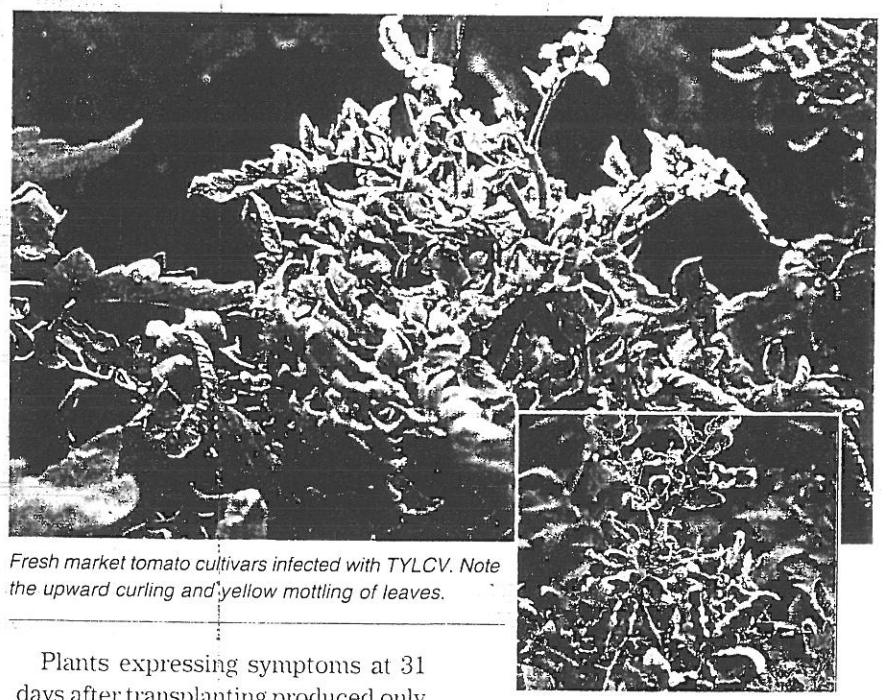
Immokalee Report

IMPACT AND MANAGEMENT OF TOMATO YELLOW LEAF CURL VIRUS ON TOMATO IN SOUTHWEST FLORIDA

By Philip A. Stansly and James M. Conner

Anyone who has seen TYLCV in the field cannot help but be impressed by the severity of symptoms and the obvious impact on production. Once symptoms become apparent, most blooms become necrotic and very little fruit is set. Symptoms can be expected to appear 10 to 15 days after virus inoculation by the whitefly, depending on growing conditions. Consequently, protection against TYLCV early in the crop cycle is critical as with all virus diseases of vegetables. Nevertheless, the impact of each disease on yield is different, and it is useful to have some quantitative measure of expected losses as a function of crop age at the time of symptom appearance to aid in prioritizing management decisions.



Fresh market tomato cultivars infected with TYLCV. Note the upward curling and yellow mottling of leaves.

Last spring, we evaluated reflective mulches and insecticidal control of whitefly in two separate trials. Incidence of TYLCV was considerable, so we took advantage of the opportunity to evaluate the impact of virus infection on yield. Plants showing symptoms of TYLCV were flagged every 3 or 4 days and harvested once individually. The effect of first symptom expression on yield was analyzed by regression.

Plants expressing symptoms at 31 days after transplanting produced only 5.5 percent (number of extra-large fruit) and 18.0 percent (total fruit weight) of the yield of uninfected plants. Yields increased steadily as time to first symptom expression increased in a strong, linear relationship. However, even plants showing symptoms 56 days after transplanting produced only 53 percent the number of large fruit and 73 percent of the weight of all fruit compared to uninfected plants. There was no significant effect of infection on average fruit weight, indicating that TYLCV affected yield by reducing fruit number rather than fruit size.

Our results emphasize the importance of controlling early movement of TYLCV into the crop. Not only is this

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disease devastating to young plants, but it is difficult to eliminate all impact on production with any treatment when the virus shows up early. Growers can best guard against early virus infection by the following practices: (1) Finish the previous season's crop as early as possible and maintain fields clean when not in use. This will maximize the length of the crop-free period and reduce primary virus and vector innoculum. (2) Do not plant near infected fields (whiteflies have been seen to spread TYLCV up to 5 miles.) (3) Use transplants that have not been exposed to viruliferous whiteflies. (4) Consider using reflective mulch to repel whiteflies from young plants. (5) Make a drench application of a systemic insecticide like Admire ® (imidacloprid) at or soon after transplanting. (6) Follow up with foliar applications of different insecticides as needed, keeping in mind that insect growth regulators IGRs like Knack® (pyriproxyfen) and Applaud® (buprofezin) provide excellent control but act slowly by suppressing egg hatch and development of immatures. (CTV)

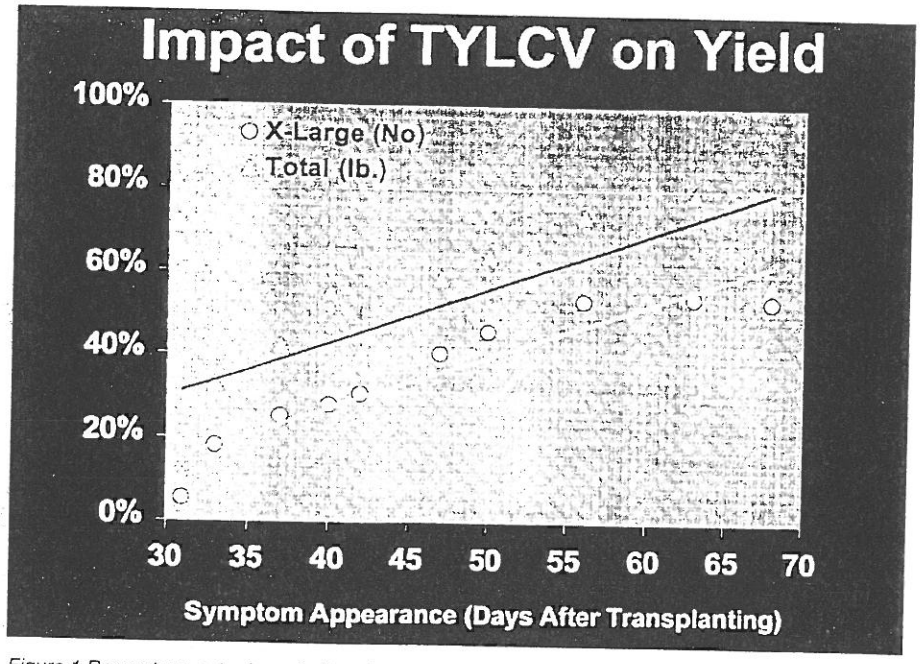

Figure 1 Percentage extra large fruit and percentage total weight of fruit per plant by day of first symptom expression compared to uninfected plants.

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