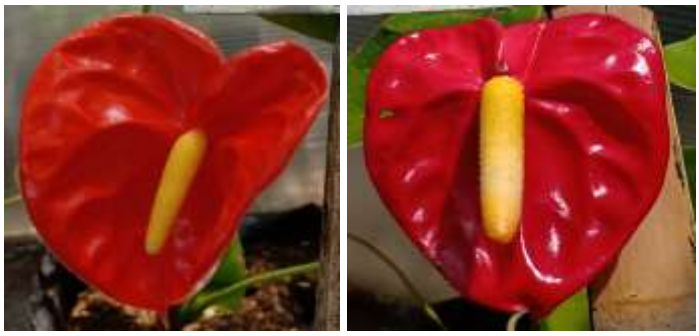
3. Results and Discussion

Anthurium grown in different organic planting medium expressed superior vegetative growth and floral yield. Table 1 showed that anthurium grown in in 50% vermicast + 50% aged rice hull significantly the longer leaf (21 cm) , wider leaf (10.87 cm), early to initiate flower (127.07 days after transplanting) consequently early to bloom (74.7 days from flower initiation) while anthurium grown in 75% vermicast + 25% chop coconut husk produced a leaf length of 20.45 cm and leaf width of 10.23 cm, early to initiate flower (114.5 days after transplanting) noted early to bloom (82.86 days from flower initiation). However, statistical analysis showed a comparable effect to anthurium grown in garden soil + urea that obtained significantly the longest (21.92 cm) and widest leaf (11.76 cm), early to initiate flower (110 days after transplanting) consequently early to bloom (67.29 days from flower initiation). On the other hand, anthurium grown in while 25% vermicast + 25% rice hulls + 50% coconut husk got the narrowest (18.54 cm and shortest leaf size of 8.71 cm. This might be due to the nutrients content both in the vermicast and in the rice hulls. The results are in accordance with the study of Gohil *et. Al*[3], Badar and Qureshi[1] , Lim *et al*.[5] Shak *et al* [6]
Among the cultivars, only the width of the spathe and the length of the spadix was significantly affected by the different organic planting medium. Results showed that Nieta orange obtained the widest spathe (6.12 cm) while the Kaumana red got the longest spadix (4.21 cm). The difference of the spathe and spadix of the two varieties of anthurium was due to inherent genetic characteristics. However, plant height, leaf size, number of suckers, number of leaves, days to flower exertion, days to full bloom, spathe size, length of spadix and length of the flower stalk did not vary significantly between variety and fertilizer as well as on its interaction effect between two factors

Table 1. Effect of different planting medium on the growth and floral yield of the two cultivars of anthurium

Treatment	Plant height (cm)	Leaf length (cm)	Leaf width (cm)	Ave. No. of suckers	Ave. No. of leaves	Days to Flower exertion	Days to full bloom	Length of spathe	Width of spathe	Length of spadix	Length of flower stalk
Planting Medium											
M1	53.48	18.54^{c}	8.71^{b}	4.33	5.00	116.63^{b}	66.53^{b}	6.75	2.78	5.52	29.43
M2	54.51	20.32^{abc}	9.87^{ab}	5	5.33	113.46^{b}	75.19^{ab}	6.85	5.79	4.18	28.40
M3	54.83	21.00^{ab}	10.87^{a}	5	5.16	127.07^{ab}	74.7^{ab}	6.72	6.12	4.22	25.39
M4	54.38	19.19^{bc}	9.89^{ab}	4.83	5.33	123.93^{ab}	74.09^{ab}	10.07	5.47	3.54	32.48
M5	50.30	20.45^{abc}	10.23^{ab}	5	5.16	114.5^{b}	82.86^{a}	6.50	5.96	3.98	25.33
M6	68.80	21.92^{a}	11.76^{a}	5	5.50	120 ^{ab}	67.29^{b}	6.59	5.51	3.86	24.75
CV	NS	7.28	6.25	NS	NS	3.54	4.82	NS	NS	NS	NS
Varieties											
V1 (Nieta orange)	56.04	20.41	10.48	4.83	5.16	126.18	73.08	6.70	6.12^{a}	3.64^{b}	27.30
V2 (Kaumanared)	56.04	20.07	9.96	5.16	5.22	122.8	73.80	6.66	5.43^{b}	4.21^{a}	27.96
CV	NS	NS	NS	NS	NS	NS	NS	NS	11	6.1	NS
Interaction (Planting Medium x varieties											
V1M1	48.07	18.58	8.92	4.33	5.00	113.6	68	6.55	5.57	3.49	28.39
V1M2	55.13	20.27	10.46	5	5.33	121.2	74.53	7.20	6.5	3.67	31.51

