Society of Krishi Vigyan
www.iskv.in

J Krishi Vigyan 2025, 13(2) : 363-367

DOI: 10.5958/2349-4433.2025.00066.9

ISSN 2319-6432 (Print)
ISSN 2349-4433 (Online)

Evaluation of Marigold Varieties for Growth and Quality Parameters

R Shobha*, S R Patil, M R Bhuvan[1], B S Kulkarni and A M Shirol
Department of Floriculture and Landscape Architecture,
College of Horticulture, UHS Bagalkot - 587104 (Karnataka)

ABSTRACT

The present study was carried out in Northern Dry Zone of Karnataka during the 2024–25 at the Experimental Farm of the Department of Floriculture and Landscape Architecture, College of Horticulture, University of Horticultural Sciences, Bagalkot, to evaluate the performance of seven marigold varieties: M Yellow, Girland, Arka Pari, Pusa Narangi Gainda, Pusa Basanti Gainda, Arka Shubha, and Arka Abhi. The trial followed a Randomized Block Design (RBD) with three replications, and data were collected on various growth and quality parameters. Among the varieties assessed, Pusa Basanti Gainda demonstrated the best overall performance. It recorded the greatest plant height (86.67 cm), widest plant spread (East-West: 71.33 cm; North-South: 78.69 cm), and highest number of branches per plant (12.83). It also showed the maximum stem girth (25.75 mm), individual flower weight (8.85 g), and flower diameter (55.42 mm). Notably, it had the longest shelf life (5.50 days), enhancing its market value. These results indicate that Pusa Basanti Gainda is particularly well-suited for cultivation in the Northern Dry Zone of Karnataka, offering high potential for commercial floriculture in regions with similar climatic conditions.

Key Words: Growth, Marigold, Northern Dry Zone, Pusa Basanti Gainda, Quality

INTRODUCTION

Marigold is cultivated across nearly all states in India, covering an area of 66.13 thousand hectares and yielding 603.18 thousand metric tons of loose flowers. Karnataka holds the position of the second leading marigold-growing state in the country, with cultivation spread over 12.10 lakh units of land and a flower yield reaching 87.34 lakh units in quantity. It is surpassed only by Madhya Pradesh, where marigold is grown more extensively, covering 14 lakh land units and generating an output of 94 lakh units. Other states where marigold is grown on a commercial scale include Gujarat, Andhra Pradesh, Haryana, West Bengal, and Maharashtra (Anonymous, 2018).

Marigolds are mainly grown for their aesthetic beauty, wide range of forms and colours, as well as for industrial purposes. They are used in decoration, adornment, and landscape enhancement. The continuous pursuit of improved genotypes and varieties fuels the assessment of existing types to attain optimal flower yield, quality, and diversity. Marigold (*Tagetes* spp.), often referred to as 'Gainda' or a flower without a receptacle, is a highly favored and adaptable ornamental plant belonging to the Compositae family.

Marigolds are widely grown for their eye-catching blooms, vivid colors, attractive form, and wide range of sizes, shapes, and structures (Naik *et al,* 2019). They are believed to have originated in regions of Central and South America, with Mexico considered their primary center of origin. The genus name *Tagetes* is derived from 'Tages,' a mythological demigod admired for his beauty. This genus comprises approximately 33 species. Marigolds are mainly grouped into two categories: African marigolds and French marigolds (Yadav *et al,* 2015). African marigolds are diploid, containing 24 chromosomes, while French marigolds are tetraploid with 48 chromosomes. Other notable species in the *Tagetes* genus include *T. tenuifolia*, *T. lacera*, *T. limmonni*, *T. lucida*, *T. minuta*, and *T. pusilla*.

MATERIALS AND METHODS

The current study was undertaken during the Rabi season, from October 2024 to January 2025. The experiment was designed using a Randomized Block Design (RBD) with three replications and included seven marigold varieties: M Yellow, Girland, Arka Pari, Pusa Narangi Gainda, Pusa Basanti Gainda, Arka Shubha, and Arka Abhi. Seeds were initially sown in protrays filled with cocopeat in September. After about

Corresponding Author's Email - shobhar1222@gmail.com
1Department of Plantation Spices Medicinal and Aromatic crops, College of Horticulture, Bagalkot, UHS Bagalkot - 587104 (Karnataka)

a month, when seedlings developed three to four leaves, they were transplanted at a spacing of 45 cm × 30 cm. Recommended agronomic practices and pest management techniques were applied as needed throughout the growing period. Data collection was carried out 90 days after transplanting by selecting five plants at random from each replication for each variety. The recorded data were used to compute mean values for all traits studied, and statistical analysis was conducted using OPSTAT software.

