

Effect of Pinching on Growth and Flower Production of Marigold



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Abstract

An experiment was conducted on the effect of pinching on growth and flower production of marigold at Ground and cover nursery, in the Department of Horticulture, the University of Agriculture Peshawar during autumn 2017. The experiment was conducted in complete randomized design with four repetitions. Marigold was pinched at a different height (0,1foot). Analysis of data revealed that pinching had a significant effect on most of the attributes of marigold. Regarding pinching a maximum number of branches (12.41), days to 50% flowering (54.9), plant height(34.43cm), flower diameter (4.58), stem diameter (0.76cm) and a number of flowers (9.93) was observed in pinched plants. It was concluded from the above results that marigold could be pinched at 1 feet height for significant growth and flower production.

Introduction

Marigold is botanically identified *Tagetes* (Compositae or Asteraceae). During growth stage of Marigold, a stage come at which the plant become bushy the reason is the overgrowth of the lateral branches which lead stop aeration in the plant inside which ultimately increase the humidity level and make the favorable environment for pathogens and the pest to attack the plant. Its species vary in size from 0.1 to 2.2m tall. Blooms naturally occur in golden, orange, yellow, and white colors, often with maroon highlights. They have fibrous roots [1]. Depending on the species, *Tagetes* species grow well in almost any sort of soil. Most horticultural selections grow best in soil with good drainage, even though some cultivars are known to have good tolerance to drought [2]. Due to the greater number of branches, the number of flowers comes in large quantity but small in size (diameter is small) the reason was that the nutrients and other minerals contents are utilized in promoting the vegetative growth [3]. Pinching help out the plant to prevent the bushy growth, use your thumb and forefinger to pinch out the top growth of the plants. For cutting use sharp knife. Removal of the apical portion of the shoot is known as pinching. It was observed that pinching at 40 days after transplanting increase flower yield. Marigold native to the new world and sacred flower of the Aztec, journey across the Atlantic Ocean twice to travel 3,000 miles north of their center of origin. Marigold flowers are plucked when they have attained full size. Plucking of flowers should be done in the cool hours of the day. The field should be irrigated before plucking so that flowers keep well for a longer period after harvest. Plucked flowers are packed in polythene bags or bamboo baskets for carrying to markets. Due to excessive

vegetative growth, the plant continuous the upright growth and at the end becomes very tall which results in the bending of the plant and then need stacking to support the plant. To find out optimum pinching length on flower production of marigold.

Methods and Material

A field trial was conducted on the effect of pinching on growth and flower production of marigold at ground and cover nursery, in the Department of Horticulture, The University of Agriculture Peshawar, during autumn 2017. The experimental site is located 331 m height from the sea level (34.015° N, 71.5249° E). The soil has 7.9pH, Warm to hot is the climatic condition (semi-arid subtropical) receiving <500mm annual precipitation (ppt) with daily average temperature varying from 400-500C in summer however in winter it is from 70-130C. The experiment was conducted in the randomized complete block design, with four repetitions. Marigold was pinched at the different height (0 and 1foot height) with 4 replications, studied its different growth attributes. The experiment was conducted in pots, each pot has 3 marigold plants and the total number of pots selected was 12. So about 30 plants were planted in pots each pot contain 3 plants of marigold. The parts are placed in 4 replications. To know the effect of pinching the control plants were also selected so that the parameters of the pinched and non-Pinched plant were compared. Data were collected on the following parameters Plant height.

- Number of branches.
- Number of flowers.

- c) Stem diameter.
- d) Flower diameter.
- e) Day to sprouting.

Results and Discussion

Number of Branches Plant⁻¹

The analysis of variance indicated that pinching had a significant effect on the number of branches plant-1 of marigold. The mean data indicated that the maximum number of branches plant-1 (12.41) was recorded in the plant that was pinched at 1 foot, whereas the minimum number of branches plant-1 (10.55) was observed in the non-pinched plant (control treatment) (Table 1). Increased number of branches due to pinching might be attributed to the breaking of apical dominance and sprouting of auxiliary buds as observed in the present study. Similar results were also reported by [4].

Days to 50% Flowering

Table 1: Mean Table. Number of branches plant⁻¹, plant height and days to 50% flowering as affected by pinching.

Treatments	No. of branches plant ⁻¹	Plant height (cm)	Days to 50% flowering
Control	10.55b	34.43a	50.56
Pinched	12.41a	22.85b	54.99
LSD≤0.05	0.62	5.03	NS

The analysis of variance showed that pinching had no significant effect on number days to 50% flowering of marigold. However, the mean data revealed that maximum days (54.99) to 50% flowering was taken by the pinched plant, whereas minimum days to 50% flowering (50.56) was observed in non-pinched plants (control treatment) (Table 1). It might be due to the fact that new shoots which emerged after pinching entered into vegetative phase and took time to become physiologically mature to bear flowers [5].

Height of Plant⁻¹

The analysis of variance indicated that pinching had a significant effect on plant height of marigold. The mean data showed that maximum plant height-1 (34.43cm) was recorded in pinched plant and the minimum plant height⁻¹ (22.85cm) was recorded in non-pinched plant (Table 1). Pinched plants are less in height because the apical portion was cut during pinching and control plants are more in height because there was no pinching involved.

Flower Diameter

The analysis of variance showed that pinching had a significant effect on flower diameter of marigold. The mean data revealed that maximum flower diameter (4.58cm) was recorded in pinched plant and the minimum flower diameter (3.45cm) was recorded in a non-pinched plant of marigold (Table 2). Mean data showed that maximum flower diameter (4.58cm) was recorded in pinched plant and the minimum flower diameter

(3.45cm) was recorded in a non-pinched plant of marigold. The data revealed that pinching had a significant effect on increasing size of flowers which ultimately increased the flower diameter.

Table 2: Number of flower plant⁻¹, flower diameter and stem diameter of marigold as affected by pinching.

Treatment	No. of flower plant ⁻¹	Flower diameter (cm)	Stem diameter (cm)
Control	6.44b	3.45b	0.60a
Pinched	9.93a	4.58a	0.76b
LSD≤0.05	0.95	0.57	0.05

Stem Diameter

The analysis of variance indicates that pinching had a significant effect on stem diameter of marigold. The mean data showed that maximum stem diameter (0.76cm) was recorded in pinched plant and the minimum stem diameter (0.60cm) was recorded in a non-pinched plant of marigold (Table 2). The mean data showed that maximum stem diameter (0.76cm) was recorded in pinched plant and the minimum stem diameter (0.60cm) was recorded in a non-pinched plant of marigold. This revealed that pinching had a significant effect on increasing stem diameter while the non-pinched plant had a small stem diameter.

Number of Flowering Plant⁻¹

The analysis of variance showed that pinching had a significant effect on the number of flowers in plant-1 of marigold. The mean data showed that the maximum number of flowers plant-1 (9.93) was recorded in pinched plant and the minimum number of flower plant-1 (6.44) was recorded in the non-pinched plant of marigold (Table 2). Effect of pinching on the yield of the weight of seeds per flower and seed yield per hectare in the marigold variety Sirakole was reported by Mohanty et al. (2015). The flower yield per plant was maximum in double pinching i.e., three times more yield than control (no- pinching). The present results are in conformity with the findings [4,6-12].

Conclusion and Recommendation

Pinching of marigold at 1 feet height was found more effective in producing the maximum number of branches, flower diameter, stem diameter, number of flowers and took maximum days to flower. Marigold should be pinched at 1 feet height for maximum growth and flower production.

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