



ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2021; 10(11): 479-481
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www.thepharmajournal.com
Received: 07-08-2021
Accepted: 15-10-2021

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Effect of different mulches on flowering and flower characters in marigold under Konkan Agroclimatic conditions

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Abstract

The field experiment was conducted in *rabi* season of 2020-21 at Floriculture Farm, College of Horticulture, Dapoli, Ratnagiri, Maharashtra. The location is under hot and humid region with lateritic soil type. The experiment was laid out in randomized block design comprising four replication and six different mulching treatments *viz*: Control (No mulch), Paddy straw, dry grass, glyricidia leaves, black polyethylene mulch and silver polyethylene mulch. The significantly early initiation of flowering (34.60DAT) was observed in treatment T₅ (Black polythene mulch). The delayed initiation of flower bud (46.53DAT) was observed in treatment T₁ (Control). The significantly lowest number of days required for 50% flowering (49.03 days) and the longest duration of flowering (78.49 days) were also taken in treatment T₅ (Black polythene mulch). Flowers in the T₅ (Black polythene mulch) treatment had the significantly highest flower diameter (7.40 cm), highest fresh weight (14.43 g/flower) and dry flower weight (2.93 g/flower).

Keywords: Marigold, mulching, black Polyethne, flowering, fresh and dry weight

Introduction

Marigold is one of the famous flower belongs to “Asteraceae” family. Out of about 33 species and cultivated throughout India all around the year. These flower use for many purpose like religious /spiritual, party /function and most of the festivals. Marigold flowers are available in attractive shapes and colours and sizes. Hence they are perfect for any garden decoration or making garlands. Due to a short cropping period and low investment and care made this flower to become popular among flower growers. In India, African marigold flowers are sold in the market as loose for making garland. Other than cut flower, marigold especially is used for beautification and also landscape plants due to its variable height and colours of flowers. It is highly suitable as a bedding plant in a herbaceous border and is also ideal for newly planted shrubberies provide colour and fill the spaces (Arora *et al.*, 2002) ^[1].

Mulching is a practice, which helps in proper growth and development of the plants by modifying soil temperature, providing better nutrient availability and better moisture conservation. Mulching increases the soil temperature and moisture, control the weeds besides improving the chemical and physical properties of soil thereby improving the productivity of the crop. In the era of declining resources there is need to standardize precision farming technologies for farmers with the aim to enhance the productivity and to reduce water foot print per unit of crop produce. Mulching and its skilful application can lead to improved soil organic matter contents and by improving other soil characteristics. Generally straw, rice husk, crop residues or plastic mulch can be used as artificial mulches in ornamental crops.

Marigold crop is generally weak competitor and suffer from heavy infestation of many annual weeds in early stages of growth, so use of mulching is a way to prevent weeds and also improve the microclimate on soil surface which improve the growth and flowering. The present investigation was carried out to assess the effect of different mulching material on flowering behaviour and flower quality in marigold during *rabi* season under Konkan agroclimatic conditions.

Material and Methods

The field experiment was conducted in *rabi* season of 2020-21 at Floriculture Farm, College of Horticulture, Dapoli, Ratnagiri, Maharashtra.

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The location is under hot and humid region with lateritic soil type. The experiment was laid out in randomized block design comprising four replication and six different mulching treatments *viz*; Control (No mulch), Paddy straw, dry grass, glyricidia leaves, black polyethylene mulch and silver polyethylene mulch. The flat beds of the Size 4.2 x 1.2 m were prepared. The seedlings were transplanted at the spacing of 30 x 45 cm. The mulches (Paddy straw, Dry grass, Glyricidia leaves) was laid between the two rows of seedlings in such a way that it covers the area between two rows. The polythene mulch films of each color i.e. black and silver cut in size of 4.2 x 1.2 m and laid between two rows of seedlings in such a way that it cover all the area between two rows. The both edge of polythene stripe were buried at either side of flat beds to protect the film against damage by wind. The recommended cultural practices were followed to raise the crop. The observations on flowering parameters i.e. initiation of flowering, 50% flowering, flowering duration, flower characters like diameter, fresh and dry weight of flower were recorded. The data were analyzed as method suggested by Panse and Sukhatme (1985) [5].

