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Cultural Management Practices of High Valued Varieties of Chrysanthemum

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Abstract

An experiment was conducted to evaluate the effect of three (3) levels of fertilizer (recommended rate 100-30-60, slow released fertilizer 18-6-8, and vermi compost + FPJ) on the growth and floral yield of three (3) high valued varieties of chrysanthemum (Yellow chrysanthemum, white chrysanthemum and lilac chrysanthemum) A total of nine (9) treatment combinations was laid out in factorial randomized complete block design with three (3) replication. Result showed that white chrysanthemum fertilized with slow release fertilizer (18-6-8) was the tallest plant with widest leaf area index and plant spread, highest dry matter yield and return of investment. early to bud initiation, shortest days to produce flowers, early to obtained 50% flowering, shortest days in flowering duration, more primary and secondary branches per plant and widest floral diameter , followed by the recommended rate (100-30-60), while those fertilized with vermi compost + fermented plant juice (FPJ) had the shortest plant , delayed floral opening due to late bud initiation, smaller flower size, and produced few branches, , had a shortest shelf life of garland and duration of flowers and the lowest percentage of return of investment (ROI).

Keywords: *slow released fertilizer, vermin compost, fermented plant juice*

INTRODUCTION

Cut flower industry in the Philippines started as a backyard operation and evolved into a regular profitable business activity for many small and medium entrepreneurs. Horticultural products grew to a point where the government recognize it's important and contribution to the local economy (Naranja and Rosario ,2008).

In the Philippines, chrysanthemum is one of the leading cut flower and potted plants commonly grown in Laguna, Benguet, Cebu and Davao City (Rosario, 1997.). According to the Philippine Statistical Authority (2017) the volume production of chrysanthemum in Benguet was 1,283.00 m.t/ha, Cebu 701.66 m.t/ha, Davao city 20.78 m.t/ha and in Northern Samar 1.09 m.t/ha.

Chrysanthemum is in demand during birthday celebration, wedding, anniversary, fiestas and all soul's day. It can be use in stage decoration, floral arrangement, bouquet, hair adornment and others. Each variety of chrysanthemums produced different colors (yellow, white, red, gold, purple or lilac and pink chrysanthemum) with various symbolism. Red chrysanthemum symbolizes as love and passion, yellow symbolize rejection or sorrow, white symbolize loyalty and honesty. Through this kind of flower, it is the way to express our love, happiness, joy and sadness.

It is widely cultivated for ornamental, culinary and medicine uses like to treat infections for eye problems lower high blood pressure, headaches and colds (Bardot ,2017) and the extract of the chrysanthemum (stems and flowers) had a potential medicinal property including anti-HIV, antibacterial and antimitotic (Prasad et.al.,2012). This work generally aimed to determine the growth and floral yield of three varieties of chrysanthemum as affected by different fertilization.

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MATERIALS AND METHODS

A 3x3 factorial design in Randomized Complete Block Design (RCBD) with three (3) replications was used in this study. The treatments are as follows;

Factor A- Different Varieties of Chrysanthemum

V1- Yellow Chrysanthemum
V2- White Chrysanthemum
V3- Lilac Chrysanthemum

Factor B- Different Fertilization

F1- Inorganic fertilizer (100-30-60) + calcium nitrate
F2- Slow release fertilizer nutricote (18-6-8)
F3- Organic fertilizers (vermi compost) + FPJ

A total of 270 disease free rooted stem cuttings of chrysanthemum were used in this study. Rooted cutting of three varieties of chrysanthemum was set individually to the designated perforated plant liner to ensure proper drainage. Different fertilization was made following the treatment. Recommended rate (100-30-60) kg/ha (F1) was applied as basal application at planting and weekly application of calcium nitrate at a rate of 8.7g after transplanting up to bolting stage. Slow release fertilizer (18-6-8 kg/ha) (F2) at a rate 5g of nutricote was applied at planting using top dress method. While one fourth (¼) kg of vermicompost (F3) was mixed thoroughly to the soil medium at planting and weekly application of fermented plant juice from transplanting to bolting stage at a rate of two (2) tablespoon per liter of water was done. Removal of growing tip was done first (1^{st}) week after planting to enhance lateral shoots formation and removal of flower bud was employed to allow lateral flower buds to maintain five (5) flower buds in every stem. Other cultural management practices were made like sticking to support the plant to grow, watering and hand weeding was regularly carried out in order to keep the entire pots weed free throughout the cropping period. Harvesting was done when the petals have fully expanded.

RESULTS AND DISCUSSION

Growth response of three varieties of chrysanthemum as affected by different fertilization.

