



Evaluation of Different Varieties of African Marigold (*Tagetes erecta*) in Chhattisgarh Plains

Vinay Dansena, Samir kumar Tamrakar*, T Tirkey**

All India co-ordinated Research project on floriculture (voluntary centre)
College of Agriculture, Raipur (C.G.) Indira Gandhi Krishi Vishwavidyalaya

ABSTRACT

Evaluation of seven genotype/varieties of African marigold, has been taken up at Instructional farm, College of Agriculture, Raipur during 2021-2022. The experiment was laid out in Randomized Block Design (RBD) with three replications. The analysis of variance revealed significant variation for most of the parameters. The results revealed that highest plant height (110.89cm), number of secondary branches (32.67), peduncle length (10.17cm) was noted in AM-19-TL-Do-1. Arka Agni recorded maximum number of leaves (40.22), plant spread (106.11 cm), and flower diameter (4.64cm). Earliest 50% flowering (50.56), heaviest flower weight (4.87g), highest yield per plant (330g), highest yield per plot (9.9 kg) and yield per hectare (16.29t). Maximum number of flowers (78) in single plant observed in Pusa Basanti.

Key Words: Flower size, Genotype, Plant height, Secondary branches.

INTRODUCTION

Marigold (*Tagetes species*) is a member of the Asteraceae family that is endemic to Central and South America, primarily Mexico. *Tagetes erecta* (African marigold) and *Tagetes patula* (French marigold) are two of the 33 species mostly cultivated in the genus *Tagetes*.

These are commercially grown in India. African marigold is hardy annual plant. The ideal pH for growing marigold is around neutral. It can be survived in all climatic conditions throughout the year except when temperature falls down below 10°C (Anonymous, 2022). Ideal growing temperature ranges about 15-35°C. It is commercially propagated by seeds. Terminal stems cutting also preferred for propagation (Anonymous, 2022).

Marigold has a great demand among growers due to the wide spectrum of attractive colours, size, shape and good keeping quality. Both the

blooms and the leaves of the plant have medicinal characteristics, making the entire plant particularly beneficial. Boils, earaches, eye illness, and ulcers are treated with the extracts and paste Choudhary *et al* (2014). The optimum yield of marigold varies with different species of African marigold yield about 10-18 MT/ha. Crop's importance and adaptability, it must be improved, with variations, genotypes, and varieties suitable to Chhattisgarh agro-ecological circumstances identified. Keeping the above facts in mind, the present investigation entitled Evaluation of different varieties/genotype of African marigold (*Tagetes erecta*) in Chhattisgarh plains was under taken at research field of instructional Horticulture farm, Indira Gandhi Krishi Vishwavidyalaya, Raipur.

MATERIALS AND METHODS

Seven genotype / varieties of African marigold namely, Pusa Bahar, Punjab Gaiinda No-1, Arka

Corresponding Author's Email: dansenavinay802@gmail.com

*Assistant professor, All India co-ordinated Research project on floriculture (voluntary centre) College of Agriculture, Raipur (C.G.) Indira Gandhi Krishi Vishwavidyalaya.

** Associate Professor, Department of floriculture and landscape College of Agriculture, Raipur (C.G.) Indira Gandhi Krishi Vishwavidyalaya.

Table 1. Phenotypically characters of different varieties of marigold.

Treatment	Plant height (cm)			Number of branches (primary branches)			Number of branches (secondary branches)			Number of leaves / plant		
	30 Days	60 Days	90 Days	30 Days	60 Days	90 Days	30 Days	60 Days	90 Days	30 Days	60 Days	90 Days
Raipur local	37.78	86.78	104.22	7.44	11.03	19.33	17.50	25.56	31.78	20.56	22.89	38.74
PusaNarangi	32.89	56.67	62.78	4.67	10.78	15.56	14.17	19.22	20.22	14.22	29.89	37.22
Pusabahar	32.00	73.33	80.00	6.67	10.44	14.56	13.27	13.56	13.67	16.78	30.44	33.22
Arka Agni	43.22	81.11	96.11	10.44	10.00	22.56	18.50	37.78	32.34	20.22	32.33	40.22
PusaBasanti	28.00	65.67	65.44	9.46	10.67	18.89	15.70	18.56	26.17	16.14	26.44	36.78
Punjab Gairda No-1	41.44	65.89	72.22	14.44	16.56	24.67	20.00	39.89	28.67	22.14	34.33	38.78
AM-19-TL-Do-1	45.11	99.33	110.89	11.55	15.45	17.78	18.35	29.44	32.67	21.78	31.89	37.44

