

## Weed management in tomato (*Lycopersicon esculentum* Mill.) under agro climatic conditions of Tripura

S. Shil, D. Nath, D. Dey and A. Chakraborty

KVK, West Tripura, Chedri, Khowai, PIN 799207

E-mail: spd020@yahoo.co.in

### ABSTRACT

The experiment conducted at the instructional farm of KVK, West Tripura with an objective to find out a suitable method of weed control in tomato with treatments comprising of T1: HW at 30 DAT, T2: pendimethalin @ 1.5 lit ha<sup>-1</sup> at 3-5 DAT, T3: pendimethalin @ 1.5 lit ha<sup>-1</sup> at 3-5 DAT + HW 30 DAT T4: and control during 2013-14 showed maximum plant height (78.23cm), maximum number of branch plant<sup>-1</sup> (6.22) and highest yield (6.69 t ha<sup>-1</sup>) in T<sub>3</sub> with lowest weed dry biomass 4.30, 10.89, 34.14 and highest weed control efficiency (WCE %) of 84.33, 73.39, 47.54 at 30, 60 and 90 DAT, respectively. It was observed that weed dry matter at all the stages of crop growth period was significantly higher in case of unweeded control due to unchecked growth of weeds.

**Key words:** Weed control, Tomato, Tripura

Tomato (*Lycopersicon esculentum* Mill.) belonging to the family Solanaceae is one of the widely grown nutritious vegetable consumed next to potato in the world. This being an important source of minerals and antioxidants such as carotenoids, lycopene, vitamins C and E phenolic compounds play a key role in human nutrition to prevent certain cancer and cardiovascular diseases (Adalid *et al.*, 2004). Tomatoes are consumed in a number of ways as sun-dried tomatoes, sauce, juice, soup, ketchup and fresh as salad (Frusciante *et al.*, 2007). In India the total area under its cultivation is 882.0 thousand ha with total production of 187.35 lakh tone. In Tripura the area and production of this crop is 1.58 thousand ha and 39.00 thousand MT, respectively. (NHB database, 2014).

Weeds in tomato reduce yields by competing for space, light, water and nutrients resulting in weakening of the crop stand and reduced harvest efficiency (Abbasi *et al.*, 2013). Govindra *et al.*, (1986) reported that weeds resulted in a 57.0 per cent reduction in tomato yield when compared with weed free conditions. Adigun (2000) reported that unrestricted weed growth throughout the crop life cycle resulted in 92-95 per cent reduction in tomato fruit yield. Shadbolt & Holm (1956) also concluded from their studies that the first four weeks in the early growth period are critical in many vegetable crops, during which the weeds should be removed. This period coinciding with the season of peak labour activity leads to scarcity of labour for weeding. This adds to the high cost of production. Therefore, use of proper weed control method is the prime need to obtain maximum productivity. The choice of any weed control measures therefore, depends largely on its effectiveness and economics. Use of pre-

emergent herbicides would make the herbicidal weed control more acceptable to farmers, which will not change the existing agronomic practices but will allow complete control of weeds (Adhikary and Ghosh, 2014). Keeping this in view, the present study to find out a suitable method of weed control in tomato was carried out.

### MATERIAL AND METHODS

The field experiment was conducted during *rabi* season of 2013 in the experimental field of KVK, West Tripura located in District Khowai of Tripura at an altitude of 23m mean sea level, latitude 23.84N, longitude 91.27E. Soil of the experimental site was sandy loam, acidic with P<sup>H</sup> 5.8, 0.52 per cent organic carbon, low in available nitrogen (217.65 kg ha<sup>-1</sup>), Medium in available phosphorus (22.82 kg ha<sup>-1</sup>) and available potash (177.68 kg ha<sup>-1</sup>). The variety used in this experiment was Trishul. The treatments consisted of T1: HW at 30 DAT, T2: pendimethalin @ 1.5 lit ha<sup>-1</sup> at 3-5 DAT, T3: pendimethalin @ 1.5 lit ha<sup>-1</sup> at 3-5 DAT + HW 30 DAT, T4: control. Spraying was done with knapsack sprayer with flood jet deflector WFN 040 nozzle using 500 lit of water ha<sup>-1</sup>. All the recommended improved package of practices including the plant protection measures was followed in the experiment. Predominant weed biomass, weed control efficiency were recorded at 30, 60 and 90 DAT.

Pendimethalin is applied as pre-emergence (PRE) herbicide or pre-plant incorporated (PPI) for control of grasses and small-seeded dicot weed species (Byrd and York 1987). Among the dinitroaniline herbicides, pendimethalin is among the most water soluble and the least volatile (Wilcut *et al.*, 1988), with microbial decomposition being the main