

Applied methods to control Beet Leafhopper and lessen the incidence of Curly Top virus on tomato

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Situation

The southwestern area of the United States including Nevada, Arizona, Utah and California experience serious losses from Curly Top (CT) on tomato nearly every year. Losses reported by market growers and home gardeners are reported to be as high as 95 percent in Utah. CT is a virus disease that is transmitted by the Beet leafhopper. It is thought that hoppers pick up the virus from weeds in uncultivated areas and transmit it to tomato fields and home gardens. Once plants are infected, symptoms will show in 7-10 days, and there is no cure. Plants will decline, lose vigor, and few if any tomatoes will be harvested.

In 2007, 2008 and 2009 we planted the varieties Row Pack, Columbian, and Roza, which had been advertised as being CT resistant. During each season, these varieties along with others, became infected and died. Concluding that the resistance found in varieties that are currently available, is not a reliable control of CT, we have begun to look at other options.

Objective

Light-weight row covers made from spun-bonded polyester material have been used for more than 20 years as a method to protect young vegetable plants from late frost. One report from California attributed a decrease in whitefly-transmitted virus diseases on squash (Natwick), to the use of row covers. Although, this method may be useful in preventing CT as well, it hasn't been tested or documented. We plan to use row covers to exclude leaf hoppers from tomato plants. We will document the presence of hoppers using sticky boards. The incidence of CT disease will be documented, including when symptoms show, and on which varieties they appear.

Procedures

Master Gardeners and commercial growers will plant transplants after last frost (April 1-15). Two popular home garden varieties and two commercial varieties will be used for the study. Selected plants will be protected by row covers and others will be left uncovered (control). Sticky boards will also be placed in the garden area and monitored weekly for leaf hoppers. Plants will be monitored every other day for virus symptoms.

Data Analysis

Four varieties will be planted in six replications. The “SAS” computer program will be used to determine if disease incidences are statistically different due to row cover treatment and/or variety.

Educational Outreach, Products and Evaluation

Results will be presented in talks given to home and commercial growers at winter meetings. A factsheet will be developed on this method if it prevents tomatoes from getting CT. Once results are presented to tomato growers, a survey will be conducted to see if row covers are actually being used to prevent CT infection. This information would also be suitable for a trade publication such as Organic Gardening or Horticulture magazine. A talk or poster on the entire project would also be given at a professional meeting such as the National Association of County Agricultural Agents.

Budget

<u>Item</u>	<u>Cost</u>
Tomato transplants	\$ 60
Plastic mulch	80
Sticky traps	70
Fertigation	200
Drip Tape	140
Row Cover	<u>250</u>
Total	\$800

Literature Cited

Natwick, E., Alfonso, D. Polyester Covers Protect Vegetables From Whiteflies and Virus Disease. California Agriculture (July-August 1985). Retrieved November 2009.
<http://ucce.ucdavis.edu/files/repositoryfiles/ca3907p21-62879.pdf>