Original Research Article

Impact of organically produced manure on growth, flowering, yield and quality of African marigold (*Tagetes erecta* L.) in Bhopal agro climatic conditions *cv. Pusa Narangi*

Abstract

The present investigation was undertaken at Department of Horticulture, Mansarovar Global University Sehore, Madhya Pradesh, during the year 2022.The experiment was laid out in R.B.D. with three replications and 13 treatments separately. The metrics of floral yield, such as number of flowers, flower diameter, and fresh and dried flower weight, as well as vegetative growth parameters, such as plant height, number of branches, and plant spread, were all increased by fertilizer most effectively flower production, length of blooming, shelf life were all at their highest. Thus, the African marigold exhibited good vegetative growth and flower output properties as a result of the usage of organic manures.

Key words : Marigold, manures, f, growth attribute, base life, flower yield,

Introduction

African marigold (*Tagetes erecta* L.) cv. Pusa Narangi belongs to the Asteraceae family, and its chromosome number is 2n = 24. It is the most widely grown loose flower and is widely used in religious and social functions in various forms (Singh *et al*. 2001). African marigold flowers retain their appealing colour range for an extended period of time and can be kept exceptionally well when cut. The entire plant can sometimes be utilised for decoration. They can be grown in beds for mass display, in mixed borders, and in pots (Tyagi and Kumar, 2006). Marigold is indigenous to Central and South America, particularly Mexico. Presently, India occupies approximately 1044 thousand ha land in floriculture, which has increased from 249 thousand ha in 1998. The production of loose flowers was around 880 thousand MT (2006-07) which increased to 1962.03 thousand. The domestic industry is growing at annual rate of 7-10 per cent.

There are now several states where flower crops are grown commercially, and in terms of area, Karnataka (17%), Jammu and Kashmir (16%), Tamil Nadu (10.5%), and West Bengal (8.5%) have surpassed other flower-producing states like Uttar Pradesh, Gujarat, Andhra

Pradesh, Madhya Pradesh, Kerala, Chhattisgarh, Maharashtra, Punjab, Haryana, Odisha, and Jharkhand. Even now, the cultivation of common flowers like marigolds, jasmine, roses, chrysanthemums, tuberoses, etc. takes up more than two thirds of the land used for floriculture. At the moment, commercial marigold carotenoids extraction in India takes place in Cochin, Hyderabad (Andhra Pradesh), close to Satyamangalam and woodland (Tamil Nadu), Telagi near Harihar, Devanagere, Haveri, Kolar, Chikkmagalore district, and in the area of Bangalore (Karnataka). Regular export destinations for the contents include Mexico, Peru, the United States, Japan, Spain, Turkey, Poland, Italy, Australia, Canada, and Africa.

African marigold blooms have beautiful colours for a very long time, and they keep their beauty astonishingly well when cut. The entire plant can occasionally be utilised as ornamentation. Gaint Double African Orange, Giant Double African Yellow, *Pusa Narangi Gainda*, and *Pusa Basanti Gainda* are a few of the commercially available cultivars of the African marigold (*Tagetes erecta*) family. The accessibility of genetic variety is essential to the success of any crop breeding operations. Generally, variants can be found in local landraces, contemporary varieties, and wild strains in both domesticated and naturalised (Ahmad *et al.* 2010).

It is raised for the purpose of producing loose flowers commercially. As a result of recent field study, many farmers are searching for sustainable crop cultivation methods like organic farming, including the use of compost, vermicompost, goat manure, chicken manure and farmyard manure. In addition to enhancing the soil's physical, chemical, and biological qualities, which have a direct impact on moisture retention, root growth, and nutrient conservation, the application of organics, a key element in organic farming, can also lower the cost of production in agriculture. Given its significance as a crop for producing flowers for trade. Organic manures' eco-friendliness promotes a healthy environment and horticulture's sustainability. By using organic manures, it is possible to increase the quality of flowers grown for profit. The use of organic manures in floriculture today has become increasingly important. Utilising organic manures is a key component of modern agriculture, which helps to produce larger yields and higher-quality crops per unit area. In order for farmers to reduce their investment in fertiliser while maintaining good soil environmental conditions, which leads to ecologically sustainable farming, it is necessary to look for alternative nutrient sources that are both affordable and environmentally safe.