White chrysanthemum fertilized with slow release fertilizer (18-6-8) significantly the tallest plant, widest leaf area index and plant spread, had numerous branches, tallest stalk length, obtained the highest dry matter yield compared to the rest of the varieties and fertilization. The results conformed with the series of trials of Osmocote and Nutricote on a variety of tropical foliage produced a tallest plant height and growth index products resulted a satisfactory of plant growth and quality (Rauch,2004.)

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Table1. Growth parameters of three varieties of chrysanthemum as affected by different fertilization.

Treatment	Plant height	Leaf area index	Plant Spread	No. of Branches	Dry matter yield	Stalk Length
Yellow chrysanthemum with inorganic fertilizer	85[b]	24[b]	186[b]	2[b]	1.68[ab]	88[b]
White chrysanthemum with slow release fertilizer	104[a]	30[a]	256[a]	3[a]	2.58[a]	103[a]
Lilac chrysanthemum with organic fertilizer	75[c]	25[a]	188[b]	2[b]	1.14[b]	78[c]

Floral yield of three varieties of chrysanthemum with different fertilization

White chrysanthemum fertilized with slow release fertilizer (18-6-8) obtained the widest floral diameter, early flower bud initiation, resulted shortest days to produce flowers, early to obtained 50% flowering, shortest days in flowering duration that lead to heaviest flower yield and highest return of investment, followed by the recommended rate (100-30-60), while those fertilized with vermi compost + FPJ had the shortest plant , delayed floral opening due to late bud initiation, smaller flower size, produced few branches, had a shorter shelf life of garland and the duration of flowers. The results conformed with the study of French (2018) that Rhododendron cultivars fertilized with controlled release fertilizer Nutricote (16-10-10) produced more flower bud and complied with international nutriquest reports (2015) that Nutricote is a controlled release fertilizer with high quality. A one-time application ensured enough nutrients for the plants vegetative stage, flower and fruit-setting stage, until the crop is ready to harvest.

Table 2. Floral yield of three varieties of chrysanthemum as affected by different fertilization.

Treatment	Floral Diameter	Shelf Life	Days to first bud initiation	Days to first flower	Days to 50% flowering	Flower yield (gm)
Yellow chrysanthemum with inorganic fertilizer	22[b]	12[b]	77[a]	101[b]	115[b]	33[b]
White chrysanthemum with slow release fertilizer	37[a]	14[a]	71[b]	98[c]	112[c]	47[a]
Lilac chrysanthemum with organic fertilizer	20[b]	11[b]	78[a]	103[a]	118[a]	25[b]

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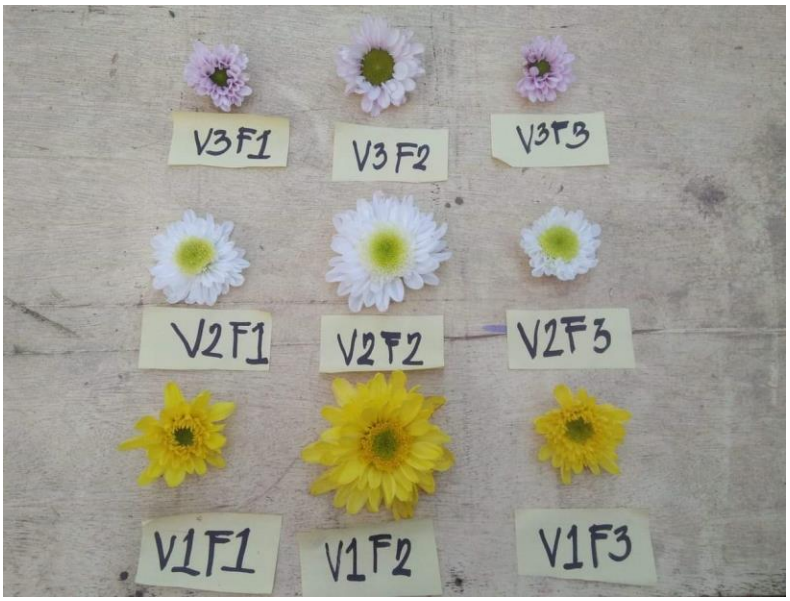

Figure 1. Floral Diameter of three (3) varieties of Chrysanthemum

CONCLUSIONS

Over all, this study demonstrated effect of different levels of NPK fertilizer on the growth and floral yield of three (3) varieties of chrysanthemum. Based on the results, the following conclusions were drawn; the different varieties of chrysanthemum planted in an open field was significantly influenced by different NPK fertilizer and the for farmers who want to grow chrysanthemum as cut flower the slow release (18-6-8) is recommended because of good floral quality like widest flower sized, early to produce flowers, greater floral yield and highest percentage of ROI.

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