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Flower yield and economics of African marigold cv. double orange as influenced by different mulches

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Abstract

The experiment was conducted at College of Horticulture, Dapoli, Ratnagiri, Maharashtra in *rabi* season of 2020-21 to assess the effect of mulching on yield of marigold cv. Double orange. The experiment was laid out in randomized block design comprising four replications and six different mulching treatments *viz.*: Control (No mulch), Paddy straw, dry grass, glyricidia leaves, black polyethylene mulch and silver polyethylene mulch. Among all different types of mulching treatments, highest number of marigold flowers (50.72/plant) and highest yield per plant (523.62 g) was observed in T₅ (Black polythene) treatment. The treatment T₅ (Black polythene mulch) also recorded highest monetary net return of Rs. 7,47,922.8/ha as the yield was 22.52 t/ha.

Keywords: Marigold, flower, yield, economics

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. It is an important flower widely accepted since long back. Marigold is used for several purposes 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. Marigold, a crop under study is ranking one of the major loose flowers widely grown all over India except the hilly temperate region round the year. Mulching is the practice of covering the soil surface with any organic or inorganic material for reducing the evaporation, conserving the soil moisture and smothering the weeds. Mulches are protective layer of organic material that is spread upto 7-10 cm depth like crop residues) or inorganic material like 100 micron thick-polyethylene Pervious/Weed mat placed on top of exposed soil below the plants. Mulches are useful in regulating microclimate conditions.

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 (Kher *et al.*, 2010) [2]. Black plastic mulch, silver mulch and other plastic mulches are most commonly used in agriculture as they reduce the deterioration of soil by way of preventing the runoff and soil loss, minimize the weed infestation, and reduce water evaporation and nutrient losses. Thus, facilitate more retention of soil moisture and help in reduction of temperature fluctuation, physical, chemical and biological properties of soil and ultimately enhances the growth and yield of crop, white or aluminum reflective mulch also repels aphids. Besides the polythene mulch, organic material such as paddy straw, dry grass, leaves, etc. (Bio waste) are easily available and are also used for mulching purpose. Hence, the present study on the effect of mulching on yield of African marigold.

Material and Methods

The experiment was conducted at College of Horticulture, Dapoli, Ratnagiri, Maharashtra in *rabi* season of 2020-21. The experiment was laid out in randomized block design comprising four replications 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 having 4.2 m x 1.2 m size were prepared and the seedlings of marigold (cv. Double orange) were transplanted at the spacing of 30 x 45 cm. The organic 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.

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The polythene mulch films of black and silver colours was 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 number of flowers per plant yield per plant and per plot were recorded. The cost of production of marigold flowers in each treatment was calculated. The data were analyzed as method suggested by Panse and Sukhatme (1985) [4].

Results and Discussion

As marigold is a loose flower crop, individual flowers of each treatment were picked at proper stage and counted and weighed and the figures are presented in Table 1. The data clearly represent that there was significant variation in number of flowers per plant among the different mulching treatments.

The highest number of flowers (50.72/plant) was recorded in treatment T₅(Black polythene mulch) and it was at par with T₆ (49.45). The lowest number of flowers (42.51/plant) was registered in treatment T₁(Control) and was at par with the organic mulch treatments (T₄, T₃ and T₂).

The mulching is beneficial to improve the soil physical, biological and chemical conditions for better growth. Mulches also play an important role in nutrient uptake as they provide favorable environment for better root growth by increasing soil temperature and conserving soil moisture regime. Relatively better growth might be lead to increase in the potential of flower production. Conversely, less flowering of plants without mulch was attributed due to poor growth. Similar results in flower yield were observed by Chawala (2006) [1], Malshe *et al.* (2017) [3] and Sikarwar *et al.* (2021) [6] in marigold.

The data pertaining to flower yield per plant presented in Table 1 showed significant effect of different mulching treatment. Among all different types of mulching treatments, highest yield per plant (523.62 g) was observed in T₅ (Black polythene) which was at par with T₆(522.05 g/plant). These treatments were followed by paddy straw (T₂) and dry grass (T₃). The least flower yield per plant (349.78 g) was recorded in T₁ (Control) and it was at par with the treatment T₄.