Materials and Methods

African marigold (*Tagetes erecta* L.) growth, flowering, yield, and quality were the subjects of a field experiment named "Effect of organic manures on growth, flowering, yield, and quality in bhopal agro climatic conditions" *cv. Pusa narangi*. The experiment was conducted at Research Farm, Department of Horticulture, Mansarover Global University, Sehore (M.P.). Three replications were used in the experiment, which was set up using a randomised block design. Each replication included thirteen treatments using various organic manures on African marigold (*Tagetes erecta* L.) cv. *Pusa Narangi Gainda*, including compost, farmyard manure, poultry manure, and vermicompost. The seedlings were transplanted in experimental field on 15 October during 2021-22. Before 25-30 days from planting, the organic manures (FYM, Poultry manure, Compost, and Vermicompost) were manually applied in each plot in accordance with the treatments. Five plants from each treatment in each replication were chosen at random for the thorough study on vegetative development, floral production, and flower yield.

Observations were recorded on growth and yield characters with the help of meter scale and vernier calipers and top balance respectively. The vase life of flowers were calculated by harvesting the flower at full open stage and keeping them at room temperature, the number of days were counted when petals lost turgidity and changed the colour. The treatments consisted of Farmyard manure 8,12,16, t/ha, Compost 8,12,16, t/ha, vermicompost 8,12,16, t/ha, Poultry manure 8,12,16, t/ha, were compared with control plot.

Results and Discussion

The current study aims to determine acceptable organic manure treatments for marigold production in terms of growth and yield parameters. During the winter season of 2021 to 2022 treatments, including a control, were assessed.

The experiment's results are given separately under the following headings.

A. Growth parameters

1. Plant height (cm) at 30, 60 DAS and at harvest

Result revealed that the maximum plant height (45.03, 94.04 and 107.20 cm) in first year, (45.46, 94.81 and 107.95 cm) in second year and (45.25, 94.42 and 107.58 cm) in pooled at 30, 60 DAS and at harvest was recorded in treatment T_{13} (Vermicompost 16 t/ha) and it was significantly

superior treatment among all the treatments. It was at par to treatment T_{10} (Poultry manure 16 t/ha) at 30 DAS and at harvest in first year. However, the minimum plant height (35.03, 70.07 and 90.02 cm) in first year, (35.62, 70.26 and 90.46 cm) in second year and (35.32, 70.17 and 90.24 cm) in pooled at 30, 60 DAS and at harvest was observed in treatment T_1 (Control).

This confirms the finding of Mandloi *et al*. (2008) and Singh & Singh (2003). similar results have also been reported by Prakash *et al*. (2002), Mohd. Rafi *et al.* (2002), Barman *et al.* (2003) and Acharya & Dashara (2004) of the organic manures vermicompost significantly enhanced the growth of the plants as compared to poultry manure, Rajdurai and Beaulah (2000) also found that increasing levels organic resulted in earlier flowering of African marigold.

Table.1. Effect of organic manures on plant height (cm) at 30, 60 DAS and at harvest of African marigold