V1M3	57.1	21.65	11.20	5	5.00	125.07	75.2	7.11	6.51	3.62	28.69
V1M4	54.73	18.81	10.15	4.67	5.67	125.13	74.53	6.83	6.18	3.13	29.23
V1M5	50.37	20.87	10.07	5	5.33	110.6	83	6	5.97	4.3	23.3
V1M6	70.83	22.28	12.07	5.0	5.33	159.3	63.26	6.53	6	3.66	22.67
V2M1	58.9	18.51	8.50	6	5.00	119.67	65.06	6.96	6.07	4.06	30.47
V2M2	53.9	20.37	9.29	5	5.33	105.73	75.86	6.53	5.08	4.7	25.3
V2M3	52.56	20.36	10.53	5	5.33	129.07	74.2	6.33	5.73	4.83	22.1
V2M4	54.03	19.57	9.63	5	5.00	122.73	73.66	6.49	4.77	3.96	35.73
V2M5	50.23	20.04	10.38	5	5.00	118.4	82.73	7.01	5.95	3.66	27.36
V2M6	54.77	21.57	11.46	5	5.67	141.	71.33	6.66	5.03	4.06	26.83
CV	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS



V 1 Nieta Orange V2 Kaumana Red

Figure 1. Anthurium cultivars used as experimental plants

Figure 2. Anthurium grown in 50% vermicast + 50% aged rice hull (M3)

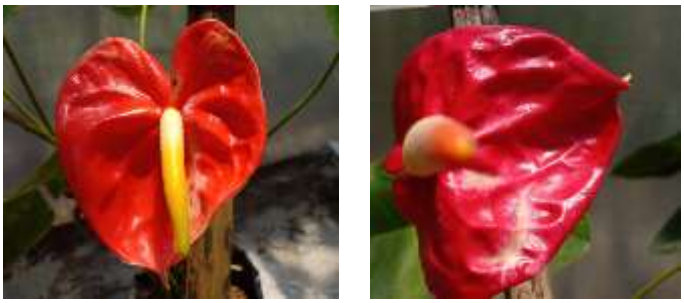


Figure 3. Anthurium grown in garden soil (M6)

4. Conclusion

Based on the findings, it can be concluded that the average width of spathe and average length of spadix is significantly influenced by the varieties while number of days to 50% flower exertion and 50% full bloom is significantly influenced by the planting medium only and show no significant effect on length of flower stalk and spathe and its interaction. Nitta orange (V1) is significantly has the widest spathe compared to Kaumana red (V2). However, a significant average length of spadix was noted in Kaumana red (V2) while Nitta orange (V1) has the shortest length of spadix. Over all, no significant effect between cultivars and different organic planting medium on the average length flower stalk and length of spathe per treatment. Garden soil + urea appeared as a potential planting medium for anthurium considering that anthurium grown in garden soil + urea expressing superior vegetative growth and floral yield which is statistically comparable to different organic planting medium.
Nieta orange (V1) was noted susceptible to leaf spots, bacterial blight and stem rot compared to Kaumana red (V2). On the other hand, short horned grasshopper was recorded in both varieties. Other arthropods pest like mites was noted to infest the experimental plants.

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