Treatment	Plant spread			Peduncle length (cm)	50% Flowering (Days)	Flower diameter (cm)	Weight of single flower (g)	Number of flowers /plant	Weight of loose flower/ pant (g)	Weight of loose flower/ plot (kg)	Yield per t/ha
	30 Days	60 Days	90 Days								
Raipur local	59.67	66.44	94.56	7.28	74.44	4.30	3.13	53.87	210	5.9	9.71
PusaNarangi	38.44	39.11	46.66	8.11	66.11	3.38	2.13	57.43	230	6.5	10.69
Pusabahar	52.22	60.34	74.11	8.61	74.67	3.98	2.38	52.66	215	6.3	10.37
Arka Agni	80	90.11	106.44	6.81	65.67	4.64	4.00	69.65	313	9.53	15.60
PusaBasanti	43.33	57.22	74.22	5.28	67.22	4.24	2.50	78.33	204	5.8	9.54
Punjab Gairda No-1	51	64.67	71.78	9.06	50.56	4.62	4.87	74	330	9.9	16.29
AM-19-TL-Do-1	70.11	76.33	105.23	10.17	68.56	4.38	2.17	58.97	190	5.5	9.05

Agni, AM-19-TL-Do-1, Pusa Basanti, Raipur Local, Pusa Narangi of African marigold were taken from IGKV. Planting was done at 45 x 45cm spacing, plot size (2.25x3.0m), during kharif season in randomized block design with three replications. The observations for different growth, floral and yield attributes were recorded and compared among different marigold genotypes. five plants were selected at random in each replication per plot for measuring plant height and plant spread. Plant

height was measured with the help of meter scale from the base of the plant up to tip of apical shoot at full bloom stage and their mean was calculated. Plant spread was recorded by measuring the distance covered by plant in East to West and North to South directions and taking the mean of sum for representative plants in each plot.

The number of branches arising from the main stem was counted at the time of full bloom on five

representative plants of each plot. At full bloom stage, various floral parameters were recorded on five representative plants from each plot and their mean was recorded. Flower diameter was measured with the help of digital Vernier-calliper. The number of days taken from the date of transplanting to the date of appearance of first flower determined the days to first flower. Number of days taken from the date of first flower opening to the last flower constituted the duration of flowering. Total number of flowers per plant was counted and mean was computed. The mean fresh weight of 5 flowers plucked randomly from each plant was recorded immediately after harvest. Flower yield of a randomly selected plant was multiplied by number of plants in the plot and recorded in kg. This constituted flower yield per plot. Flower yield per plot was converted to hectare basis which reflected the yield per hectare and recorded in (kg). Experimental data obtained from all marigold genotypes were subjected to statistical analysis of variance (ANOVA) as suggested by Panse and Sukhatme (1995).

RESULTS AND DISCUSSION

At 30 DAT, the plant height was reported highest (45.11 cm) in the AM-19-TL-Do-1 (T7). The plant height was recorded minimum (28.78 cm) in the Pusa Basanti (T5). Similarly, at 60 DAT, the plant height was recorded maximum (99.33cm) in AM-19-TL-Do-1 (T7) . AM-19-TL-Do-1 (T7) observed maximum height (110.89 cm) at 90 DAT which found to be superior to all cultivars Similar results were also observed in different genotypes Khanvillkar *et al* (2003) in marigold . At 90 DAT primary branches were recorded highest (14.44) in T6 (AM-19-TL-Do-1) and minimum number of primary branches (7.44) noticed in T1(Raipur Local). At 30 days number of secondary branches noted to be non-significant. Highest number of secondary branches (39.89) noticed in T6 (AM-19-TL-DO-1) at 60 DAT numbers of secondary branches recorded in T3 (PusaBahar) (13.56). Similarly, 90 DAT the results reveal that maximum number of secondary branches noticed in treatment

T7 (AM-19-TL-Do-1) least number of secondary branches (13.65) found in T3 (Pusa Bahar) . These finding also followed with Singh and Singh (2010), Rao *et al.* (2003), in marigold . At 30 DAT number of leaves maximum (22.14) in T6 (Punjab Gainda No-1) minimum (14.22) number of leaves per plant Pusa Narangi (T2). At 60 DAT highest number of leaves (34.33) observed in Punjab Gainda No-1 (T6). Minimum number of leaves per plant (33.22) was observed in (T3) PusaBahar. At 60 DAT highest number of leaves (34.33) observed in Punjab Gainda No-1 (T6) and minimum number of leaves per plant (33.22) was observed in (T3) Pusa Bahar. Similarly, at 90 DAT most number of leaves (40.22) recorted in (T4) Arka Agni minimum number of leaves per plant (33.22) was observed in (T3) Pusa Bahar similar findings is in relevant with the findings of (Verma *et al*, 2004), .

