STUDIES ON THE INFLUENCE OF GROWING MEDIA, PINCHING AND GROWTH REGULATORS ON VEGETATIVE GROWTH AND FLOWERING PARAMETERS OF *Fuchsia* x *hybrida*

abstract :

Experiment was laid out in a factorial Completely Randomized Design (CRD) with four levels each of growing media namely M_1:Soil+ Sand+ FYM(1:1:1v/v),M_2:Cocopeat+Soil+Sand+Leafmould+FYM(2:1:1:1v/v),M_3:Cocopeat+Perlite +Vermiculite+Vermicompost (2:1:1:1 v/v), M_4:Cocopeat + Vermicompost + Leafmould (2:1:1 v/v), three levels of growth regulator [G_1: Control (0 ppm), G_2:Benzyl adenine (150 ppm),G_3: CPPU (10 ppm)] and two treatment pinching [P_1:Single pinch and P_2:Double pinch] makeup total of 24 treatment combinations which were replicated thrice each having 10 pots accommodating one plant per pot. Plants were raised through terminal cutting and were planted in 6-inch size pots. Study revealed that maximum plant height (33.13 cm), plant spread (33.37 cm), length of side shoots (24.67 cm) and minimum number of days taken for visible bud formation (92.40 days), number of days taken for peak flowering (160.60 days) was recorded when the single pinched plants were grown in media consisting cocopeat + Vermicompost + Leafmould (2:1:1 v/v) and sprayed with 150 ppm of benzyl adenine. However, maximum number of side shoots (27.33), number of flowers per plant (55.67), number of flowers per plant open at a time (42.93), duration of flowering (24.67days) was recorded when double pinched plants were grown in growing media consisting of cocopeat + vermicompost + Leafmould (2:1:1 v/v) and were sprayed with 150 ppm of benzyl adenine. The maximum flower diameter (4.61 cm) was recorded when single pinched plants were grown in medium consisting cocopeat + vermicompost + leafmould (2:1:1 v/v) and sprayed with 10 ppm of CPPU. Based on the present investigation findings, double pinched plants of *Fuchsia* x *hybrida* grown in pots consisting of growing media i.e., cocopeat + vermicompost+ leafmould (2:1:1 v/v), sprayed with 150 ppm of benzyl adenine is recommended for quality pot plant production of *Fuchsia* x *hybrida*.

Keywords: Fuchsia, Single pinch, Double pinch, Presentability, CPPU

INTRODUCTION

Fuchsia x *hybrida* belongs to the family Onagraceae and is one of the most popular ornamental pot plants (Casanova et al., 2005) for the temperate areas appreciated due to the beauty of their flowers. Fuchsias can be grown in full sun or partial shade and are better adapted to cold climates (Lorenzi and Souza., 2008). Fuchsia is found in the wild in the regions of Central and South America and to New Zealand and Tahiti. Fuchsia is the latin and the common genus name for the mass of 110 species. Father Charles Plumier named the genus in 1703 after Leonhart Fuchs, a 16th century German botanist and doctor of medicine. Fuchsia is generally grown for its showy pendulous flowers. Fuchsia flowers have four shorter, broader petals and four long, slender sepals. Flowers of Fuchsia are often tubular to bell-shaped. Color of flowers differ from solid to combinations of white, red, pink or purple. Fuchsias are used for variety of ornamental purposes such as colourful house and conservatory plants, containers (upright or spreading) and hanging baskets, trellies, standard and specimen plants, bedding, informal hedging, etc. Fuchsia petals can be eaten (Rop et al., 2012) or used as a garnish in

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salads. For achieving best pot presentability, growing media, growth regulators and pinching operation also play a vital role. For obtaining quality flower production and optimum development of plant root system suitable growing medium and crop residues are important (Awang et al., 2009). Growing media enhance root and shoot growth by having a proper ration of better aeration, good water holding capacity, plentiful drainage, good nutrient uptake by the roots. Flower yield is enhanced by pinching practiced at appropriate time. Pinching practice diverts the flow of nutrients and energy from the single stem system to a multi stem system. Pinching supports in the better use of hormones which therefore, enhance the growth and development of the plant and also increases growth and yield of the plant (El- Shayeb et al., 2021). Plant growth regulator is defined as organic compounds which when used in small amount boost, hinder or modify physiological process in plants (Tukey et al., 1954). Cytokinins are plant hormones that influence a wide range of plant development processes. The cell division and formation of meristematic tissue is stimulated by cytokinin. Cytokinins are plant hormones that influence a wide range of plant development processes. The cell division and formation of meristematic tissue is stimulated by cytokinin.

