

# Curly Top Resistant Tomato Varieties For Southern Utah

## 2006 IPM Mini-grant Proposal

### Project Leaders:

Rick Heflebower, Horticulture Agent, Washington County

Chad Reid, Agriculture Agent, Iron County

### Specialists (advisors):

Dan Drost, Vegetable Specialist, Utah State University

Diane Alston, IPM Coordinator, Utah State University

### Cooperators:

Larry Hancock, Sandia Nursery

Southern Utah University Greenhouse

Aviva Maller, Springdale

Joe Odd, Washington

Larry Ward, New Harmony

## Curly Top Resistant Tomato Varieties For Southern Utah

### **Situation**

Curly top (CT) is a serious disease on tomatoes and other vegetable crops in the western states. This virus is harbored in weeds, such as mustard, and Russian thistle where it is found in rangelands and vacant lots. It is felt that the beet leafhopper picks up the virus while feeding and transmits (vectors) it to cultivated plants. The warmer regions of the desert southwest provide a suitable overwintering area for the beet leafhopper, where they come in contact with the virus before migrating north in the spring (Thompson).

Control of the beet leafhopper is difficult as their emergence is erratic and determined largely by unpredictable weather patterns. To apply insecticide when first noticed is of little use, as they only need to feed once on a plant to cause infection. Infected weeds are symptomless, and even if infected plants could be identified, removal over many acres of rangeland is not practical.

### **Background**

During the 2002 and 2003 growing seasons, numerous cases of curly top were reported on tomatoes in southern Utah. Small acreage growers in Washington and Iron counties suffered as much as 80-90% losses. The same growers reported approximately 50% loss in 2004. Dan Drost, USU Vegetable Specialist, has suggested using resistant varieties as the most practical means of control. Four tomato varieties, thought to be resistant, are available through Washington State University.

In the Spring of 2005 seeds of the tomato varieties, Roza, Columbian, Rowpac, and Salad Master were obtained from the Washington State University Extension Service. Larry Hancock, owner of Sandia Nursery in Washington, agreed to plant seeds of each as part of his Master Gardener volunteer service. Eight Master Gardeners grew the four varieties and provided written comments about them. A greenhouse located at Southern Utah University also grew plants for a later planting in Iron county. Many positive comments were received and no CT was reported on any of the resistant types. It is significant to note that CT was found on at least two (non-resistant) varieties that were grown beside the Washington State varieties.

### **Justification**

With one trial season under our belts, and a growing interest in the CT resistant tomato varieties from Washington State, we plan to propagate more plants in 2006 and get them out to more growers for trial. The reports from Master Gardeners were favorable, and we would like to get the varieties into the hands of a few fresh market growers this season. We will select two of the CT varieties (Columbia and Roza) that seem to have the most potential for marketing and home production for trial in 2006.

### **Procedures**

Propagation of tomato plants is to begin in February at Sandia Nursery. Plants will be distributed in early April to growers to be planted after danger of frost is past. The Iron county schedule will follow 3-4 weeks later with the cooler growing season. Each grower

will receive two non-resistant varieties in addition to the CT resistant varieties. We will plant two commercial sites and six Master Gardener sites. Participants will evaluate each variety during the season and include the following information:

Planting date

Date of first fruit

Report incidence of disease (when, which varieties, etc.)

Quality ratings to be included on size, flavor, color, and texture

Market potential

A survey checklist will be provided to each cooperator to help in gathering the needed information. In at least two of the locations, yield data will be collected (in addition to the other information) throughout the season. Surveys and yield data will be analyzed in order to draw conclusions and make comparisons on all varieties in the study. Mulch will be used to curtail weed growth.

### **Experimental Design**

In the two larger fields, where yield data is to be taken, tomatoes will be planted in a randomized design. Each plant will be represented in every row and replicated 4 times. In the smaller gardens replication may not be possible due to space constraints.

### **Outreach**

Little information is available on the CT resistant tomato varieties. We plan to publish our results in one of the trade magazines (American Vegetable Grower, Organic Gardening). A bulletin will also be prepared giving a description of each variety.

### **Proposed Budget**

Germination, transplanting, etc.	\$600
Seed	\$200
Land preparation	\$250
Fertilizer	\$130
Mulch	\$250
Travel	\$320
Printing costs	\$250
Total Request	\$2,000