Plant height (cm)									
Treatments detail	**I st Year**			**II nd Year**			**Pooled**		
	30 DAS	**60 DAS**	**At harvest**	**30 DAS**	**60 DAS**	**At harvest**	**30 DAS**	**60 DAS**	**At harvest**
T_1-Control is 0	35.03	70.07	90.02	35.62	70.26	90.46	35.32	70.17	90.24
T_2-Farmyard manure (FYM) 8 t/ha	36.34	71.03	92.65	36.50	71.43	92.84	36.42	71.23	92.74
T_3-Farmyard manure (FYM) 12 t/ha	40.87	79.31	97.37	40.26	78.98	97.84	40.57	79.14	97.61
T_4-Farmyard manure (FYM) 16 t/ha	43.58	89.04	104.23	43.26	88.88	104.73	43.42	88.96	104.48
T_5-Compost 8 t/ha	38.08	72.37	93.30	38.85	72.82	92.99	38.47	72.60	93.15
T_6-Compost 12 t/ha	42.36	80.37	98.55	42.16	80.78	98.34	42.26	80.57	98.45
T_7-Compost 16 t/ha	43.69	90.45	105.44	43.55	90.77	105.57	43.62	90.61	105.51
T_8-Poultry manure 8t/ha	39.36	73.46	94.21	40.06	73.54	94.38	39.71	73.50	94.29
T_9-Poultry manure 12 t/ha	42.80	82.42	99.51	42.46	82.99	98.62	42.63	82.71	99.07
T_{10}-Poultry manure 16 t/ha	44.56	92.46	106.18	44.68	92.40	105.61	44.62	92.43	105.90
T_{11}-Vermi compost 8 t/ha	40.16	77.47	95.42	40.09	77.80	95.32	40.12	77.63	95.37
T_{12}-Vermi compost 12 t/ha	43.04	87.56	100.49	43.21	87.98	100.91	43.12	87.77	100.70
T_{13}-Vermi compost 16 t/ha	45.03	94.04	107.20	45.46	94.81	107.95	45.25	94.42	107.58
SEm ±	**0.310**	**0.402**	**0.586**	**0.254**	**0.294**	**0.311**	**0.200**	**0.249**	**0.332**

2.Number of primary branches/plant and Chlorophyll content in leaves (mg/g)

A perusal of data indicates that treatment T_{13}(Vermicompost 16 t/ha) was found the best treatment for influencing the number of primary branches/plant and it gave the maximum

number of primary branches/plant (22.40, 22.70 and 22.55) in first year, second year and pooled. It was at par to treatment T_{10} (Poultry manure 16 t/ha) only in first year. However, the minimum number of primary branches/plant (15.14, 15.42 and 15.28) in first year, second year and in pooled was noted in treatment T_1 (Control). the maximum chlorophyll content in leaves (0.371, 0.374 and 0.373 mg/g) in first year, second year and pooled was recorded in treatment T_{13} (Vermicompost 16 t/ha) and it was found the best treatment for influencing chlorophyll content in leaves. It was at par to treatment T_7 (Compost 16 t/ha) and T_{10} (Poultry manure 16 t/ha) only in first year. However, the minimum chlorophyll content in leaves (0.360, 0.361 and 0.361 mg/g) in first year, second year and pooled was found in treatment T_1 (Control).

The proper dose of organic is important for the vigorous growth of plants. Vermicompost also enhanced the and enzymatic activity which might have augmented the plant spread. This is in conformity to the findings of Rathi *et al.*, (2005) and Suthar (2005) in marigold. The more nutrient availability resulted in better root and shoot growth and ultimately resulted in a proliferation of more number of branches per plant. Similar findings were also reported by Sunitha *et al.*, (2007) in marigold.

Table 2. Effect of organic manures on number of primary branches/plant of African marigold

Treatments detail	Number of primary branches/plant			Chlorophyll content in leaves (mg/g)		
	Ist Year	IInd Year	Pooled	Ist Year	IInd Year	Pooled
T_1-Control is 0	15.14	15.42	15.28	0.360	0.361	0.361
T_2-Farmyard manure (FYM) 8 t/ha	16.24	16.78	16.51	0.361	0.361	0.361
T_3-Farmyard manure (FYM) 12t/ha	18.98	18.63	18.81	0.363	0.364	0.364
T_4-Farmyard manure (FYM) 16t/ha	21.39	21.43	21.41	0.367	0.369	0.368
T_5-Compost 8 t/ha	17.42	17.64	17.53	0.362	0.362	0.362
T_6-Compost 12 t/ha	19.63	19.35	19.49	0.366	0.364	0.365
T_7-Compost 16 t/ha	21.54	21.48	21.51	0.369	0.370	0.369
T_8-Poultry manure 8t/ha	17.89	18.10	17.99	0.363	0.362	0.362
T_9-Poultry manure 12 t/ha	20.13	20.47	20.30	0.366	0.365	0.366
T_{10}-Poultry manure 16 t/ha	22.04	22.23	22.13	0.370	0.370	0.370
T_{11}-Vermi compost 8 t/ha	18.22	18.28	18.25	0.363	0.363	0.363
T_{12}-Vermi compost 12 t/ha	20.92	20.57	20.74	0.367	0.366	0.366
T_{13}-Vermi compost 16 t/ha	22.40	22.70	22.55	0.371	0.374	0.373
SEm ±	**0.173**	**0.159**	**0.118**	**0.001**	**0.001**	**0.001**
CD 5%	**0.505**	**0.465**	**0.334**	**0.004**	**0.003**	**0.002**

