Control of Tomato Yellow Leave Curl Disease with Biopesticide Extracted from Goat Weed Ageratum conyzoides Linn

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Tomato yellow leaf curl disease is one of the most devastating plant diseases caused by Tomato Yellow Leaf Curl Virus (TYLCV), the White Fly insect vector Bemisia tabaci and its host the Echinochloa colona weed. This project investigated the effect of local Compositae plant extracts on viral inhibition and the mortality and growth rates of insects and weeds. Comparative laboratory scale study on the efficiency of different types of the Compositae extracts on TYLCV by tissue implantation technique showed that extract of the goat weed Ageratum conyzoides could not eradicate the virus but reduced the symptom of tomato yellow leaf curl disease. The topical toxicity test of A. conyzoides extract caused high mortality rate of B. tabaci. In field test using foliar spray method, the crude extract of A. conyzoides at 0.10% w/v caused high mortality of B. tabaci and also eradicated more than 50% of the weed E. colona within 1-7 days with exposure to the sun but little damage was observed on tomato plants. Phytochemical screening of Ageratum crude extract demonstrated the existence of terpenoids, flavonoids, tannin and alkaloids. The yields of tomato fruits and income per area plantation using either A. conyzoides extract or chemical pesticide were comparable, but the cost of production using the biopesticide was decreased by 25% together with the increase in environmental benefit.

Awards Won:

Monsanto Company: Second Award of $1,500