



E-ISSN: 2278-4136  
P-ISSN: 2349-8234  
JPP 2018; SPI: 2415-2417

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## Effect of mulching in rose (*Rosa hybrida*) cv. Maine parole

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**Abstract**

The Climatic condition for Rose is favourable in Jharkhand. Winter is the main season for this crop. It has been that seen during December to mid-January the minimum temperature goes below 7<sup>0c</sup> which effect the Production. On the other hand, due to acidic and sandy loam soil, weeds are one of the serious problem in this region which reduce the yield of about 30-45% (Singh and Singh, 2004), it also affects its yield and deteriorate the quantity and quality of flowers. To overcome these problems, one experiment has been planned to see the effect of mulching on rose cv. Maine Parle was conducted during October-March, 2015-16 at B.A.U, Ranchi. On the basis of observations, The weed count/m<sup>2</sup> and dry weight of weeds were significantly minimum in Black Polythene, 200 micron (5.66/m<sup>2</sup> and 1.93g/m<sup>2</sup>) respectively as well as duration of flowering and flower diameter (12.33 cm) was also found maximum in Black Polythene (200 micron) whereas maximum count and dry weight was found in White Polythene 50 micron (451.27 g/m<sup>2</sup> and 325 g/m<sup>2</sup>) respectively. Among the reproductive characters, the maximum number of shoots (11.47), number of flowers (47.00 flowers/plant) (Singh and Kamal, 2012) was found in black polythene 200 micron whereas minimum was observed in weedy control (15.60).

**Keywords:** Rose, Mulching, Black and White Polythene

**Introduction**

Rose is universally celebrated and leading cut flower commercially grown all over the world. It belongs to the family Rosaceae and Genus *Rosa* which contains about more than 150 species and 1400 cultivars. Roses are perennial garden plants and cultivation is mostly done under open field conditions. Owing to enhanced profit levels, commercial floriculture is emerging as a potential field of horticultural production (Anderson *et al.*, 2010)

In Jharkhand, floriculture is an emerging sector, there are five commercial flowers grown under open field conditions, like Rose, Gladiolus, Marigold, Gerbera and chrysanthemum. Weed is a serious problem in Jharkhand which affects the cultivation of roses and thereby deteriorates the quantity and quality of the flower. Due to weeds, there is reduction in yield of about 30-45% (Singh and sharma, 2004), as well as the quantity and quality of flowers. Heavy manurial and irrigation requirement of this crop increases conditions conducive, for the rank growth of numerous monocot and dicot

weeds. These weeds compete with crop for various factors such as nutrient, moisture, light and space. Mulching is one of the cultural practice which can help in this particular line of concern. It has a strong influence on growth, yield, quality and duration of harvesting, it increases moisture level of soil as well as soil temperature during peak winter time when minimum soil temperature goes below 10<sup>0c</sup> in this way mulching helps to increase the number of flowers. Mulching and its skillful application can lead to improved soil organic matter contents and by improving other soil characteristics (Harris *et al.*, 2004). Generally Straw, rice husk, crop residues or plastic mulch can be used as artificial mulches in ornamental crops (Wilhoit *et al.*, 1990; Stowell, 2000). In view of the above mentioned facts the present investigation was under taken on "Effect of mulching and post-harvest management in Rose" in the Floriculture unit, in department of Horticulture, B.A.U, Ranchi with following objectives to See the effect of different mulching materials in weed control and quality and productivity of rose.

**Materials and methods**

The experiment was conducted at floricultural unit of the Department of Horticulture, Birsa Agricultural University during October – March, 2015- 2016 to study the effect of mulching in rose. The Plants were arranged according to the spacing of 1m x 1m. The treatments were polythene sheet of different thickness and colour with straw. It consisted of nine treatments of (50, 100, 200 micron) thickness black polythene and white polythene along with paddy straw and control (hand weeding and no weeding). The experiment was laid out in randomized

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block design with three replications. The Weed count and dry weight were subjected to square root transformation  $X+1$  for analysis.

### Results and Discussion

During the trial, the soil temperature under black polythene was found more in comparison to bare land because the thermal conductivity of the soil is high relative to that of air. A large proportion of the energy absorbed by black plastic can be transferred to the soil by conduction and are generally  $2.8^{\circ}\text{C}$ , higher at a depth of 5cm. Due to higher soil temperature under black polythene helped to reduce weed population as well as increased night soil temperature favoured to produce more number of flowers. The weed count/m<sup>2</sup> and weight of weeds were minimum in black polythene 200 micron which might be due to indirect entrance of solar radiation through them which affected the photosynthesis process of weeds under black polythene. Similar results were obtained by Rajablariani *et al.*, 2010, Ramakrishna *et al.*, 2006, Anzalone *et al.*, 2010