Results And Discussion

The data on days required for flower bud initiation, days to flower initiation, days to 50% flowering after transplanting and flowering duration are presented in Table 1.

The data revealed that the significantly early initiation of flowering in marigold (34.60DAT) was observed in treatment T₅ (Black polythene mulch) and was at par with the treatment T₆ (35.64DAT). The delayed initiation of flower bud (46.53DAT) was observed in treatment T₁ (Control).

Among the application of different type of mulches, treatment T₅ (Black polythene mulch) recorded significantly early flowering (41.73 DAT) which was at par with treatment T₆ (42.29 DAT). These treatments were followed by T₂ (47.28 DAT), T₃ (50.23 DAT) and T₄ (53.08 DAT). Significantly highest number of days (59.14DAT) was required for initiation of flowering in T₁ (Control).

The earliness in days to flower initiation under black polythene mulching may be due to better growth of plants, as result of high soil temperature and high soil moisture which helped in profuse and early initiation of bud and flower under black polythene mulching. These results are in line with the findings of Chawala (2006) [2], Kokkeragadda *et al.* (2018) [3] and Sikarwar *et al.* (2021) [6] in marigold.

The data regarding days required for 50% flowering in marigold crop are presented in Table 1 revealed that the significantly lowest number of days required for 50% flowering (49.03 days) were taken in treatment T₅ (Black polythene mulch) and was at par with the treatment T₆ (49.38 days). It was followed by T₂ (50.00 days), T₄ (50.45 days) and T₃ (53.45 days). The maximum number of days taken for 50% flowering (54.02 days) was in Control (T₁). Adequate moisture and appropriate temperature of soil lead to enhanced vegetative growth and subsequently flower emergence. The finding was consistent with the report of Solaiman *et al.* (2008) [7] in China aster.

The longest duration of flowering (78.49 days) was observed in the treatment T₅ (Black polythene) which was statistically at par with the treatment T₆ (Table 1). Both treatments were followed by treatment T₂ (71.78 days), T₃ (70.64 days) and T₄ (67.40 days). The shortest duration of flowering (66.84 days) was observed in the treatment T₁ (Control).

The prolong duration of flowering in polythene mulching treatments might be attributed to conservation of more soil moisture leading to enhance life span of the crop. The organic mulches have also positive influence on soil moisture conservation. Besides this, the weed control due to mulching might be beneficial in extending the crop growth and flowering span. The finding was consistent with the report of Kokkeragadda *et al.* (2018) [3].

The data related to flower quality in marigold as influenced by different mulching treatments are presented in Table 2. Flower diameter is the parameter that eventually defines the quality and suitability of variety as loose flower. There was significant difference among the different plant mulching treatments with respect to flower diameter. Among the different mulching treatments, T₅ (Black polythene mulch) registered the significantly highest flower diameter (7.40 cm) and it was at par with the treatment T₆ (6.58 cm) which was higher compared to other organic mulches and control. The lowest flower diameter (4.68 cm) was obtained in treatment T₁ (Control). From the data, it is revealed that the pinching practice helped in improve the flower diameter in comparison with control. The conservation of soil moisture and availability of moisture as well as nutrients due to mulching might be helpful for improving flower size. These results are in line with the findings of Chawala (2006) [2], Malshe *et al.* (2017) [4], Kokkeragadda *et al.* (2018) [3] and Sikarwar *et al.* (2021) [6] in marigold.

The fresh weight of single flower was significantly influenced by the different mulching treatments in marigold as shown in Table 2. The fresh weight of single flower ranged from 10.13 to 14.43 g per flower. The highest fresh weight (14.43 g/flower) was recorded in treatment T₅ (Black polythene mulch). It was followed by T₆ (13.55 g/flower). The treatments T₂ (13.00 g/flower) and T₃ (12.68 g/flower) were at par with each other. The lowest fresh flower weight (10.13 g/flower) was registered in treatment T₁ (Control).