MATERIAL AND METHODS

The present investigation was carried out at the experimental farms of Horticultural Regional training station and Krishi Vigyan Kendra at Kandaghat (Solan) Himachal Pradesh under polyhouse conditions. The experimental farm was laid out in Completely randomized block design (factorial) with four levels of growing media, two level of pinching and three level of growth regulators replicated thrice with total makeup of 24 treatment combinations. Uniformly sized terminal cuttings with 4-5 nodes, 8-10 cm long were taken from the actively growing plants. These healthy, disease free and stocky rooted cuttings of *Fuchsia hybrida* were selected and transplanted in pots of 6 inches containing four different types of growing media. The growing media was prepared by mixing different substrates in different proportion i.e., M_1: Soil + Sand+ FYM (1:1:1 v/v), M_2: Cocopeat + Soil + Sand + Leafmould + FYM (2:1:1: 1:1 v/v), M_3: Cocopeat + Perlite + Vermiculite + Vermicompost (2:1:1:1 v/v), M_4: Cocopeat + Vermicompost + Leafmould (2:1:1 v/v). After planting, the pots were kept inside the naturally ventilated low-cost polyhouse and were arranged in such a way that they would receive proper sunlight.Irrigation was given with the help of plastic pipe in morning hours. Beside applying of basal dose of 200 ppm NPK in the form of CN (5.16 g/ pot), SSP (7.75 g/ pot) and MOP (3.86 g/ pot) supplemented at time of preparationof growing media. 200 ppm of N-P-K were also supplied through fertigation with polyfeed (NPK 19:19:19) i.e.,1.32 g/l at fortnight interval. Three sprays of Benzyl adenine (BA) at 150 ppm and CPPU at 10 ppm were given to foliage of plant at 30,45 and 60 days respectively after transplant. The level of spray upto droplet formations were kept constant for all treatment. The control plants were sprayed with distilled water. The treatment of single pinching was given treatment wise by removing the terminal shoot along with 1-2 leaf node in order to produce uniform side shoots, after 25-30 days after transplanting. The treatment of double pinching was done treatment wise in all the secondary shoots at 3- 4 node stage in order to produce maximum side shoots after 20-25 days of single pinching.

RESULTS AND DISCUSSIONS:

The data from Table 1 demonstrates that single pinched plants reached a height of (33.13 cm) when cultivated in a growing medium composed of cocopeat, vermicompost, and leafmould in a 2:1:1 v/v ratio, and treated with a 150 ppm solution of benzyl adenine. Conversely, untreated double pinched plants reached a minimum height of (16.86 cm) when grown in a growing medium comprising soil, sand, and FYM in a 1:1:1 v/v ratio. The use of a

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growing medium composed of cocopeat, leafmould, and vermicompost in a 2:1:1 v/v ratio was found to be highly effective in increasing plant height, while a mixture of soil, sand, and FYM in a 1:1:1 v/v ratio showed the least favorable results. This difference in performance could be attributed to the availability of essential nutrients such as nitrogen, phosphorus, potassium, and organic carbon within the media. Additionally, the optimal electrical conductivity (EC) of 0.976 and pH of 6.75 facilitated better nutrient uptake by the plants from the medium. The application of benzyl adenine through spraying resulted in the maximum recorded plant height, whereas untreated plants exhibited the minimum height. This difference could be attributed to the effects of cytokinin, which promotes cell division and expansion. Nahed and Aziz., 2007 found a significant increase in plant height when 20 ppm of benzyl adenine was applied to Codiaeum variegatum plants compared to control plants. Studies conducted by (Kumar et al., 2012, Rathore et al., 2011, and Maharnor et al., 2011) have shown that pinching significantly reduces plant height while increasing plant spread and the number of branches. Maximum plant height was achieved when pinching was performed 30 days after transplanting marigold, as opposed to pinching at 40 to 50 days after transplanting, due to the breakage of apical dominance.