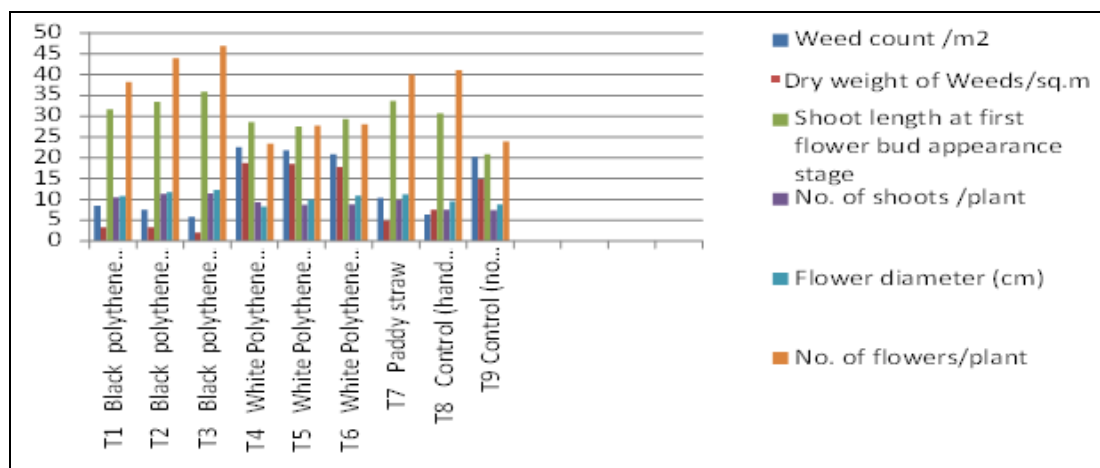
with respect to weed biomass whereas the maximum count and weight was found in white polythene 50 micron. Among the vegetative characters, the maximum shoot length at first flower bud appearance stage (35.89 cm) numbers of shoots (11.47) was found maximum in black 200 micron. This may be due to better moisture conservation, favourable soil temperature as well as weed control. Similar results were found by Kumar *et al.* 2010, Pande *et al.* 2005, Sultana *et al.* 2011. Among the reproductive characters flower diameter (12.33 cm) number of flowers (47.00 flowers/plant) was observed maximum in black polythene 200 micron which was significantly superior to control. The better flower quality may be due to ideal temperature, supply of balanced nutrition, better root proliferation while checking weed growth, preserving soil moisture, structure and increasing CO<sub>2</sub> contents around the plants. The response of black polythene has been reported by Barman *et al* 2002 and Rodrigues, E.J.R. *et al.* 1999.

**Table 1:** Soil Temperature of Mulched Plots during December to January

WEEK	December								January							
	1		2		3		4		1		2		3		4	
	7 a.m	2 p.m	7 a.m	2 p.m	7 a.m	2 p.m	7 a.m	2 p.m	7 a.m	2 p.m	7 a.m	2 p.m	7 a.m	2 p.m	7 a.m	2 p.m
T <sub>1</sub> Black polythene 50 micron	14.0	29.8	11	24	13.45	25.9	10.2	20	11	19.8	11.3	23.0	11	23.5	11	22
T <sub>2</sub> Black polythene 100 micron	14.15	30	11.60	24.1	13.9	26	10.5	20.2	11.1	19.9	11.9	23.2	11.15	23.7	11.1	22.25
T <sub>3</sub> Black polythene 200 micron	14.8	30.15	11.8	24.9	14	26.3	10.75	21.75	11.2	20.15	12.1	23.5	11	24	11.9	21.9
T <sub>4</sub> White Polythene 50 micron	15	30.7	11.9	25	14	26.6	11.25	20.25	11.3	20.25	12	23.75	11	24	11	22.5
T <sub>5</sub> White Polythene 100 micron	15.25	31.2	12	25.1	14.3	26.8	11.6	21.4	11.25	20.1	12.2	24	11.25	24.1	11.9	22
T <sub>6</sub> White Polythene 200 micron	15.6	31	12.1	25.3	14.75	27	11.8	22.1	11.1	20.4	12.25	24.3	11.4	24.75	11.9	22.25
T <sub>7</sub> Paddy straw	13	25.5	9.9	20.25	12.1	22.1	9.9	19.25	10.15	19.9	11	21.7	10	22.7	10	21.9
T <sub>8</sub> Control (hand weeding)	8.4	28	6	22	8	25.75	8.2	19	9.1	18.2	8.75	20.9	9.3	21.9	8.3	20.9
T <sub>9</sub> Control (no weeding)	9.8	24.5	6.9	19.3	8.5	21.5	8.9	18.75	9.25	18	9	20.2	9.8	21	9.3	20.3

