

Effect of different types of mulches on growth and yield of turmeric (*Curcuma longa*. L.)

Annu Verma^{1*} and D. A. Sarnaik

College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya, RAIPUR (C.G.) INDIA

ABSTRACT

This experiment was conducted at the farmer's field as On-farm trial (O.F.T.) during 2001-02 in the village Bhatagaon at Raipur district of Chhattisgarh state. was used for experiment with four replications and five treatments. Locally available materials like paddy straw (M₁), dry grass (M₂), palash leaves (M₃), along with plastic mulch (M₄, black polythene) were used as mulching material in this study. A treatment without mulch (M₅) was also included as control. Five treatments were replicated four times in randomized block design. The results indicated that the treatment in which paddy straw was used as mulch gives maximum average plant height (84.40 cm.) and number of leaves(10.32) as compared to other treatments. In case of yield of turmeric also, the paddy straw mulch gave maximum yield (169.33 q/ha.) followed by mulching with dry grass (131.33q/ha.).

Key words : Turmeric, Mulch, Paddy straw, Yield.

INTRODUCTION

Turmeric is a dried rhizome of *Curcuma longa* L., belonging to family Zingiberaceae. The rhizome has 1.8 to 5.4 per cent curcumin, the pigment and 2.5 to 7.2 per cent of essential oil (Kumar et. al.1993). Turmeric constitutes an important herbaceous plant having its importance for domestic uses and export due to its versatile uses. Hence it is a multipurpose crop valued for its medicinal properties, colouring pigment and spicy flavour.

In India, the area, production and productivity of Turmeric was 1.69 lakh ha., 6.98 lakh tonnes and 4.13 t/ha respectively. (The Hindu 2002). Turmeric share 6.02 % value of spices exported from India. The tremendous increase in the demand of this plant has created the need of commercial cultivation using scientific technology. Limited water resources, flood irrigation practices, scarcity of water, poor water management are some of the reasons of less productivity in turmeric (Gaikwad et.al.2002). Water management research was needed to provide answers to how water can be used efficiently so that the crop does not suffer on account of water shortage. Thus for increasing the productivity of turmeric the soil and water management is needed. Mulching had shown some positive effects in this regard. Keeping this in view, it was felt necessary to study the effect of different mulches after seedling establishment to conserve soil and water so that the growth and yield of turmeric can be improved.

MATERIALS AND METHODS

The experiment was carried out in the farmer's field as On-farm trial (O.F.T.) during 2001-02. Spacing of rhizomes of turmeric variety Shillong was 60x20 cm.in ridges and Randomized Block Design was used for experiment with four replications and five treatments. Mulches

used in the study were locally available materials like paddy straw (M₁), dry grass (M₂), palash leaves (M₃), along with plastic mulch (M₄, black polythene). A treatment without mulch (M₅) was also included as control. Different materials to be used as mulch were spread on the crop immediately after planting as per treatments. In treatment (M₄) black polythene was spread by giving cut in (60x20 cm.) such a way so that germinated plant of the crop may come above the ground as well as polythene. Paddy straw, dry grass and palash leaves were spread on bed such as to form 5-10 cm. thick layer. In control, no mulch was applied and weeding was done twice over the period of crop. Manures and fertilizers were applied in all the treatments @ 30:30:60 kg. /ha. of N.P.K. Similar cultural practices were adopted for all treatments.

RESULTS AND DISCUSSION

Data presented in the Table shows that mulching influenced the plant height and number of leaves per plant. Treatment in which paddy straw was used as mulch gives maximum average plant height (84.40 cm.) as compared to other treatments. Similarly average number of leaves was maximum in M₁ (10.32), followed by M₃. Germination of rhizomes were seen earlier in treatment M₄ (Black polythene as mulch). Mohanty et.al. (1991) also observed similar results in cultivars. PTS-24. There were fewer weeds in mulched material. In case of yield of turmeric also, the paddy straw mulch gave maximum yield (169.33 q/ha.) followed by mulching with dry grass (131.33q/ha.). These two treatments were found as better treatments when compared with other treatments at farmers field. Mohanty et. al. (1991) also got similar findings in two different experiments on cvs. PTS-24 and Surama.

Table : Effect of different types of mulches on growth and yield of Turmeric cv. Shillong.

S.No.	Treatments	Plant height (cm.)	No.of leaves Per plant	Yield (kg.per plot)	Yield (q./ha)
1	M ₁ -Paddy straw as mulch	84.40	10.32	25.40	169.33
2	M ₂ -Dry grass as mulch	71.80	9.50	19.70	131.33
3	M ₃ -Palash leaves as mulch	76.20	10.02	19.30	128.66
4	M ₄ -Black polythene as mulch	79.20	8.30	11.60	97.33
5	M ₅ -Control (without mulching)	63.20	6.90	8.80	58.67
S.E. (m)		0.21	--	0.94	0.97
C.D. (5%)		6.18	--	2.75	28.22

¹ Krishi Vigyan Kendra, Anjora, Durg 491001 India

* Author for correspondence