

Effect of mulches on soil moisture and fruit yield in summer tomato

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SUMMARY

Present experiment was conducted in participatory mode among ten tomato growers of Chatra district of Jharkhand during late *Rabi* of 2009-10 to summer 2010 including three technology options *viz.*, Farmers practices *i.e.* plots provided with required number of irrigations without mulching (TO₁), use of black plastic mulch (TO₂) and use of rice straw mulch applied @ 10 t/ha to maintain 2 inch thickness (TO₃). Mulched plots were also irrigated whenever required to maintain soil moisture. Data were recorded on moisture content after one week of irrigation (%), number of irrigations during 130 days of crop duration, irrigation intervals (days) required to maintain at least 20-22 per cent soil moisture, weed population per m² area, fruit weight (g), fruit yield per plant (kg), yield (q/ha) and C:B ratio. Results indicated that black plastic mulch was promising for increasing soil moisture content after one week of irrigation, fruit weight and reducing number of irrigations and weed population per m² area but rice straw mulch increased number of fruits per plant and fruit yield. Rice straw mulching also exhibited maximum B:C ratio due to higher fruit yield and lower initial input required in application of this locally available mulch material. Therefore, it is recommended for large scale application in summer tomato crop for remunerative yield.

Key Words : Mulches, Soil moisture, Fruit yield, Tomato

How to cite this article : Pandey, V.K., Mishra, A.C., Rai, V.P. and Singh, R.K. (2013). Effect of mulches on soil moisture and fruit yield in summer tomato. *Internat. J. Plant Sci.*, 8 (1) : 148-150.

Article chronicle : Received : 01.09.2012; Revised : 10.10.2012; Accepted : 25.11.2012

Tomato is an important crop of Chatra district of Jharkhand grown throughout the year. In addition to September planted main (*Rabi*) crop, January planted summer and June planted *Kharif* crops are also grown by the farmers in extensive area. The *Rabi* and *Kharif* crops do not suffer water stress but summer crop is more prone to dry spell during the months of February to May. The growers suffer more irrigation requirement of the crop due to low longevity of soil moisture during summer season. In spite of limitations, this crop is highly remunerative to the farmers. Therefore, soil moisture conservation techniques are more

useful for facilitating the farmers. Mulching of crop is one of the efficient means of conserving the moisture (Shock *et al.*, 1988; Singh *et al.*, 1975; Uniyal and Mishra, 2004, regulating soil temperature (Sood, 1988; Uniyal and Mishra, 2003), checking soil erosion (Aarstad and Miller, 1973; Shock *et al.*, 1988; Rees *et al.*, 2002) and efficient use of nutrients through soil solution. Sood, 1989; Stieber *et al.*, 1991; Yoder, 1991). Maintaining the optimum soil moisture during growth and development of crop is one of the factors promoting proper uptake of nutrients. Crop production supplying the required number of irrigations is a tedious and uneconomic job particularly in rainfed and water scarce areas. In such areas, application of mulch has special importance to reduce number of irrigations. Many types of mulches have been utilized in agriculture with varying degree of beneficial results. Mulch materials should have easy and economical reach of farmers with affirmative impact on yield and environment. Therefore, evaluation of some mulch materials with good soil moisture conservation

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