The dry flower weight (2.93 g) was maximum in treatment T₅ (Black polythene mulch) and it was at par with treatments T₆ (2.78 g), T₂ (2.55 g). The minimum dry weight (1.75g/flower) was recorded in treatments T₁(Control) and T₄ (Glyricidia leaves). The fresh and dry weight of the flower was maximum in polythene mulching treatment which might be attributed to enhanced fresh and dry weight of the plant. The profused plant growth in mulching treatments produced voluminous flowers. The positive effect of mulching on morpho-physiological development of crops could be the cause of higher fresh and dry weight of flowers. Kokkeragadda *et al.* (2018) [3] also noted the similar trend due to mulching.

From the present study, it is construed that mulching with black polythene paper was the practice for early induction of flowering in marigold which also improved the size of flower.

Table 1: Effect of different type of mulches on flowering parameters in marigold cv. Double Orange

Treatments	Days to flower bud initiation	Days to flower initiation	Days to 50% flowering	Duration of flowering
T ₁ Control	45.53	54.02	66.84	52.08
T ₂ Paddy straw	38.79	50.00	71.78	47.28
T ₃ Dry grass	40.10	50.53	70.64	49.43
T ₄ Glyricidia leaves	44.80	53.45	67.40	50.78

T ₅	Black polythene	34.60	49.03	78.49	41.73
T ₆	Silver polythene	35.64	49.38	76.63	42.29
Range		34.60-45.53	41.73-52.08	49.03-54.02	66.84-78.49
Mean		39.91	47.26	51.07	71.96
S.Em.±		0.607	0.779	0.874	1.142
C.D.at5%		1.830	2.348	2.63	3.443

Table 2: Effect of different type of mulches on diameter, fresh weight and dry weight of flowers and in Marigold cv. Double Orange

Treatments		Diameter of flower (cm)	Fresh weight of flower (g)	Dry weight of Flower (g)
T ₁	Control	10.13	1.75	4.68
T ₂	Paddy straw	13.00	2.55	5.65
T ₃	Dry grass	12.68	2.25	5.33
T ₄	Glyricidia leaves	10.75	1.75	5.23
T ₅	Black polythene	14.43	2.93	7.40
T ₆	Silver polythene	13.55	2.78	6.98
Range		4.68-7.40	10.13-14.43	1.75-2.93
Mean		5.88	12.42	2.33
S.Em.±		0.248	0.22	0.16
C.D.at5%		0.749	0.67	0.47

References

1. Arora JS, Kaur A, Sidhu GS, Kaur A. Performance of carnation in polyhouse. *Journal of Ornamental Horticulture* 2002;5:58-63.
2. Chawla SL. Effect of irrigation regimes and mulching on vegetative growth, quality and yield of flowers of African marigold. Ph.D. Thesis, Department of Horticulture, Maharana Pratap University of Agriculture and Technology, Udaipur 2006.
3. Kokkeragadda RB, Sumangala HP, Rupa TR, Sangama, Sujatha AN. Effect of Fertigation, Irrigation and Mulching on Growth, Flowering and Yield Parameter in African marigold. *International Journal of Current Microbiology and Applied Sciences* 2018;7(3):2319-7706.
4. Malshe KV, Sagavekar VV, Chavan AP. Effect of mulching on growth and flower yield of African marigold (*Tagetes erecta* L.). *Bioinfolet* 2017;14(3):233-234.
5. Panse VG, Sukhantme PV. "Statistical Methods for Agricultural Workers. I. C. A. R., New Delhi 1985.
6. Sikarwar PS, Vikram B, Sengupta J. Effect of different mulches on vegetative growth, quality and flower yield of African marigold (*Tagetes erecta* L.) cv. Pusa Narangi Gaiinda. *The Pharma Innovation Journal* 2021;10(2):279-281.
7. Solaiman AHM, Kabir MH, Uddin AFMJ, Hasanuzzaman M. Black plastic mulch on flower production and petal coloration of Aster (*Callistephus chinensis*). *Am- Euras. J. Bot* 2008;1(1):05-08.