

Effect of mulching on plant growth and rhizome yield in ginger (*Zinziber officinale* Rosc.) in rainfed plateaus of Jharkhand

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SUMMARY

Present experiments were conducted in participatory mode on farmers' field. Eight ginger growing farmers of four villages of Garhwa district were selected to grow the crop by application of four types of mulches viz., Palas (*Butea monosperma* L.) leaves, Paddy straw, Dried bushes (*Lantana americana*, *Ocimum americana*, *Parthenium* etc.), FYM @ 10 t/ha each along with unmulched control in plots of 20 m² area during *kharif*, 2006 and 2007. It is evident from above observations that mulching of ginger with FYM resulted in maximum rhizome yield per plot, width of rhizome, number of tillers per hill, plant height and earliest emergence whereas mulching with *Palas* leaves exhibited maximum rhizome length, numbers of leaves per plants and minimum number of weeds per unit area.

Key words : Mulches, Rhizome, Ginger

Ginger is an important spice crop of Garhwa district of Jharkhand. Farmers generally grow this crop during rainy season under rainfed uplands using locally available planting materials. However, they procure an uneconomical yield because of high input in cultural operations and water stress due to erratic and flush nature of rainfall in growing period. As the rural areas of Garhwa district are adorned with forest trees and bushes which could efficiently be used as mulch materials. Use of agricultural residues, forest litters, bushes and dried grass as mulching material for conservation of soil moisture, suppression of weeds, favourable temperature for plant growth etc. have been reported by many of earlier workers (Isenberg and Obland, 1950; Singh and Gangwar, 1972; Singh *et al.*, 1976; Korla *et al.*, 1990; Gupta and Awasthi, 1997). Besides, plant residues as mulch, black polythene has also exhibited favourable effects on plant growth, weed control and rhizome yield (Korla *et al.*, 1990; Pawar, 1990; Mohanty *et al.*, 1990; Kumar and Korla, 1998). Looking the importance of mulching in sciophytic crops particularly in ginger, these trials were conducted.

MATERIALS AND METHODS

Present experiments were conducted in participatory mode on farmers' field. Eight ginger growing farmers of four villages of Garhwa district were selected to grow

the crop by application of four types of mulches viz., Palas (*Butea monosperma* L.) leaves, Paddy straw, Dried bushes (*Lantana americana*, *Ocimum americana*, *Parthenium* etc.), FYM @ 10 t/ha each along with unmulched control in plots of 20 m² area during *kharif*, 2006 and 2007. Seed rhizomes were planted in second fortnight of June at 15 x 15 cm spacing. Mulch materials were applied just after planting the seed rhizome. The experiments were laid out in randomized block design with eight replications. Data were recorded for days to emergence, plant height (cm), number of leaves per plant, number of tillers per hill, number of weeds per unit area (0.25 m²), rhizome length (cm), width of rhizome (cm) and rhizome yield per plot (kg).

RESULTS AND DISCUSSION

The average data of two years depicted in Table 1 revealed that planting of seed rhizome in June followed by mulching exhibited almost five days earlier emergence as compared to unmulched plots. Minimum days were taken to emergence by mulching with FYM (15.69) followed by at par effects of *Palas* leaves and Paddy straw which were significantly earlier than mulching with dried bushes (18.44 days) and unmulched plots (20.07 days). Regarding vegetative growth of plants, FYM mulch registered maximum effect (43.86 cm) followed by *Palas* leaves (43.12 cm). Maximum number of leaves was recorded in mulching with *Palas* leaves (64.72) followed by FYM and paddy straw with at par effect on number of leaves per plant. Mulching with *Palas* leaves and FYM were also promising treatments of number of tillers per hill (5.56 and 4.84, respectively) with non significant difference. Gupta and Awasthi (1997) had reported

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