List 1 : Physico – chemical properties of Growing media

	growing media	pH	Electrical conductivity (dSm^{-1})	Organic carbon (%)	Available N (kg/ha)	Available P (kg/ha)	Available K (kg/ha)
Before planting	M_1	7.26	0.765	0.87	320.06	106.12	165.17
	M_2	7.20	0.814	1.29	339.12	113.12	186.13
	M_3	7.11	0.955	1.46	358.23	127.66	198.65
	M_4	6.75	0.976	1.53	530.32	142.12	211.31
After Flowering	M_1	7.30	0.319	0.97	315.15	76.73	137.21
	M_2	7.24	0.325	1.41	328.32	83.87	144.14
	M_3	7.20	0.426	1.54	334.32	112.34	156.12
	M_4	7.18	0.432	1.63	470.30	109.74	167.51
M_1 : Soil+Sand+FYM(1:1:1v/v); M_2 : Cocopeat+Soil+Sand+Leafmould+FYM (2:1:1:1:1 v/v); M_3 : Cocopeat+Perlite+Vermiculite+Vermicompost (2:1:1:1 v/v); M_4 : Cocopeat+ Vermicompost+ Leafmould (2:1:1 v/v)							

The interaction among growing media, growth regulator, and pinching resulted in varying plant spread as shown in Table.1. Single pinched plants, when grown in a mixture of cocopeat, leafmould, and vermicompost in ratio of 2:1:1 v/v and treated with 150 ppm of benzyl adenine, exhibited the maximum spread at 33.37 cm. Conversely, untreated double pinched plants, cultivated in a mixture of soil, sand, and FYM at a 1:1:1 ratio v/v, showed the minimum spread at 16.05 cm. The widest plant spread was achieved when *Fuchsia* x *hybrida* plants were cultivated in a mixture of cocopeat, leafmould, and vermicompost at a ratio of 2:1:1 v/v ratio, while the smallest spread was observed when plants were grown in a blend of soil, sand, and FYM at a 1:1:1v/v ratio. According to (Nair and Bharathi, 2015) incorporating vermicompost with other growing media enhances both the flowering and vegetative attributes of pot mum chrysanthemums. Cocopeat possesses the capability to retain and gradually release nutrients to plants over an extended duration. Additionally, vermicompost enriches plant nutrition and contains significant levels of humic substances (Sahni et al., 2008). The widest plant spread was observed when plants were treated with a 150-ppm solution of benzyl adenine, while the smallest spread was recorded in untreated plants. Similar findings were reported by (Vasudevan

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and Kannan, 2015) when they sprayed rose plants with 200 ppm of benzyl adenine, resulting in a considerable increase in plant spread compared to untreated plants. Double pinched plants exhibited a significant reduction in plant spread compared to single pinched plants. This outcome aligns with the results reported by (Bhat and Shepherd, 2007) who found that single pinching of African marigold significantly increased plant spread.