From the present findings, it is inferred that the application of different type of mulches significantly improved the flower production and polythene mulches recorded higher number of flowers per plant. Further, it is clear that the flower yield in

polythene (Black and silver) mulches was higher which might be because of all the better growth characters *viz.*, plant height, plant spread, number of branches, and diameter of flowers in the respective treatments. The findings were in accordance with the research of Chawala (2006) [1], Malshe *et al.* (2017) [3], Sikarwar *et al.* (2021) [6].

The data related to effect of different mulches on flower yield of marigold per plot and per hectare are presented in Table 1. It is seen that the flower yield per plot was also significantly influenced due to mulching treatments. The maximum flower yield (17.43 kg per plot) was registered in the treatment T₅ (Black polythene mulch). It was at par with treatment T₆ (16.18 Kg). The minimum flower yield per plot (11.43 kg) was recorded in treatment T₁(control) at was at par with rest of the treatments.

The increased flower yield per plant in the polythene mulch treatments may be the cause of higher yield per plot. The cumulative effect of suppression of weed growth, conservation of soil moisture, nutrient availability, better root and plant growth in mulching treatments contributed the higher yield. The mulching is one of the component of precision farming. It helps in prevention of weed growth, reduction in the evaporation and creates the favorable microclimate for crop growth which may lead to higher yield. The higher yield in mulching treatments might be attributed to the large sized flowers with more fresh weight of flowers. The results obtained in this investigation are close agreement with the finding of Malshe *et al.* (2017) [3] and Raja Babu *et al.* (2018) [5] in marigold.

The data presented in Table 2 pertaining to economics of marigold cultivation in terms of investment and return per hectare under different mulching treatments revealed that the treatment T₅ (Black polythene mulch) recorded highest monetary net return of Rs. 7,47,922.8/haas the yield was 22.52 t/ha and it was followed by T₆ (Silver polythene mulch) Rs. 7,23,944.9 /ha. with cost benefit ratio of 1.97 and 1.91, respectively. It was followed by T₃ (Dry grass) Rs. 6,32,371, T₂ (Paddy straw) Rs. 6,31,455.7 and T₄ (Glyricidia leaves) Rs.5,11,197.7 with cost benefit ratio of 1.75, 1.72 and 1.43 respectively. The net return of T₁ (Control) was not much satisfactory leading to less monetary returns Rs.4,93,731.5 (cost benefit ratio of 1.42).

Thus, from the above results, it can be concluded that among the different mulching treatments black polythene mulch was the best option to increase the net profit.

Table 1: Effect of different mulches on flowers yield of African marigold cv. Double Orange

		No. of flower per plant	Yield per plant(g)	Flower yield per plot (kg)
T ₁	Control	42.51	11.43	11.43
T ₂	Paddy straw	44.93	12.81	12.81
T ₃	Dry grass	44.45	12.48	12.48
T ₄	Glyricidia leaves	42.73	11.72	11.72
T ₅	Black polythene	50.72	17.43	17.43
T ₆	Silver polythene	49.45	16.18	16.18
	Mean	45.79	178.36	13.67
	S.Em.±	1.16	7.39	0.570
	C.D.at5%	3.51	22.16	1.719

Table 2: Economics of African Marigold cv. double orange as influenced by different mulches

Treatments	Yield t/ha	Expenditure Rs/ha	Gross Return Rs/ha	Net profit Rs/ha	B:C ratio
T ₁ Control	16.79	345768.5	839500	493731.5	1.42
T ₂ Paddy straw	19.96	366644.3	998100	631455.7	1.72
T ₃ Dry grass	19.86	360629.0	993000	632371	1.75
T ₄ Glyricidia leaves	17.35	356252.4	867450	511197.7	1.43
T ₅ Black polythene	22.52	377827.3	1125750	747922.8	1.97
T ₆ Silver polythene	22.03	377755.1	1101700	723944.9	1.91

References

1. 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.
2. Kher R, Baba JA, Bakshi P. Influence of planting time and mulching material on growth and fruit yield of strawberry cv. Chandler. Indian Journal of Horticulture. 2010;67(4):441-444.
3. 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.
4. Panse VG, Sukhantme PV. Statistical Methods for Agricultural Workers. I. C. A. R., New Delhi, 1985.
5. Raja Babu K, Sumangala HP, Rupa TR, Sangama, Sujatha A. Nair. Effect of Fertigation, Irrigation and Mulching on Growth, Flowering and Yield Parameters in African Marigold. Int. J Curr. Microbiol. App. Sci. 2018;7(03):685-692.
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.