RESULTS AND DISCUSSION

Growth parameters

Growth parameters such as plant height, spread, stem girth, and leaf length and width were recorded in marigold varieties at the grand growth stage. The results revealed significant differences in plant height among the varieties, which ranged from 29.89 cm to 86.67 cm. The tallest plant, measuring 86.67 cm, was found in the Pusa Basanti Gainda variety (Table 1), making it the most superior, followed by Arka Shubha at 81.44 cm. The shortest plant height, at 29.89 cm, was observed in the M Yellow variety. This variation in plant height is likely due to the genetic makeup of the varieties, which affects meristematic activity, cell division, and elongation during early growth, as well as the synthesis of phytohormones and the influence of environmental conditions. Similar results were obtained by Mahanta *et al* (2020), Prateeksha *et al* (2024), and Bhusaraddi *et al* (2022).

The plant spread in the East-West direction varied between 26 cm and 71.33 cm. Pusa Basanti Gainda exhibited the largest spread (71.33 cm) (Table 1), followed by Arka Shubha (65.78 cm) and Arka Abhi (55.00 cm). In the North-South direction, Pusa Basanti Gainda also showed the greatest spread (78.69 cm), followed by Arka Abhi (67.89 cm). The M Yellow variety had the smallest spread in both directions, with 26.00 cm in the East-West direction and 28.36 cm in the North-South direction. These variations are likely due to the genetic potential of the varieties, which influence the number of branches produced, as well as the impact of climatic conditions. Similar findings were reported by Naik *et al* (2019), Shilpa *et al* (2022), and Bhusaraddi *et al* (2022).

The number of primary branches varied from 5.50 to 12.83, with Pusa Basanti Gainda having the highest number (12.83) (Table 1), followed by Arka Shubha (9.61) and Arka Abhi (7.33). The lowest number of primary branches was recorded in M Yellow (5.50). Secondary branches ranged from 16 to 23.12, with Pusa Basanti Gainda again showing the highest number (23.12), followed by Arka Shubha (22.33) and M Yellow (20.5). The fewest secondary branches were observed in Arka Abhi (16). These variations are likely due to the genetic makeup of the varieties, which influence photosynthesis rates and, in turn, the number of branches produced, as well as the effect of environmental factors that affect light interception. Similar results were observed by Palthe *et al* (2019), Prateeksha *et al* (2024), and Sharma *et al* (2021).

Leaf length ranged from 14.56 cm to 8.99 cm, with Pusa Basanti Gainda having the longest leaf length (14.56 cm). Pusa Narangi Gainda followed with a leaf length of 10.16 cm (Table 1). On the other hand, Arka Abhi had the shortest leaf length (8.99 cm). The leaf width varied between 13.56 cm and 5.67 cm, with the widest leaves observed in Pusa Basanti Gainda (13.56 cm), which was significantly greater than the other varieties. Following this, Pusa Narangi Gainda (9.00 cm), Arka Shubha (7.44 cm), and Girland (6.82 cm) showed the next highest leaf widths. The variety Arka Pari had the narrowest leaves, measuring just 3.48 cm. The differences in leaf length and width across varieties may be attributed to their genetic makeup, which influences the number of branches and, subsequently, the number of leaves produced. Similar results were reported by Sharma *et al* (2021) and Shilpa *et al* (2022).

The highest stem girth was recorded in Pusa Basanti Gainda (25.75 mm), followed by Arka Abhi (16.37 mm), Arka Pari (15.78 mm), and Arka Shubha (15.23 mm) (Table 1). In comparison, Pusa Narangi Gainda had a stem girth of 14.65 mm, while the lowest stem girth was observed in Girland (9.93 mm). This variation is likely due to the genetic characteristics of the varieties, which influence cell division in the lateral meristem, as well as the varieties' adaptability to the climate, leading to differences in stem girth. Similar findings were reported by Mahanta *et al* (2020) and Chethan *et al* (2024).

Quality Parameters

The fresh weight of flowers ranged from 8.85 g to 4.77 g, with Pusa Basanti Gainda having the highest fresh weight (8.85 g), followed by M Yellow (Table 2). The lowest fresh weight was recorded in Arka Pari

Table 1. Growth parameters of different marigold varieties at grand growth stage.