The highest number of side shoots, 27.33 was observed in double pinched plants grown in a specific growing media composition of cocopeat, vermicompost, and leafmould, and treated with 150 ppm of benzyl adenine as shown in Table 1. This indicates the synergistic effect of the growing media and the growth regulator on the lateral branching of the plants. The findings suggest that manipulating the growing media composition, implementing pinching techniques, and utilizing growth regulators can greatly influence the production of side shoots in plants. By optimizing these factors, such as using the appropriate growing media and applying specific growth regulators, farmers and horticulturists can enhance lateral branching and promote the overall growth and appearance of their plants. On the other hand, the lowest number of side shoots, 9.53 was recorded in untreated single pinched plants when grown in a different growing media composition of soil, sand, and FYM. This stark contrast in the number of side shoots demonstrates the significant influence of both the growing media and the pinching technique on the lateral growth of the plants. The highest number of lateral shoots were produced when *Fuchsia* x *hybrida* plants were cultivated in a potting mix of cocopeat, vermicompost, and leafmould (2:1:1 v/v), while the lowest number of lateral shoots was observed when plants were grown in a potting medium consisting of soil, sand, and FYM (1:1:1 v/v). The greatest number of side shoots occurred in plants treated with 150 ppm benzyl adenine, compared to untreated plants. Similar results and by (Mondal and Sarkar, 2017) for rose plants sprayed with 200 ppm benzyl adenine. Double-pinched African marigold cv. Inca orange showed significantly more branches compared to single-pinched or unpinched ones on day 50 after planting as per (Poudel et al., 2017) findings; (Gnyandev et al., 2014) also noted higher branch numbers per plant in China aster cv. Phule Ganesh due to an increase in auxin/cytokinin ratio resulting from exogenous cytokinin application such as benzyl adenine which enhances axillary bud outgrowth. The data showed in Table 1 illustrates how growing media, pinching, and growth regulator interact. When single-pinched plants were cultivated in growing media made up of cocopeat, vermicompost, and leafmould 2:1:1v/v and treated with 150 ppm of benzyl adenine, the greatest length of side shoots 24.67 cm was reported. On the other hand, in double pinched untreated plants cultivated in growing media made up of soil, sand, and FYM 1:1:1 v/v, the least length of side shoots 10.63 cm was observed. The plants treated with 150 ppm of benzyl adenine showed longer side shoots than the control group. When hybrid tea rose cv. "Bugatti" was sprayed with 100 ppm of benzyladenine, (Mondal and Sarkar, 2017) found a similar result. Compared to double pinching, single pinched plants showed the longest side shoots. Auxin buildup at the tip section may be the cause of this.

After reviewing the data in Table.2, it is evident that single-pinched *Fuchsia* x *hybrida* plants grown in a medium of cocopeat, leafmould and vermicompost (2:1:1 v/v) with a spray of 150 ppm benzyl adenine showed early visible bud formation at 92.40 days. In contrast, double-pinched plants grown in soil, sand and FYM (1:1:1 v/v) with a spray of 10 ppm CPPU took the maximum time for visible bud formation at 112.27 days according to the interaction between growing media, growth regulator and pinching. The lowest number of days required for visible bud formation was observed when *Fuchsia* x *hybrida* plants were cultivated in a

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growing medium consisting of cocopeat, vermicompost, and leafmould (in a 2:1:1 v/v ratio), while the longest duration was recorded when the plants were grown in soil, sand, and FYM (in a 1:1:1 v/v ratio). Similar results were reported by (Kashyap et al., 2005) for Gloxinia and African violet using different growing media. Additionally, it was found that spraying plants with 150 ppm of benzyl adenine resulted in the shortest time for bud formation, whereas spraying with 10 ppm of CPPU led to the longest duration. Similarly, (Nambiar et al., 2012) discovered that Dendrobium cv. 'Angel White' showed accelerated flowering after being sprayed with BAP. Moreover, single pinched plants exhibited a shorter time period for visible bud formation compared to double pinched plants according to (Dalal et al., 2006) findings on carnation cv. 'Yellow Solar'.

Data in Table.2 shows that when *Fuchsia* x *hybrida* plants were grown in a medium of cocopeat, leafmould and vermicompost (2:1:1 v/v) and treated with 150 ppm benzyl adenine, they reached early peak flowering at 160.60 days after being single pinched. In contrast, the plants took the longest time to reach peak flowering (182.47 days) when double pinched and grown in soil, sand and FYM (1:1:1 v/v) while being sprayed with 10 ppm CPPU. (Ryagi et al., 2007) observed a notable reduction in the duration required for peak flowering in single pinched carnation plants compared to those that were double pinched. This disparity in flowering time can be attributed to the elimination of apical dominance in double pinched plants, which prolongs the period necessary for the development of the physiological prerequisites for flower production. (Priyanka et al., 2018) similarly discovered that benzyl adenine (BA) application led to the shortest duration for floret opening in gladiolus plants. Conversely, plants treated with 10 ppm of CPPU exhibited the longest time span for peak flowering. This suggests that different plant growth regulators, such as BA and CPPU, can significantly influence flowering time.