3.Plant spread (E-W cm^2) and Plant spread (N-S cm^2)

It was observed that the maximum plant spread E-W (41.02, 41.43 and 41.23 cm^2) in first year, second year and pooled was recorded in treatment T_{13} (Vermicompost 16 t/ha) and it was found the best treatment for influencing plant spread in marigold. It was at par to treatment T_{10} (Poultry manure 16 t/ha) only in first year. However, the minimum plant spread E-W (35.09, 35.81 and 35.45 cm^2) in first year, second year and pooled was found in treatment T_1 (Control).the maximum plant spread N-S (38.11, 38.87 and 38.49 cm^2) in first year, second year and pooled was recorded in treatment T_{13} (Vermicompost 16 t/ha) and it was found the best treatment for influencing plant spread in marigold. It was at par to treatment T_{10} (Poultry manure 16 t/ha) only in first year. However, the minimum plant spread N-S (33.02, 33.31 and 33.17 cm^2) in first year, second year and pooled was found in treatment T_1 (Control).

The proper dose of organic is important for the vigorous growth of plants. Vermicompost also enhanced the microflora and enzymatic activity which might have augmented the plant spread. This is in conformity to the findings of Rathi *et al.*, (2005) and Suthar (2005) in marigold. The more nutrient availability resulted in better root and shoot growth and ultimately resulted in a proliferation of more number of branches per plant. Similar findings were also reported by Sunitha *et al.*, (2007) in marigold.

Table. 3. Effect of organic manures on plant spread (E-W cm^2) and Plant spread (N-S cm^2) of African marigold

Treatments detail	Plant spread (E-W cm^2)			Plant spread (N-S cm^2)		
	Ist Year	Ist Year	Ist Year	Ist Year	IInd Year	Pooled
T_1-Control is 0	35.09	33.02	33.02	33.02	0.361	0.361
T_2-Farmyard manure (FYM) 8 t/ha	35.65	34.09	34.09	34.09	0.361	0.361
T_3-Farmyard manure (FYM) 2t/ha	37.63	35.50	35.50	35.50	0.364	0.364
T_4-Farmyard manure (FYM)16t/ha	39.45	36.86	36.86	36.86	0.369	0.368
T_5-Compost 8 t/ha	36.09	34.40	34.40	34.40	0.362	0.362
T_6-Compost 12 t/ha	37.71	35.99	35.99	35.99	0.364	0.365
T_7-Compost 16 t/ha	40.11	37.12	37.12	37.12	0.370	0.369
T_8-Poultry manure 8t/ha	36.40	34.76	34.76	34.76	0.362	0.362
T_9-Poultry manure 12 t/ha	38.19	36.09	36.09	36.09	0.365	0.366
T_{10}-Poultry manure 16 t/ha	40.74	37.45	37.45	37.45	0.370	0.370
T_{11}-Vermi compost 8 t/ha	36.76	35.39	35.39	35.39	0.363	0.363
T_{12}-Vermi compost 12 t/ha	38.86	36.58	36.58	36.58	0.366	0.366
T_{13}-Vermi compost 16 t/ha	41.02	38.11	38.11	38.11	0.374	0.373
SEm ±	**0.185**	**0.132**	**0.132**	**0.132**	**0.001**	**0.001**
CD 5%	**0.540**	**0.384**	**0.384**	**0.384**	**0.003**	**0.002**

B.Floral characters

Data obtained on number of days taken to appearance of first flower is presented in Tables graphically representation.