**Table 2:** Effect of Mulching On Different Characters of Rose.

Treatments	Weed count /m <sup>2</sup>	Dry weight of weeds/m <sup>2</sup> (g)	Shoot length at first flower bud appearance stage	No. of shoots /plant	Flower diameter (cm)	No. of flowers/plant	
T <sub>1</sub> Black polythene 50 micron	8.56 (65.00)	3.37 (8.25)	31.65	10.55	10.84	38.32	
T <sub>2</sub> Black polythene 100 micron	7.59 (50.30)	3.32(8.00)	33.44	11.38	11.84	44.00	
T <sub>3</sub> Black polythene 200 micron	5.88 (29.00)	2.12(335.00)	35.89	11.47	12.33	47.00	
T <sub>4</sub> White Polythene 50 micron	22.64 (490.33)	18.80(335.00)	28.63	9.41	8.34	23.50	
T <sub>5</sub> White Polythene 100 micron	21.85 (455.60)	18.55(326.00)	27.59	8.76	10.07	27.80	
T <sub>6</sub> White Polythene 200 micron	20.88 (415.75)	17.82(300.00)	29.38	8.89	10.96	28.10	
T <sub>7</sub> Paddy straw	10.40 (98.20)	4.88(19.20)	33.65	9.72	11.30	40.10	
T <sub>8</sub> Control (hand weeding)	6.46 (35.80)	7.57 (50.10)	30.70	7.59	9.56	41.10	
T <sub>9</sub> Control (no weeding)	20.27(391.00)	14.92(208.00)	31	20.92	7.44	8.81	24.00
SEM ±	1.0	0.78	2.12	0.60	0.75	2.67	
CD (5%)	3.26	2.36	6.38	2.01	2.25	8.03	
CV%	13.61	13.52	12.22	12.26	14.47	13.31	



**Fig 1:** Effect of Mulching On Different Characters of Rose

## Conclusion

The results regarding this study revealed that Black polythene mulch (100 and 200 micron) were beneficial in altering the temperature of soil, provided favourable soil conditions for plant growth, conserved moisture and reduced the loss of nutrients which is evident from better plant quality flower production of rose.

## References

1. Anderson NO, Younis A, Sun Y. Intersimple sequence repeats distinguish genetic differences in easter lily 'Nillie White' clonal within and among bulb growers over years. *J Amer. Soc. Hort. Sci.* 2010; 135(5):445-455.
2. Anzalone A, Ramirez-Guerrero H, Lugo J, Cirujeda A, Zaragoza C, Aiber J. Mulch evaluation for weed control on integrated tomato production. *Revista de la Facultad de Agronomia.* 2010; 28(1).
3. Barman D, Rajini K, Rampal, Upadhyay RC. Effect of mulching on cut flower production and corm multiplication in *Gladiolus*. *Journal of Ornamental Horticulture.* 2002; 08:152-154.
4. Harris RW, Clark JR, Mathney NP. *Arboriculture.* 4<sup>th</sup> Ed. Prentice Hall Jersey, 2004.
5. Kumar S, Chakraborty V, Singh N. Effect of different mulching materials in rose (*Rosa* spp. L.) cv. Laher. *Journal of Ornamental Horticulture.* 2010; 13(2):95-100.
6. Pande kk, Dimiri DC, Kamboj P. Effect of Various mulches on growth, yield and quality attributes of apple. *Indian journal of Horticulture.* 2005; 62(2).
7. Rajablarian HR, Hassankhan F, Rafezi R. Effect of coloured plastic mulches on yield of tomato and weed biomass. *International Journal of Environmental Science and Development.* 2012; 3(6):333-335
8. Ramakrishna A, Tam Hoang Minh, Wani SP, Long TD. Effect of mulch on soil temperature, moisture, weed infestation and yield of groundnut in northern Vietnam. *Food crop research.* 2006; 95(2, 3):115-125.
9. Rodrigues EJR, Minami K, Farina E. Mulching in soilless systems of rose crop: productivity, water consumption, temperature and salinization. *Scientia Agricola.* 1999; 56(4):785-795.
10. Stowell B. Organic Kiwifruit production-maintaining soil fertility and yields. *Kiwifruit.* 2000; 139:18-21
11. Sultana S, Ahmed N, Ali MA, Zubaer HM, asaduzzaman M. Influence of mulch materials and organic manures on lettuce. *International Journal of Agriculture, Environmental and Biotechnology.* 2011; 4(1):15-19.
12. Wilhoit JH, Morse RD, Vaughan DH. Strip tillage production of summer cabbage using high residue levels. *Agri. Res.* 1990; 5:338-342