The data presented in Table 2 demonstrates that the interaction between growing media, pinching, and growth regulator had a significant impact on the number of flowers per plant. Specifically, the highest number of flowers per plant (55.67) was observed in double pinched plants cultivated in a growing medium comprising cocopeat, vermicompost, and leafmould in a ratio of 2:1:1 (v/v) and treated with 150 ppm of benzyl adenine. Conversely, the lowest number of flowers per plant (23.60) was recorded in untreated single pinched plants grown in a growing medium composed of soil, sand, and FYM in a ratio of 1:1:1 (v/v). This highlights the significant influence of both pinching and growth regulator application on flower production, as well as the importance of the growing medium composition in achieving optimal flowering outcomes. The application of 150 ppm of benzyl adenine resulted in the highest number of flowers per plant compared to untreated control plants. This observation aligns with the findings of (Mondal and Sarkar, 2017) who reported a similar outcome in Hybrid Tea rose cv. 'Bugatti' when sprayed with 100 ppm of benzyl adenine. Additionally, double pinched plants exhibited a greater number of flowers per plant compared to single pinched plants. (Meena et al., 2015) found that pinching marigold plants at 60 days after transplanting led to a higher number of flowers per plant due to increased branching, compared to pinching at 30 days after transplanting. Moreover, double pinching resulted in the highest flower yield per plant, yielding three times more flowers than non-pinched control plants. These findings are consistent with previous studies by (Bhat and Shepherd, 2007; Tomar et al., 2004 and Arora and Khanna, 1986) in marigold. Pinching in carnation, as studied by Kumar and Singh (2003),

and in chrysanthemum, as observed by (Gowda and Jayanthi, 1988), promotes side growth, leading to an increase in flower production due to the rise in the number of floral buds.

The data from Table 2, indicates that the interaction between growing media, pinching, and growth regulator had a significant effect on the number of flowers per plant opened at a time in *Fuchsia* x *hybrida*. Specifically, the highest number of flowers per plant opened at a time (42.93) was observed in double pinched plants cultivated in a growing medium composed of cocopeat, vermicompost, and leafmould in a ratio of 2:1:1 (v/v) and treated with 150 ppm of benzyl adenine. In contrast, the lowest number of flowers per plant opened at a time (15.47) was recorded in untreated single pinched plants grown in a growing medium comprising soil, sand, and FYM in a ratio of 1:1:1 (v/v). This demonstrates the significant impact of pinching, growth regulator application, and growing medium composition on the number of flowers per plant opened at a time in *Fuchsia* x *hybrida*.

Table 2 presents data on the interaction between growth regulator, pinching, and growing media. It shows that when double-pinched plants were grown in a growing medium containing cocopeat, vermicompost, and leafmould (2:1:1 v/v) and treated with 150 ppm of benzyl adenine, the maximum duration of flowering (24.67) of *Fuchsia* x *hybrida* was observed. On the other hand, when grown in growing medium made up of soil, sand, and FYM (1:1:1 v/v), the shortest time for flowering (12.27) was observed in untreated single-pinched plants. When Fuchsia plants were sprayed with 150 parts per million of benzyl adenine, the longest period of blooming was seen, whereas the shortest period of flowering was observed in untreated plants (control). According to research by (Farag et al. 2018), benzyl adenine at 100–200 mg/L significantly lengthened the flowering period of chrysanthemums. The highest length of flowering was observed in fuchsia double-pinched plants, whereas the least length of flowering was observed in single-pinched plants. Similar results were noted by (Sarkar and Roychoudhury, 2003) on the carnation variety 'Chabaud Mix,' which showed that double-pinched plants resulted in a longer flowering period than single-pinched plants. The maximum flower diameter (4.61 cm) of *Fuchsia* x hybrida was recorded in single pinched plants when grown in growing media consisting of cocopeat, vermicompost, and leafmould (2:1:1 v/v) and treated with 10 ppm of CPPU. This information relates to the interaction between growing media, pinching, and growth regulator and is presented in Table 2. While untreated double pinched plants cultivated in growing medium made up of soil, sand, and FYM (1:1:1 v/v) recorded the lowest blossom diameter (2.70 cm). The largest flower diameter in *Fuchsia* x *hybrida* was observed in plants cultivated in a growing medium containing cocopeat, vermicompost, and leafmould in a ratio of 2:1:1 (v/v), while the smallest flower diameter was noted in untreated plants grown in soil, sand, and FYM in a ratio of 1:1:1 (v/v). Incorporating vermicompost with other substrates has been found to enhance flowering characteristics, including flower diameter, in gerbera (Chauhan et al., 2014) and marigold (Gupta et al., 2014). Furthermore, the application of 10 ppm of CPPU resulted in the maximum flower diameter, whereas untreated plants exhibited the minimum flower diameter. Similar findings were reported by (Abdullakasim et al., 2015) in Dendrobium cv. Sonia 'Earsakul', where the highest flower diameter was achieved with the application of 10 ppm of CPPU.