1. **Duration of flowering (days) and Number of days taken to appearance of first flower**

Result clearly shows that the maximum duration of flowering (44.00, 44.33 and 44.17 days) in first year, second year and pooled was recorded in treatment T_{13} (Vermicompost 16 t/ha) and it was found the best treatment for among all the treatments. number of days taken (31.00, 31.33 and 31.17) to appearance of first flower in first year, second year and pooledHowever, the maximum number of days taken (34.00, 35.00 and 34.50) to appearance of first flower in first year, second year and in pooled was noted in treatment T_1 (Control).

These results are reported by Jadhav *et al.,* (2002) and Sehrawat *et al.,* (2003) in marigold. Days to first harvest i.e. first flowering and the opening of a flower were increased linearly with increasing the plant. Similar views have been reported by Jain and Gupta (2004) in marigold. Higher dose of nitrogen keeps the flower soft and succulent in texture and this type of texture of flower resulted in higher and faster respiration and dehydration (Anuradha *et al.*,, 1990) These findings corroborate results obtained by Suthar (2005) and Patel *et al.,* (2011) in marigold, Nethra *et al.,* (1999) , Parmar (2007) in China aster.

Table 4. Effect of organic manures on Duration of flowering (days) and number of days taken to appearance of first flower of African marigold

Treatments detail	Number of days taken to appearance of first flower			Duration of flowering (days)		
	Ist Year	Ist Year	Ist Year	Ist Year	IInd Year	Pooled
T_1-Control is 0	34.00	34.00	34.00	34.00	0.361	0.361
T_2-Farmyard manure (FYM) 8 t/ha	33.67	36.00	36.00	36.00	0.361	0.361
T_3-Farmyard manure (FYM) 2t/ha	33.00	39.00	39.00	39.00	0.364	0.364
T_4-Farmyard manure (FYM)16t/ha	32.00	42.00	42.00	42.00	0.369	0.368
T_5-Compost 8 t/ha	33.33	36.67	36.67	36.67	0.362	0.362
T_6-Compost 12 t/ha	32.67	39.67	39.67	39.67	0.364	0.365
T_7-Compost 16 t/ha	31.67	42.33	42.33	42.33	0.370	0.369
T_8-Poultry manure 8t/ha	33.33	37.00	37.00	37.00	0.362	0.362
T_9-Poultry manure 12 t/ha	32.33	40.00	40.00	40.00	0.365	0.366
T_{10}-Poultry manure 16 t/ha	31.33	43.00	43.00	43.00	0.370	0.370
T_{11}-Vermi compost 8 t/ha	33.00	38.00	38.00	38.00	0.363	0.363
T_{12}-Vermi compost 12 t/ha	32.33	41.67	41.67	41.67	0.366	0.366
T_{13}-Vermi compost 16 t/ha	31.00	44.00	44.00	44.00	0.374	0.373
SEm ±	**0.641**	**0.649**	**0.649**	**0.649**	**0.001**	**0.001**
CD 5%	**1.871**	**1.894**	**1.894**	**1.894**	**0.003**	**0.002**

2.Number of flowers/plant and Average weight of flower (g)

A perusal of data indicates that the maximum number of flowers/plant (27.42, 27.52 and 27.47) in first year, second year and pooled was recorded in treatment T_{13} (Vermicompost 16 t/ha) and it was found the best treatment for among all the treatments Result revealed that treatment T_{13} (Vermicompost 16 t/ha) was found the best treatment for influencing the average weight of flower (g) and it gave the maximum average weight of flower (8.47, 8.56 and 8.52 g) in first year, second year and pooled.

These findings are in accordance with those of Kapadiya *et al.,* (2008) Naik *et al.,* (2008) Dodake *et al.,* (2007) and Sunitha *et al.,* (2007) in marigold, Kulkarni *et al.,* (1996) Panchal (2006) Chaitra and Patil (2007) in China aster. The balanced application of fertilizers resulted in increased carbohydrate assimilation leading to increased vegetative growth. These carbohydrates, when translocated to reproductive organs, underwent hydrolysis and got converted into the reducing sugars which ultimately helped in increasing flower size. These findings corroborate results obtained by Kapadiya *et al.,* (2008) in marigold, Nethra *et al.,* (1999) and Kumar *et al.,* (2003)

Table 5. Effect of organic manures on Number of flowers/plant and Average weight of flower (g)