Variety	Plant height (cm)	Plant spread E-W (cm)	Plant spread N-S (cm)	Stem girth (mm)	Primary branches	Secondary branches	Leaf length (cm)	Leaf width (cm)
M Yellow	29.89	26.00	28.36	14.04	5.50	20.5	9.31	5.84
Girland	79.67	54.67	55.03	9.93	6.67	27.5	9.83	6.82
Arka Pari	33.44	42.78	46.06	15.78	6.50	21.5	9.33	5.67
Pusa Narangi Gainda	62.22	51.56	48.50	14.65	7.00	19.5	10.16	9.00
Pusa Basanti Gainda	86.67	71.33	78.69	25.75	12.83	23.12	14.56	13.56
Arka Shubha	81.44	65.78	67.72	15.23	9.61	22.33	9.25	7.44
Arka Abhi	73.11	55.00	67.89	16.37	7.33	16	8.99	6.80
S. Em±	1.94	3.75	4.154	1.47	1.75	1.78	0.77	0.63
CD @ 5%	5.98	11.55	12.80	4.516	5.38	5.54	2.36	1.95

Table 2. Quality parameters of different marigold varieties at grand growth stage

Variety	Individual flower weight (g)	Flower diameter (mm)	Shelf life (days)
M Yellow	7.71	45.04	4.35
Girland	6.76	43.82	4.21
Arka Pari	4.77	29.47	3.91
Pusa Narangi Gainda	5.41	40.48	4.20
Pusa Basanti Gainda	8.85	55.42	5.50
Arka Shubha	5.11	38.20	3.35
Arka Abhi	5.56	41.14	3.25
S. Em±	0.24	1.04	0.25
CD @ 5%	0.76	3.20	0.78

(4.77 g). These variations are primarily due to the genetic potential of the varieties, as well as the influence of external climatic conditions. Similar findings were reported by Bhatwal *et al* (2019) and Tiwari *et al* (2020). The longest shelf life was recorded in Pusa Basanti Gainda (5.50 days), followed by M Yellow (4.35 days), Girland (4.21 days), and Arka Pari (3.91 days) (Table 2).

The shortest shelf life was observed in Arka Abhi (3.25 days). These variations are mainly attributed to the genetic potential of the varieties, as well as the influence of external climatic conditions. Similar findings were reported by Naik *et al* (2019) and Sharma *et al* (2021). The flower diameter ranged from 55.42 cm to 29.47 cm, with Pusa Basanti Gainda having the largest diameter (55.42 cm), followed by M Yellow (45.04 cm), Girland (43.82 cm), and Arka Abhi (41.14 cm) (Table 2). The smallest flower diameter was recorded in Arka Pari (29.47 cm). These variations are primarily due to the genetic potential of the varieties, as well as the influence of external climatic conditions. Similar results were observed by Prateeksha *et al* (2024) and Mahanta *et al* (2022).

CONCLUSION

Among the seven varieties of marigold studied, the variety Pusa Basanti Gainda was found to be superior when compared with other varieties in terms of growth and quality parameters followed by the variety Girland. Hence the varieties of marigold Pusa Bsanati Gainda and Girand found to be best suitable to grow in Northern dry zone of Karnataka.

REFERENCES

Annonymus (2018). Indian Horticulture Data Base, National Horticulture Board, p. 286.

Bhusaraddi P, Bhagat V V and Kulkarni B S (2022). Evaluation of different French marigold (*Tagetes patula* L.) genotypes. *Pharma Innov J* **11**(5): 495-498.

Chethan T, Vikramsimha H V, Pujari R. and Palaiah P (2024). Assessment of suitable variety of marigold (*Tagetes erecta*) for northern dry zone condition. *Current Hort* **12**(3): 84-85.