In Table 2, the interaction between growing media, pinching, and growth regulator revealed that *Fuchsia* x *hybrida* plants exhibited the highest pot presentability (94.40) in double pinched plants when cultivated in a growing medium comprising cocopeat, vermicompost, and leafmould in a ratio of 2:1:1 (v/v) and treated with 150 ppm of benzyl adenine. Conversely, the

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lowest pot presentability (55.13) was recorded in untreated single pinched plants grown in a growing medium consisting of soil, sand, and FYM in a ratio of 1:1:1 (v/v). A significant enhancement in pot presentability was noted when Fuchsia plants were grown in a growing medium composed of cocopeat, leafmould, and vermicompost (2:1:1 v/v), while the minimum pot presentability was observed when plants were grown in soil, sand, and FYM (1:1:1 v/v). This improvement might be attributed to the fact that among all the growing media, the one with cocopeat, leafmould, and vermicompost had the highest availability of nitrogen, phosphorus, potassium, and organic carbon. The optimal electrical conductivity (EC) and pH values likely facilitated the rapid and adequate uptake of these nutrients from the medium. Moreover, the maximum pot presentability was achieved when plants were sprayed with 150 ppm of benzyl adenine, while untreated plants exhibited the minimum pot presentability. (Hegazy, 2000) reported similar findings in the year 2000, demonstrating that benzyl adenine significantly increased both vegetative and flowering parameters of gladiolus. Furthermore, double pinched plants displayed maximum pot presentability compared to single pinched plants. This difference may be attributed to the development of side branches, which likely distributed energy more evenly during the pinching treatment.

CONCLUSION:

According to the results of the current study, *fuchsia* x *hybrida* plants grown in potting medium made up of cocopeat, vermicompost, and leafmould (2:1:1 v/v) with double pinching and three sprays of 150 ppm benzyl adenine were found to be effective in maximizing the vegetative and flowering attributes and produced the most presentable pots with the highest possible score.

