SHORT COMMUNICATION

PERFORMANCE OF DIFFERENT MULCHES ON GROWTH AND YIELD OF CHILLI

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Abstract: The present experiment was conducted during summer, 2018 at the Horticulture research scheme, Vasantrao Naik Marathwada Krishi Vidyapeeth Parbhani. The experiment was laid out in randomized block design with 7 treatments viz; black, white, silver, red, yellow polythene mulch, soyabean straw, and control with replicated three times. The results indicated to the maximum plant height was reported at 60 and 90 DAT in silver polythene mulch (45.03cm, 58.06cm) respectively, while lowest plant height was recorded in control. The maximum plant spread in East-West direction was recorded in silver polythene mulch (66.11cm) and the maximum plant spread in North-South direction in silver polythene mulch (59.17cm). The maximum number of branches at 45 and 90 DAT in silver polythene mulch (10.40cm, 18.08cm) respectively. The maximum number of leaves in silver polythene mulch (413.55). The minimum days to first flowering and 50 per cent flowering (65.63days) was recorded in silver polyethylene mulch. The highest fruit girth (2.29cm) and fruit length (8.23 cm) was recorded in treatment silver polyethylene mulch, as compare to control. The highest average yield per plot (32.18kg) and per hectare (218.91qt) was recorded in treatment silver mulch.

Keywords: Chilli, Growth, Yield, Soybean straw, Plastic mulch

INTRODUCTION

Chilli (*Capsicum annuum* L.) is cultivated worldwide and is an important spice cum vegetable crop cultivated extensively in India. It is an indispensable spice essentially used in every Indian cuisine for its pungency, taste, colour and aroma. The fruits are an excellent source of health-related phytochemical compounds, such as ascorbic acid, carotenoids, tocopherols, flavonoids, and capsaicinoids that are very important in preventing chronic diseases such as cancer, asthma, coughs, sore throats, toothache, diabetes and cardiovascular diseases (El- Ghoraba *et al.*, 2013). Thus our country plays a major role in the world chilli market. Keeping the high export potential chilli, production can be increased by a combination of advance production technologies viz., high yielding hybrids, mulching, application of growth regulators, staking, drip fertigation and integrated pest and disease management. Mulching is an essential cultural technique that can reduce the amount of work inherent in gardening, helping to produce healthier plants and potentially increasing vegetable yields. Mulch is often defined as any material applied to the soil surface as cover. Organic mulch has a number of positive attributes.

Organic or inorganic soil mulches influence the crop in a number of ways. Plastic mulches can offer a barrier against weeds, moisture loss, nutrient loss, erosion, insect and disease injury, while it encourages plant establishment and an earlier crop of potentially higher quality. The combined effects of soil temperature, soil moisture and weed suppression not only work to improve crop growth but they also facilitate hand picking and lead to higher yield and increased fruit size. Increase in soil temperature by application of plastic mulch caused a significant reduction in pathogen levels. The effect of plastic mulch and its colour improves soil structure, crop growth and its development. (Kumar and Bhardwaj, 2012).

During summer season the chilli is grown for green fruit, where there is maximum demand in market; but because of shortage of irrigation water there is limitation for its cultivation. With these ideas in view, an experiment was conducted to study the performance of different mulches on growth and yield of chilli during summer, 2018

MATERIALS AND METHODS

The experiment was conducted during summer seasons 2018 at Horticulture research scheme (vegetable), Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani. The experiment was laid out in a randomized block design (RBD) with seven treatments with three replications.

T_1 : Black polythene
T_2 : White polythene
T_3 : Silver polythene
T_4 : Red polythene
T_5 : Yellow polythene
T_6 : Soyabean Straw
T_7 : Control

Observations were recorded from randomly selected five plants of each treatment. Observations with respect to growth characteristics were recorded at different day's interval. The experimental data pertaining to all the characters studied were subjected

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to statistical analysis of variance technique as described by Panse and Sukhatme (1985). The results of the experiment was tabulated and presented below.

RESULTS AND DISCUSSION

Growth parameters

The growth parameters varied significantly due to different types of mulches. The treatment (T_3) i.e. silver polythene recorded (Table1) significantly maximum plant height at 45 and 90 DAT maximum (45.03cm, 58.06cm)respectively, number of leaves (413.55), number of branches at 45and 90 days (10.40 and 18.08), plant spread (E-W 66.11, N-S 59.17). It was at par with treatment (T_1) Black polythene. These findings are in close conformity with those of Hedau *et al*. (2001), Singh *et al*. (2009), Diazperez (2010), Parmar *et al*. (2013).

Yield parameters

Among the various treatments the treatment (T_3) Silver polythene recorded (Table2) significantly indicated that the minimum days to 50% flowering (65.63) and number of fruit (271.56), maximum fruit girth and fruit length (2.29 cm and 8.23cm), average 5 fruit weight (0.34 g), highest plot yield (kg) and yield (q/ha) was (32.18 kg and 218.91q/ha) respectively which was at par with treatment (T_2) Black polythene. These findings are in agreement with those of Parmar *et al*. (2013), Khan *et al*. (2005), Iqbal *et al*. (2009), Shinde *et al*. (2002).

CONCLUSION

The results of the experiment showed that the vegetative and yield parameters of chili were significantly improved by the application of different mulches. The silver polythene mulch gives better result regarding growth and yield gives highest among all the mulches

Table 1. Effect of different mulches on growth of Chilli

Treatment	Plant height 60 days (cm)	Plant height 90 days (cm)	No. of leaves	No. of Branches 45 days	No. of Branches 90 days	Plant spread E×W (cm)	Plant spread N×S (cm)
T_1 – Black Polythene	42.32	56.23	410.57	9.29	17.07	64.05	57.23
T_2 – White Polythene	29.24	46.04	370.64	7.13	15.12	62.11	53.07
T_3 – Silver Polythene	**45.03**	**58.06**	**413.55**	**10.40**	**18.08**	**66.11**	**59.17**
T_4 – Red Polythene	32.40	44.02	340.31	6.08	13.75	58.91	54.07
T_5 – Yellow Polythene	34.53	52.17	386.38	8.05	16.65	63.86	56.83
T_6 –Soybean straw	27.36	45.12	337.54	6.04	12.05	55.94	51.60
T_7 – Control	23.77	38.38	324.40	5.05	11.27	54.10	50.66
SEM	1.39	3.44	0.58	0.51	0.52	2.23	1.05
CD	4.35	10.74	1.83	1.612	1.64	6.96	3.28

Table 2. Effect of different mulches on yield of Chilli

Treatment	Days to 50% flowering	No. of fruit / plant	Fruit Girth (cm)	Fruit length (cm)	Average 5 fruit weight (g)	Plot yield (kg)	Yield (q/ha)
T_1 – Black Polythene	66.62	270.51	1.80	7.56	0.31	31.15	211.90
T_2 – White Polythene	69.45	265.60	1.23	6.89	0.27	26.11	177.61
T_3 – Silver Polythene	**65.63**	**271.56**	**2.29**	**8.23**	**0.34**	**32.18**	**218.91**
T_4 – Red Polythene	72.72	261.26	1.21	6.00	0.26	19.13	130.15
T_5 – Yellow Polythene	68.39	267.51	1.56	7.25	0.29	28.23	192.06
T_6 – Soybean straw	73.65	261.48	1.14	6.38	0.21	18.17	123.60
T_7 – Control	75.75	260.56	0.91	5.56	0.19	17.28	117.5
SEM	0.58	0.55	0.11	0.48	0.01	1.53	
CD	1.80	1.72	0.35	1.50	0.06	4.79	

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