

## Title: Western Flower Thrips Management in Field Staked Tomatoes

### Report to: Pennsylvania Vegetable Marketing Research Program

#### Personnel:

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#### Introduction:

Western Flower Thrips (WFT) infestations are a growing source of concern for tomato growers. Educator experience with client growers, direct field experience in research trials and more recent research conference calls all indicate increased presence of WFT in field staked, machine harvested and high tunnel tomatoes. WFT does both direct feeding damage and is a known vector of several virus diseases. This project was to evaluate a number of strategies for managing WFT in field staked tomatoes including pyrethroid-based, non-pyrethroid-based, an organic regimen and newer mode-of-action based.

This trial was installed at the Penn State Southeast Agricultural Research and Extension Center (SEAREC), aka. Landisville Farm. Each treatment was replicated 4X in a randomized block pattern using Scarlet Red and Primo Red red, slicing tomatoes. As management of WFT in paste tomatoes is also a concern, the paste tomato variety Pony Express was included in each block. All tomatoes were staked using a modified Florida Weave. All tomatoes received the same preventative disease management program. Tomatoes were to be evaluated for WFT levels by examination of fruit samples, blue sticky cards in rain-shielded enclosures, and direct flower scouting.

#### Objectives:

- Evaluate current insect control materials and tactics for their ability to manage WFT infestations.
- Evaluate newer 'biological' pest materials for their ability to control WFT's as compared to current BMP's for control.
- Measure WFT levels in the field for 2014 in order to establish a baseline for future work.

#### Work Plan:

Weekly fungicide applications were based on the 2014 Penn State Vegetable Guide recommendations in order to eliminate disease management as a variable. The fields

were fertilized prior to plastic mulch installation based on nutrient management recommendations from preplant soil testing.

Once planted, nutrient injections and foliar nutrient applications based on tissue analysis were applied on a bi-weekly schedule. Tissue testing from a composite sample of varieties and plots were collected on a bi-weekly basis.

All fruit were to be counted, rated as to #1, #2, or cull and evaluated for WFT (and other insect) damage. #1 and #2 fruit will be sized and weighed. Plants were also to be evaluated for virus and related WFT damage.

#### Results:

Approximately three weeks before the first harvests were to begin on Primo Reds (our earlier variety), Bacterial Canker was identified in the field. We applied foliar copper (Badge SC) with Regalia alternated with Mancozeb plus copper and Greenstim, plus Regalia through the fertigation system in an attempt to slow the progress of the disease enough to collect some data. At the same time, the field was culled of obviously infected plants. After the initial culling, we still had approximately 90% plant population in the field and what appeared to be enough healthy plants to run the trial. 10 days later, it was necessary to remove more infected plants even under this very intensive application regimen. Once we were down to less than 70% of the original planting, it was clear that the trial insecticide program was going to be unable to proceed. The entire field was stripped of plants and stakes by late July. No data was collected.

It was also observed in 2014 that WFT field infestations were substantially less than that seen in 2013. In order to get the most out of any future similar studies, it is the belief of the PI that all insect and mite population levels in subject crops be included vs. just WFT.