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Treatments	Plant Height (cm)	Plant Spread (cm)	No. of side shoots	Length of side shoots
Soil+Sand+FYM(1:1:1v/v)+Control (0 ppm)+ Single Pinch	18.33	18.03	9.53	12.27
Soil+Sand+FYM(1:1:1v/v)+BA (150 ppm)+ Single Pinch	21.33	22.82	12.27	13.70
Soil+Sand+FYM(1:1:1v/v)+CPPU (10 ppm)+ Single Pinch	18.93	21.20	10.27	12.53
Soil+Sand+FYM(1:1:1v/v)+Control (0 ppm)+ Double Pinch	16.86	16.05	11.27	10.63
Soil+Sand+FYM(1:1:1v/v)+BA (150 ppm)+ Double Pinch	19.53	20.85	14.13	11.47
Soil+Sand+FYM(1:1:1v/v)+CPPU (10 ppm)+ Double Pinch	17.53	19.20	12.20	10.70
Cocopeat+Soil+Sand+Leafmould+FYM (2:1:1:1:1 v/v)+ Control (0 ppm)+ Single Pinch	20.46	24.05	10.53	14.67
Cocopeat+Soil+Sand+Leafmould+FYM (2:1:1:1:1 v/v)+ BA (150 ppm)+ Single Pinch	24.86	27.57	12.73	17.13
Cocopeat+Soil+Sand+Leafmould+FYM (2:1:1:1:1 v/v)+ CPPU (10 ppm)+ Single Pinch	23.26	25.42	12.47	16.57
Cocopeat+Soil+Sand+Leafmould+FYM (2:1:1:1:1 v/v)+ Control (0 ppm)+ Double Pinch	19.66	22.88	13.33	12.13
Cocopeat+Soil+Sand+Leafmould+FYM (2:1:1:1:1 v/v)+ BA (150 ppm)+ Double Pinch	22.86	25.87	15.67	14.77
Cocopeat+Soil+Sand+Leafmould+FYM (2:1:1:1:1 v/v)+ CPPU (10 ppm)+ Double Pinch	22.46	24.22	14.33	14.33
Cocopeat+Perlite+Vermiculite+Vermicompost (2:1:1:1 v/v)+ Control (0 ppm)+ Single Pinch	24.33	24.92	14.53	18.33
Cocopeat+Perlite+Vermiculite+Vermicompost (2:1:1:1 v/v)+ BA (150 ppm)+ Single Pinch	27.80	31.78	17.47	21.53
Cocopeat+Perlite+Vermiculite+Vermicompost (2:1:1:1 v/v)+ CPPU (10 ppm)+ Single Pinch	26.40	28.32	17.67	20.33
Cocopeat+Perlite+Vermiculite+Vermicompost (2:1:1:1 v/v)+ Control (0 ppm)+ Double Pinch	23.13	23.53	17.20	15.97
Cocopeat+Perlite+Vermiculite+Vermicompost (2:1:1:1 v/v)+ BA (150 ppm)+ Double Pinch	25.46	27.72	21.07	17.97
Cocopeat+Perlite+Vermiculite+Vermicompost (2:1:1:1 v/v)+ CPPU (10 ppm)+ Double Pinch	25.06	26.50	20.07	18.67
Cocopeat+ Vermicompost+ Leafmould (2:1:1 v/v)+ Control (0 ppm)+ Single Pinch	28.66	29.37	18.73	21.83
Cocopeat+ Vermicompost+ Leafmould (2:1:1 v/v)+ BA (150 ppm)+ Single Pinch	33.13	33.37	25.07	24.67
Cocopeat+ Vermicompost+ Leafmould (2:1:1 v/v)+ CPPU (10 ppm)+ Single Pinch	30.06	31.18	20.53	22.40
Cocopeat+ Vermicompost+ Leafmould (2:1:1 v/v)+ Control (0 ppm)+ Double Pinch	27.13	26.97	22.47	18.13
Cocopeat+ Vermicompost+ Leafmould (2:1:1 v/v)+ BA (150 ppm)+ Double Pinch	31.06	30.33	27.33	22.53
Cocopeat+ Vermicompost+ Leafmould (2:1:1 v/v)+ CPPU (10 ppm)+ Double Pinch	28.66	29.83	23.67	20.30
$C.D_{0.05}$	0.24	0.27	0.21	0.19

Table 1: Effect of effect of growing media, pinching and growth regulators on *Fuchsia* x *hybrida*