At 30 days plant spread was found maximum in (80cm) T4 (Arka Agni) also in 60 days (90.11cm) least spread noted in 30 days in Pusa Narangi (T4) and also in 60 days (39.11cm) . Similarly at 90 days highest spread noted in Arka Agni (106.11cm) minimum spread observed in Pusa Narangi (46cm) the findings are similar with the findings of Narsude *et al* (2010) in marigold..

Number of days needed for 50% flowering,T6 (Punjab GaindaNo-1) (50.56 d) experienced 50% flowering at the earliest possible time The results were consistent with those of Singh and Mishra (2008) for marigold. The biggest flower diameter was recorded in T4 (Arka Agni) (4.64 cm) minimum flower diameter (3.38 cm) found in T2 (Pusa Narangi) identical outcomes in African countries, as described by Narsude *et al.* (2010). In treatment T6 (Punjab Gainda No-1), the average flower weight was higher least weight (1.13g) of single flower was observed in T2 (Pusa Narangi) These findings are in consistent with the findings of Rao *et al.* (2005), Singh and Mishra (2009), Narsude *et al* (2010). Peduncle length was found significantly superior in T7 (AM-19-TL-Do-1) (10.17cm). Pusa Basanti were least peduncle length. Highest number

of flowers per plant (78) was recorded in T5 (Pusa Basanti) Similar finding have been reported by Singh and Mishra (2009), Narsude *et al* (2010), Beniwal and Dahiya (2012) in marigold.

. maximum flower yield per plot was recorded in T6 (Punjab Gaiinda No-1) (330g) Related results have been noticed by Narsude *et al* (2010), Singh and Singh (2006) Dahiya and Beniwal (2012),

. Maximum loose flower yield recorted in T6 (Punjab Gaiinda No-1) (16296.29kg) Least yield observed in T7 (AM-19-TL-Do-1) (9053.49 kg) These conclusion are in row with the finding of Singh and Singh (2006), Rao *et al* (2005).

CONCLUSION

These findings concluded that considering the important vegetative, floral and yield characteristics, Punjab Gaiinda No-1 found suitable for commercial cultivation. To obtain the higher benefit in Chhattishgarh plains with better quality along with maximum yield of flower Punjab Gaiinda No-1 followed by Arka Agni may be recommended for commercial cultivation.

REFERENCES

- Annonymous 2022). *Floriculture At A Glance*. 5th Rev. Ed. Ludhiana: 124p.
- Beniwal B S and Dahiya S S (2012). Variability studies in marigold (*Tagetes spp.*). In: Abstracts of National Seminar on Sustainable Agriculture and Food Security: Challenges in Changing Climate, held at CCS Haryana Agricultural University, Hisar, Haryana, March 27-28, p. 298.

- Choudhary M, Beniwal B S and Kumari A, (2014). Evaluation of marigold genotypes under semi-arid conditions of Haryana. *Annals of Hort* 7(1): 30-35.
- Khanvilkar M H (2003). Performance of African marigold (*Tagetes erecta*) in north Konkan coastal zone of Maharashtra. *J Maharashtra Agric Univ* 28(3):333-334.
- Narsude P B , Kadam A S and Patil V K (2010). Studies on the growth and yield attributes of different African marigold (*Tagetes erecta* L.) genotypes under Marathwada condition. *Asian J Hort* 5(2):284-286.
- Rao C C, Goud P V, Reddy K M and Padmaja G (2005). Screening of African marigold (*Tagetes erecta* L.) cultivars for flower yield and carotenoid pigments. *Indian J Hort* 62(3): 276-279.
- Singh D and Misra K K (2008). Genetic variability in quantitative characters of marigold. *Indian J Hort* 65(2): 187-192
- Singh, D. and Singh, A.K. 2006. Characterization of African marigold (*Tagetes erecta* Linn.). *J Ornament Hort* 9 (1): 40-42.
- Panse V G and Sukhatme P V (1967). *Statistical Methods for Agricultural workers*. 2nd Edition, Indian Council of Agricultural Research , New Delhi, 1967.
- Verma S K, Singh R K and Arya R R (2004). Evaluation of *Tagetes* germplasm. *Scientific Hort* 9:219-224.

Received on 9/8/2022

Accepted on 22/9/2022