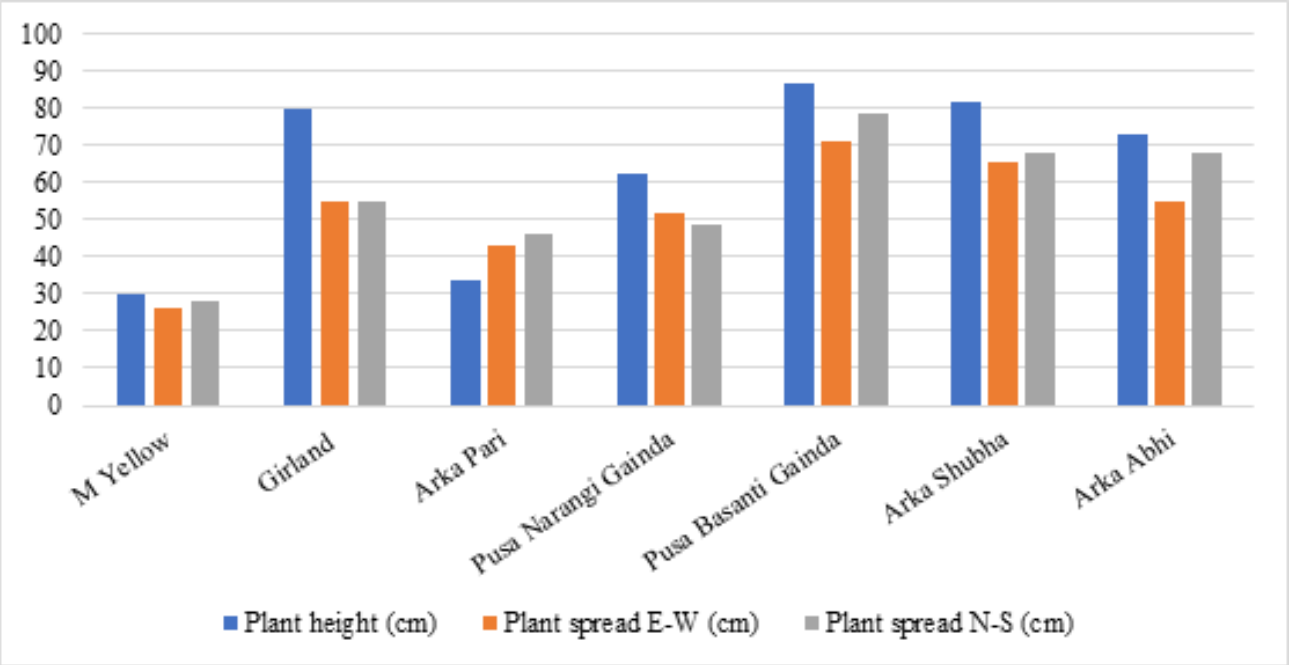

Fig 1. Growth parameters of different varieties of marigold

Fig 2. Individual flower weight and shelf life of different varieties of marigold

Mahanta S, Talukdar M C and Talukdar P (2020). Evaluation of marigold varieties for growth, flowering, yield and carotenoid content under Assam condition. *J Soils and Crops* 30 (2) :231-235

Naik P V, Seetaramu G K, Patil G M, Tejaswini, Sadanand G K, Shivashankara K S (2019). A study on evaluation of marigold genotypes for growth parameters under upper Krishna project command area in Karnataka state. *Internat J Chem Stud* **7**(4):1562-1566.

Naik P V, Seetaramu G K, Tejaswani M G, Sadanand G K, Shivashankara K S. and Kalmath, B S (2019). Evaluation of marigold genotypes for flowering and quality parameters under upper Krishna project command area in Karnataka State. *Internat J Chem Sci* **7**(4), pp.1567-1570.

Pratheeksha C T, Kulkarni B S, Udaya T V and Thammaiah N (2024). Assessment of growth performance and screening of French marigold (Tagetes patula L.) genotypes against leaf spot disease. *Int J Adv Biochem Res* **8** (8): 76 -8 0

Sharma G and Jadagoudar B (2021). Comparative analysis and agro-morphological evaluation of French marigold genotypes (*Tagetes patula* L.). *The J. Pharma Innov* **10**(5), p.1558.

Shilpa` P, Sreelatha U, Minimol J S, Sankar M. and Suma A (2022). Evaluation of growth parameters and yield attributes of marigold genotypes under humid tropical plains. *Journal of Tropical Agriculture* **60**(1).

Tiwari A, (2020). Varietal evaluation of African marigold (*Tagetes erecta* L.) under Bundelkhand region of Uttar Pradesh (Doctoral dissertation), Banda University of Agriculture & Technology, Banda, Uttar Pradesh, India.

Yadav K S, Singh A K, Sisodia (2015). Effect of growth promoting chemicals on growth, flowering and seeds attributes in marigold. *Annals of plants and soil Research* **17**(3):253-256.

Received on 20/3/2025 Accepted on 10/5/2025