

Research Paper

ADVANCE RESEARCH JOURNAL OF
C R P
IMPROVEMENT
Volume 4 | Issue 1 | June, 2013 | 44-46
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Study on effect of management methods on tomato yellow leaf curl disease (TYLCV)

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ABSTRACT : Field experiment was carried out during *Rabi* 2011-12 at the Horticultural Farm, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G), to know the effect of different insecticides, biopesticides and its combination on incidence of tomato yellow leaf curl virus (TYLCV) disease and population of whitefly on tomato cv. Pusa Ruby. The disease incidence of TYLCV was recorded periodically from 15 to 90 days after transplanting (DAT) with an interval of 15 days by visual observation. Among the all treatments T₉ i.e. thiacloprid treated plots showed lowest average whitefly population and proved to be effective treatment with lowest mean disease incidence 30.24 per cent and highest marketable fruit yield 18.38 q/ha⁻¹ while the more average whitefly population was observed in T₆ i.e. (Cowdung + cow urine @ 20ml/l.) treated plots and control plots showed highest disease incidence and more number of whiteflies per plant.

Key Words : Management methods , TYLCV, Whitefly, Disease incidence

How to cite this paper : Patel, Rashmi and Khare, C.P. (2013). Study on effect of management methods on tomato yellow leaf curl disease (TYLCV), *Adv. Res. J. Crop Improv.*, **4** (1) : 44-46.

Paper History : Received : 23.03.2013; Revised : 29.03.2013; Accepted : 30.04.2013

Tomato is affected by large number of viral diseases (Anonymous, 1983). Over 40 viruses belonging to Alfamo, Luteo, Carla, Cucumo, Gemini, Poty, Illar, Nepo, Tombus, Tobamo and Tospovirus groups attack this crop (Allen and Gibs, 1990). Among them, tomato leaf curl and tospoviruses are very important, tospoviruses are though very common in vegetable crops are increasing year after year and more so in tomato (Reddy *et al.*, 1997).

Leaf curl is one of the most important diseases of tomato causing heavy losses in yield and quality of fruits. Leaf curl caused by tomato yellow leaf curl virus (TYLCV) is one of the devastating diseases of the crop and depending on the severity and stage of the infection causing heavy losses in yield (Kalloo, 1988). The incidence of TYLCV in tomato growing areas of Karnataka ranged from 17-100 per cent in different seasons and 50 to 70 per cent yield loss was observed in tomato cv. Pusa Ruby grown in February – May (Saikia and Muniyappa, 1989). Yield loss exceeds 90 per cent, when infection occurred within four weeks after transplanting in the field (Sastry and Singh, 1973) Saikia and Muniyappa, 1989).

The whitefly, *bemisia tabaci* gennadius is one of the most economically important pests throughout the world causing extensive damage in more than 500 species of crops (Greathead, 1986). in tomato besides causing direct damage as

a sucking pest, it transmits tomato leaf curl virus (TYLCV), a Gemini virus, which causes heavy losses round the year in tropical and sub tropical tomato growing regions of the world (Green and Kalloo, 1994). In india, this disease is wide spread during summer in south india (Saikia and Muniyappa, 1989) and autumn in north india (Banerjee and Kalloo, 1987). Whiteflies and the viruses they transmit result in extensive losses necessitating for a worldwide search for the cost effective management strategies. Cultural practices play a significant role in integrated pest management system targeting whiteflies and consequent reduction in TYLCV incident. The cultural practices have received little attention from the researchers, possibly due to difficulty of testing by conventional method.

RESEARCH PROCEDURE

To study the effect of different management practices and their combination on disease progress, whiteflies population dynamics, disease incidence and yield of tomato, a field experiment was conducted. The experiment was laid out in Randomized Block Design, having ten treatments with four replications. The transplanting was done on 15th October, 2011 in *Rabi* season using the variety Pusa Ruby. The plot size was used 3 x 3.15 m². The spacing followed was 60 x 45 cm. and