UNDER PEER REVIEW

Treatments	No. of day taken for visible bud formation	No. of days taken for peak flowering	No. of flowers per plant	No. of flowers per plant open at a time	Duration of flowering (days)	Flower diameter (cm)	Pot presentability (out of 100)
Soil+Sand+FYM (1:1:1v/v)+Control (0 ppm)+ Single Pinch	112.27	173.67	23.60	15.47	12.27	2.83	55.13
Soil+Sand+FYM (1:1:1v/v)+BA (150 ppm)+ Single Pinch	110.27	171.27	29.60	20.47	13.33	2.91	62.27
Soil+Sand+FYM (1:1:1v/v)+CPPU (10 ppm)+ Single Pinch	115.53	175.27	25.33	17.87	12.93	3.35	58.47
Soil+Sand+FYM (1:1:1v/v)+Control (0 ppm)+ Double Pinch	117.40	182.47	25.73	19.07	14.07	2.70	58.40
Soil+Sand+FYM (1:1:1v/v)+BA (150 ppm)+ Double Pinch	114.80	178.47	33.13	23.87	15.93	2.78	65.93
Soil+Sand+FYM (1:1:1v/v)+CPPU (10 ppm)+ Double Pinch	118.67	183.67	27.40	20.13	15.20	3.06	61.33
Cocopeat+Soil+Sand+Leafmould+FYM (2:1:1:1:1 v/v)+ Control (0 ppm)+ Single Pinch	106.60	167.53	27.93	21.27	14.47	3.10	61.67
Cocopeat+Soil+Sand+Leafmould+FYM (2:1:1:1:1 v/v)+ BA (150 ppm)+ Single Pinch	105.73	169.33	33.80	27.47	15.60	3.63	73.87
Cocopeat+Soil+Sand+Leafmould+FYM (2:1:1:1:1 v/v)+ CPPU (10 ppm)+ Single Pinch	108.53	176.47	33.67	24.40	15.13	3.90	67.20
Cocopeat+Soil+Sand+Leafmould+FYM (2:1:1:1:1 v/v)+ Control (0 ppm)+ Double Pinch	113.60	174.27	31.87	24.47	15.87	2.96	65.73
Cocopeat+Soil+Sand+Leafmould+FYM (2:1:1:1:1 v/v)+ BA (150 ppm)+ Double Pinch	110.80	177.40	36.47	30.33	18.27	3.33	79.13
Cocopeat+Soil+Sand+Leafmould+FYM (2:1:1:1:1 v/v)+ CPPU (10 ppm)+ Double Pinch	115.40	182.73	35.07	27.53	17.67	3.71	70.07
Cocopeat+Perlite+Vermiculite+Vermicompost (2:1:1:1v/v)+Control (0 ppm)+Single Pinch	98.40	165.40	36.27	29.33	16.40	4.20	67.47
Cocopeat+Perlite+Vermiculite+Vermicompost (2:1:1:1v/v)+BA (150 ppm)+ Single Pinch	96.20	161.60	44.87	34.73	17.73	4.31	81.73
Cocopeat+Perlite+Vermiculite+Vermicompost (2:1:1:1 v/v)+ CPPU (10 ppm)+ Single Pinch	103.27	162.60	38.87	31.73	16.67	4.51	77.67
Cocopeat+Perlite+Vermiculite+Vermicompost (2:1:1:1 v/v)+ Control (0 ppm)+ Double Pinch	104.87	173.60	38.40	31.73	17.47	4.11	69.87
Cocopeat+Perlite+Vermiculite+Vermicompost (2:1:1:1 v/v)+ BA (150 ppm)+ Double Pinch	102.40	171.60	47.13	37.47	19.87	4.25	86.53
Cocopeat+Perlite+Vermiculite+Vermicompost (2:1:1:1 v/v)+ CPPU (10 ppm)+ Double Pinch	108.20	175.47	42.13	33.60	18.73	4.40	81.73
Cocopeat+ Vermicompost+ Leafmould (2:1:1 v/v)+ Control (0 ppm)+ Single Pinch	94.33	161.73	44.47	35.13	16.47	4.25	77.67
Cocopeat+ Vermicompost+ Leafmould (2:1:1 v/v)+ BA (150 ppm)+ Single Pinch	92.40	160.60	52.13	38.20	21.53	4.50	90.07
Cocopeat+ Vermicompost+ Leafmould (2:1:1 v/v)+ CPPU (10 ppm)+ Single Pinch	100.73	163.60	49.13	37.20	19.53	4.61	85.33
Cocopeat+ Vermicompost+ Leafmould (2:1:1 v/v)+ Control (0 ppm)+ Double Pinch	98.27	171.27	46.60	36.53	19.27	3.96	80.87
Cocopeat+ Vermicompost+ Leafmould (2:1:1 v/v)+ BA (150 ppm)+ Double Pinch	95.53	170.73	55.67	42.93	24.67	4.33	94.40
Cocopeat+ Vermicompost+ Leafmould (2:1:1 v/v)+ CPPU (10 ppm)+ Double Pinch	105.73	174.67	52.87	39.40	22.73	4.48	89.60
$C.D_{0.05}$	0.20	0.27	0.26	0.26	0.25	0.05	0.46

Table 2: Effect of effect of growing media, pinching and growth regulators on *Fuchsia* x *hybrida*

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