Treatments detail	Average weight of flower (g)			Number of flowers/plant		
	Ist Year	Ist Year	Ist Year	Ist Year	IInd Year	Pooled
T_1-Control is 0	7.41	20.15	20.15	20.15	0.361	0.361
T_2-Farmyard manure (FYM) 8 t/ha	7.56	21.18	21.18	21.18	0.361	0.361
T_3-Farmyard manure (FYM) 2t/ha	7.91	23.71	23.71	23.71	0.364	0.364
T_4-Farmyard manure (FYM)16t/ha	8.30	26.18	26.18	26.18	0.369	0.368
T_5-Compost 8 t/ha	7.67	21.84	21.84	21.84	0.362	0.362
T_6-Compost 12 t/ha	8.02	24.66	24.66	24.66	0.364	0.365
T_7-Compost 16 t/ha	8.34	26.76	26.76	26.76	0.370	0.369
T_8-Poultry manure 8t/ha	7.74	22.53	22.53	22.53	0.362	0.362
T_9-Poultry manure 12 t/ha	8.12	24.93	24.93	24.93	0.365	0.366
T_{10}-Poultry manure 16 t/ha	8.37	27.08	27.08	27.08	0.370	0.370
T_{11}-Vermi compost 8 t/ha	7.81	23.02	23.02	23.02	0.363	0.363
T_{12}-Vermi compost 12 t/ha	8.22	25.77	25.77	25.77	0.366	0.366
T_{13}-Vermi compost 16 t/ha	8.47	27.42	27.42	27.42	0.374	0.373
SEm ±	**0.057**	**0.155**	**0.155**	**0.155**	**0.001**	**0.001**
CD 5%	**0.167**	**0.452**	**0.452**	**0.452**	**0.003**	**0.002**

3.Average diameter of flower (cm) and Longevity of intact flower (days)

The investigation revealed that the maximum longevity of intact flower (5.37, 5.44 and 5.41 days) in first year, second year and pooled was recorded in treatment T_{13} (Vermicompost 16 t/ha) and it was found the best treatment among all the treatments. revealed Result revealed that treatment T_{13} (Vermicompost 16 t/ha) was found the best treatment for influencing the average diameter of flower (cm) and it gave the maximum average diameter of flower (5.37, 5.38 and 5.37 cm) in first year, second year and pooled. Similar results were recorded by Gaur *et al.*, (2008) in marigold, Chauhan (2005) in chrysanthemum. The data presented in table 6 revealed that the size of flower (diameter) and individual flower weight did not vary significantly between the treatments of organic manures.

Table 6. Effect of organic manures on Average diameter of flower (cm) and Longevity of intact flower (days)

Treatments detail	Average diameter of flower (cm)			Longevity of intact flower (days)		
	Ist Year	Ist Year	Ist Year	Ist Year	IInd Year	Pooled
T_1-Control is 0	5.14	4.53	4.53	4.53	0.361	0.361
T_2-Farmyard manure (FYM) 8 t/ha	5.16	4.66	4.66	4.66	0.361	0.361
T_3-Farmyard manure (FYM) 2t/ha	5.21	4.94	4.94	4.94	0.364	0.364
T_4-Farmyard manure (FYM)16t/ha	5.29	5.20	5.20	5.20	0.369	0.368
T_5-Compost 8 t/ha	5.17	4.74	4.74	4.74	0.362	0.362
T_6-Compost 12 t/ha	5.24	5.00	5.00	5.00	0.364	0.365
T_7-Compost 16 t/ha	5.31	5.24	5.24	5.24	0.370	0.369
T_8-Poultry manure 8t/ha	5.19	4.80	4.80	4.80	0.362	0.362
T_9-Poultry manure 12 t/ha	5.25	5.06	5.06	5.06	0.365	0.366
T_{10}-Poultry manure 16 t/ha	5.35	5.32	5.32	5.32	0.370	0.370
T_{11}-Vermi compost 8 t/ha	5.20	4.87	4.87	4.87	0.363	0.363
T_{12}-Vermi compost 12 t/ha	5.28	5.15	5.15	5.15	0.366	0.366
T_{13}-Vermi compost 16 t/ha	5.37	5.37	5.37	5.37	0.374	0.373
SEm ±	**0.019**	**0.045**	**0.045**	**0.045**	**0.001**	**0.001**
CD 5%	**0.056**	**0.131**	**0.131**	**0.131**	**0.003**	**0.002**

