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## Effect of nitrogen and vermicompost on floral and yield parameters on marigold

■P.R. PATEL<sup>1</sup>, N.K. PATEL<sup>1</sup>, R.Z. VALIA<sup>1</sup> AND S.R. CHAUDHARI

**Associated Authors:**

<sup>1</sup>ASPEE College of Horticulture and Forestry, Navsari Agricultural University, NAVSARI (GUJARAT) INDIA

**Author for correspondence :**

**S.R. CHAUDHARY**  
ASPEE College of Horticulture and Forestry, Navsari Agricultural University, NAVSARI (GUJARAT) INDIA

**Abstract :** An experiment was conducted on marigold cv. SIERRA YELLOW to evaluate the effect of nitrogen along with vermicompost on floral and yield parameters. The various levels of nitrogen (0, 120, 160, 200, 240 kg/ ha) and vermicompost (0, 5, 10, 15 t/ha) studied under FRBD with three replications. Application of 160 kg N per ha with 10 t/ha vermicompost minimize days to 50 % flowering (64.25), increase the number of flowers (58.38), flower yield (203.42 g/plant and 8793.60 kg/ha), flower diameter (7.60 cm), and keeping quality (9.28 days) of marigold cv. SIERRA YELLOW.

**Key words :** Broccoli, Date of planting, Spacing, Yield

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African marigold (*Tagetes erecta* Linn.) is commonly used for the loose flower in India because of easy cultivation, adaptability to varying soil and climatic conditions, long duration of flowering and keeping quality. It has been established that nutrition play an important role in improvement of flower and yield in marigold. Nitrogen is absorbed by plants in huge amount and it is most limiting factor for crop production. With application of vermicompost it applies nitrogen phosphorus and other micro nutrient in trace quantity. Under such conditions balanced nitrogen and other nutrients are highly imperative to obtain higher yield of marigold.

Present investigation was carried out at college farm, N.M. College of Agriculture, Navsari Agricultural University Navsari during winter 2005-06 to standardize the dose of nitrogen along with vermicompost in African marigold cv. SIERRA YELLOW. Total 20 treatments combinations comprising five levels of nitrogen (0, 120, 160, 200, 240 kg/ ha) and four levels of vermicompost (0, 5, 10, 15 t/ha) were tried in Factorial Randomized Block Design with three replications in black soil. In the initial stage soil has available nitrogen (160.00 kg/ha), available Phosphorus (40.02 kg/ha), available potash (384.50 kg/ ha) with pH (7.7). One month old seedlings of uniform

growth were transplanted at the spacing of 40x30 cm. The observations taken in the experiment were days taken to 50 % flowering, flower yield per plant and hectare basis, no of flower per plant, flower diameter, keeping quality etc.

The results obtained from the present investigation are summarized below :

**Days taken for 50 % flowering:**

Data present in Table 1 clearly reveals that significantly minimum (64.25) days taken for 50 % after transplanting were recorded in N<sub>2</sub> (160 kg N/ ha). Among vermicompost treatment V<sub>2</sub> has shows minimum (66.20) days for 50 % flowering. This might be due to vigorous vegetative growth of plant, which resulted in better food assimilation so increase in carbohydrates levels. This was translocated rapidly to flower bud initiation resulting early development. This was in accordance with the result obtained by Dahiya *et al.* (1998) in marigold.

**Number of flower per plant:**

Data in Table 1 clearly indicated that the significantly maximum number of flower per plant (58.38) in N<sub>2</sub> (160 kg/ha) treatment. Among vermicompost doses 10 t/ha

**Table 1 : Effect of nitrogen and vermicompost on floral and yield parameters of African marigold cv. SIERRA YELLOW**

Treatments	Days to 50 % flowering (days)	Number of flower per plant	Yield of flower per plant (g)	Yield of flower per ha (kg)	Flower diameter (cm)	Keeping quality (days)
<b>Nitrogen</b>						
0	74.92	36.20	92.07	3949.62	5.93	6.23
120	69.50	51.88	155.84	7295.49	6.72	7.75
160	64.25	58.38	203.42	8793.60	7.60	9.28
200	66.75	56.55	191.85	8404.64	7.38	8.58
240	68.00	55.18	185.97	8244.91	7.15	8.18
C.D. (P=0.05)	3.03	3.14	15.60	522.34	0.55	0.67
<b>Vermicompost</b>						
0	72.20	41.72	112.53	6057.59	6.29	6.72
5	69.00	53.20	165.91	7228.08	6.94	7.88
10	66.20	56.62	194.91	8151.44	7.34	8.88
10	67.33	55.00	189.97	7913.49	7.24	8.52
C.D. (P=0.05)	2.71	2.81	13.96	467.19	0.49	0.59

shows maximum number of flower. This might be due to assimilation of carbohydrates to nitrogen which increase hydrolysis and get reproductive sugar which ultimately helps in increase number of flower, similar result were also obtained by Yadav *et al.* (2000) in marigold.

#### Yield of flower per plant and hectare basis:

Data showed in Table 1 revealed that the significantly maximum yield per plant and hectare (203.42 g/plant and 8793.60 kg/ha) in 160 kg N per ha application. While 10 t/ha vermicompost also produce higher yield (194.91g/plant, 8151.44 kg per ha). This may be due to the nitrogen at low rate increase the carbohydrate levels in plant, which goes in hydrolysis and get sugar which help in the increase the yield potential of marigold plants. Similar finding were observed by Jain and Gupta (2004) in African marigold.

#### Flower diameter:

Data presented in Table 1 revealed that maximum flower diameter (7.60 cm) was observed in N<sub>2</sub> (160 kg/ha), significantly maximum flower diameter (7.34cm) was observed in V<sub>2</sub> (10 t/ha). This might be due to appropriate dose of nitrogen resulted more carbohydrates. When carbohydrates translocated to reproductive organs under goes hydrolysis and get in to reproductive sugar which ultimately help in the increase the flower diameter, Anuradha *et al.* (1990).

#### Keeping quality:

From data (Table 1) showed that the significantly maximum keeping quality (9.28 days) of flower observed in N<sub>2</sub> (160 kg/ ha), and vermicompost 10t/ha recorded

(8.88 days) application. This might be due to increase level of carbohydrates due to appropriate dose of nitrogen which hydrolysis sugar which responsible to extant keeping quality of flower, similar findings by Avari (1990) in marigold and Belorkar *et al.* (1996) in chrysanthemum.

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