

Utah IPM/SA Mini-Grant Final Report for 2012

Project Title: Evaluation of grafted tomato plants for heat stress and disease resistance

Location: Washington County

Total Grant Award: \$625

Principal Investigator: Rick Heflebower, Horticulture Agent

Advisor: Dan Drost, Extension Vegetable Specialist

Cooperator: Tammy Mitchell, Master Gardener

Summary of Project: Grafting tomato plants has been reported as a possible solution to “tomato short life”. Short life is when tomato plants die before they are old enough to have fruit and is usually attributed to insect feeding, disease pressure, or temperature extremes. “Heirloom” tomatoes are being grown on grafted plants to overcome some of these problems. “Heirlooms” are older varieties that lack the vigor of modern hybrids, but have a taste that is preferred by many people. By combining vigorous root stocks that have resistance to disease with heirloom varieties, growers have been able to extend plant life and increase yield ¹. Grafted plants however, are not readily available and may cost as much as \$6 per plant from mail order suppliers². The high cost is another reason why growers may consider grafting their own. In many of the southwestern states including Utah, Nevada, and Colorado we attribute most of our tomato problems to Curly Top Virus. Curly Top is spread by the Beet Leafhopper. Pesticides and row covers have been shown to reduce the number of infected plants in a given season, but no varieties have been found that have adequate resistance to prevent infection³. It is unknown as to whether grafted plants may have sufficient vigor and resistance to overcome Curly Top.

1 Rivard, and Louws, North Carolina State University Extension
<http://www4.ncsu.edu/~clrivard/TubeGraftingTechnique.pdf>

2 Johnny Select Seeds Catalog

3 Heflebower, Reid, Frank and Evans, Utah State University Extension
<http://extension.usu.edu/files/publications/factsheet/curly-top-tomato08.pdf>

Objectives of Project: Graft the tomato varieties ‘Celebrity’, ‘Mountain Fresh’ and ‘Shady Lady’ to ‘Maxfort’ rootstock for evaluation. Evaluate the performance of the grafted plants to the same varieties on their own roots.

Results of Project: Due to high winds experienced the week after plants were set in the field all grafted plants, as well as many of those on their own roots (ungrafted plants), were broken just above the soil line. Several days of persistent wind, shifting at times from north to south were more than the transplants could handle. Not enough survived to compare bloom, ripening, fruit size or tier ability to resist Curly top virus.

Evaluation and Impact: I was able to successfully graft the three varieties mentioned above and report on the technique using a Power Point at the Utah Association of County Agricultural Agents Meeting.

Educational Outreach

A factsheet describing how to graft tomatoes is in the works. There is also the possibility of a video being produced that will demonstrate how to successfully graft tomatoes.

The presentation “Tomato Grafting; Counting the Cost” was given at The Utah Association of County Agricultural Agents Meetings in 2012.

Educational Products Produced

Abstract: Tomato Grafting; “Counting the Cost” was published in the Proceedings for the 2012 Summer Meeting of the Utah Association of County Agricultural Agents. A Power Point under the same title was developed and used for a presentation during the meeting (Electronic versions required).