C.Yield characters

1.Yield of flowers/plant (g) and Yield of flowers/plot (kg)

A perusal of data indicates that the maximum yield of flowers/plant (232.35, 235.55 and 233.95 g) in first year, second year and pooled was recorded in treatment T_{13} (Vermicompost 16 t/ha) and it was found the best treatment for influencing the flower yield in marigold. It was evident from the data that the maximum yield of flowers/plot (2.09, 2.12 and 2.11 kg) in first year, second year and pooled was recorded in treatment T_{13} (Vermicompost 16 t/ha. It was recorded that the maximum yield of flowers/ha (209.11, 211.99 and 210.55 q) in first year, second

year and pooled was recorded in treatment T_{13} (Vermicompost 16 t/ha) These findings are in accordance with those of Kapadiya *et al.,* (2008) Naik *et al.,* (2008) Dodake *et al.,* (2007) and Sunitha *et al.,* (2007) in marigold, Kulkarni *et al.,* (1996) Panchal (2006)

Table.7. Effect of organic manures on Yield of flowers/plant (g) and Yield of flowers/plot (kg)

Treatments detail	Yield of flowers/plant (g)			Yield of flowers/plot (kg)			Yield of flowers/ha (q)		
	Ist Year	Ist Year	Ist Year	Ist Year	IInd Year	Pooled	Ist Year	IInd Year	Pooled
T_1-Control is 0	149.28	1.34	1.34	1.34	0.361	0.361	134.35	137.43	135.89
T_2-Farmyard manure (FYM) 8 t/ha	160.09	1.44	1.44	1.44	0.361	0.361	144.08	144.61	144.35
T_3-Farmyard manure (FYM) 2t/ha	187.44	1.69	1.69	1.69	0.364	0.364	168.69	166.54	167.62
T_4-Farmyard manure (FYM)16t/ha	217.19	1.95	1.95	1.95	0.369	0.368	195.47	196.06	195.76
T_5-Compost 8 t/ha	167.48	1.51	1.51	1.51	0.362	0.362	150.73	149.13	149.93
T_6-Compost 12 t/ha	197.77	1.78	1.78	1.78	0.364	0.365	178.00	179.02	178.51
T_7-Compost 16 t/ha	223.15	2.01	2.01	2.01	0.370	0.369	200.83	200.26	200.55
T_8-Poultry manure 8t/ha	174.49	1.57	1.57	1.57	0.362	0.362	157.04	154.66	155.85
T_9-Poultry manure 12 t/ha	202.39	1.82	1.82	1.82	0.365	0.366	182.15	184.92	183.54
T_{10}-Poultry manure 16 t/ha	226.68	2.04	2.04	2.04	0.370	0.370	204.01	208.17	206.09
T_{11}-Vermi compost 8 t/ha	179.81	1.62	1.62	1.62	0.363	0.363	161.83	160.01	160.92
T_{12}-Vermi compost 12 t/ha	211.89	1.91	1.91	1.91	0.366	0.366	190.70	189.27	189.98
T_{13}-Vermi compost 16 t/ha	232.35	2.09	2.09	2.09	0.374	0.373	209.11	211.99	210.55
SEm ±	**1.704**	**0.015**	**0.015**	**0.015**	**0.001**	**0.001**	**1.534**	**1.802**	**1.183**
CD 5%	**4.973**	**0.045**	**0.045**	**0.045**	**0.003**	**0.002**	**4.476**	**5.260**	**3.364**

Conclusion

Result concluded that treatment T_{13} (Vermicompost 16 t/ha) was found the best organic manure treatment for influencing the growth, floral yield and quality parameters of African marigold and it gave the maximum growth characters, floral characters, yield characters and seed characters in first year, second year and pooled, whereas the minimum growth characters, floral characters, yield characters and seed characters in first year, second year and pooled were recorded in treatment T_1 (Control).

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