

Title: Tomato Commodity Survey 2013

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Abstract:

A CAPS (Cooperative Agricultural Pest Survey) of tomatoes was conducted for one exotic insect pest and three exotic tomato diseases as well as one disease known to occur in NY. A total of 11 farms in 11 counties were surveyed bi-weekly for both the insect and disease pests. Suspect samples were sent in to either Cornell's Insect Diagnostic Lab or Cornell's Plant Disease Diagnostic Clinic. Only bacterial canker, known to occur in NY, was discovered. This was found in 5 of the 11 sites.

Background and justification:

Fresh market yield of tomatoes in New York was valued at \$47.2 million in 2012 making NY the 6th largest tomato producing state based on production value. This is a 66% increase in production value since 2010, primarily due to a 39% increase in yield per acre ([2013 USDA Annual Vegetable Summary](#)). With such a highly valuable crop, early detection of exotic pests is critical to the crops protection and potential pest eradication.

A survey targeting three diseases and one insect pest was conducted throughout New York. Two of the diseases are bacterial, bacterial spot, *Xanthomonas gardneri*, which is found in Ohio, Pennsylvania and Michigan but not in New York and bacterial Wilt, *Ralstonia solanacearum*, which is found worldwide except for USA and Canada. The third is a viral disease, whose causative agent is a previously unknown virus found in both Pennsylvania and Virginia in 2012. The insect pest, tomato leafminer (TLM)– *Tuta absoluta*, has not been found in the US. TLM is native to South America and was first detected in Spain in 2006. It has continued to spread throughout southern Europe and northern Africa. It is considered a serious pest in both its native range as well as introduced areas. In addition to the exotic pest/diseases, samples were also collected for bacterial canker, *Clavibacter michiganensis* subsp. *michiganensis*. This disease is known to occur in NY but a better understanding of its spread and most commonly found isolates is needed.

Objectives:

- Survey, using APHIS approved protocols, traps and lures, for tomato leaf miner (*Tuta absoluta*) in tomato fields. Submit any suspect samples to Cornell University Insect Diagnostic Lab.
- Monitor and scout tomato fields bi-weekly for symptoms of the 4 target diseases. Submit any suspect samples for determination.

Project location(s):

Surveys were conducted on tomato farms in Albany, Cayuga, Columbia, Erie, Genesee, Niagara, Onondaga, Schoharie, Tioga, Wayne, and Yates counties.

Procedures:

We followed the [CAPS approved survey method](#) to survey and monitor for *Tuta absoluta* (TLM). Protocols for the three exotic diseases were created and used to monitor for bacterial spot, bacterial wilt and the unknown virus. We also surveyed for bacterial canker at the time of the other disease surveys.

Traps for TLM were initiated mid to late July throughout western, central and eastern NY (Fig.1) and checked every two weeks. One trap was set up per acre of tomatoes for a total of 22 traps. Any suspect insect samples were collect and sent to Jason Dombroskie of Cornell's Insect Diagnostic Lab. Lures were replaced every four weeks according to protocol. A disease survey was also conducted every two weeks and any suspect samples were collected, placed into labeled Ziploc bags and stored in a cooler. Disease samples were initially screened by Dr. Chris Smart of the New York State Agricultural Experiment Station (NYSAES) and then sent out to Cornell's Plant Disease Diagnostic Clinic if warranted. Surveying and trapping continued until late August or mid October depending on site (Table 1).

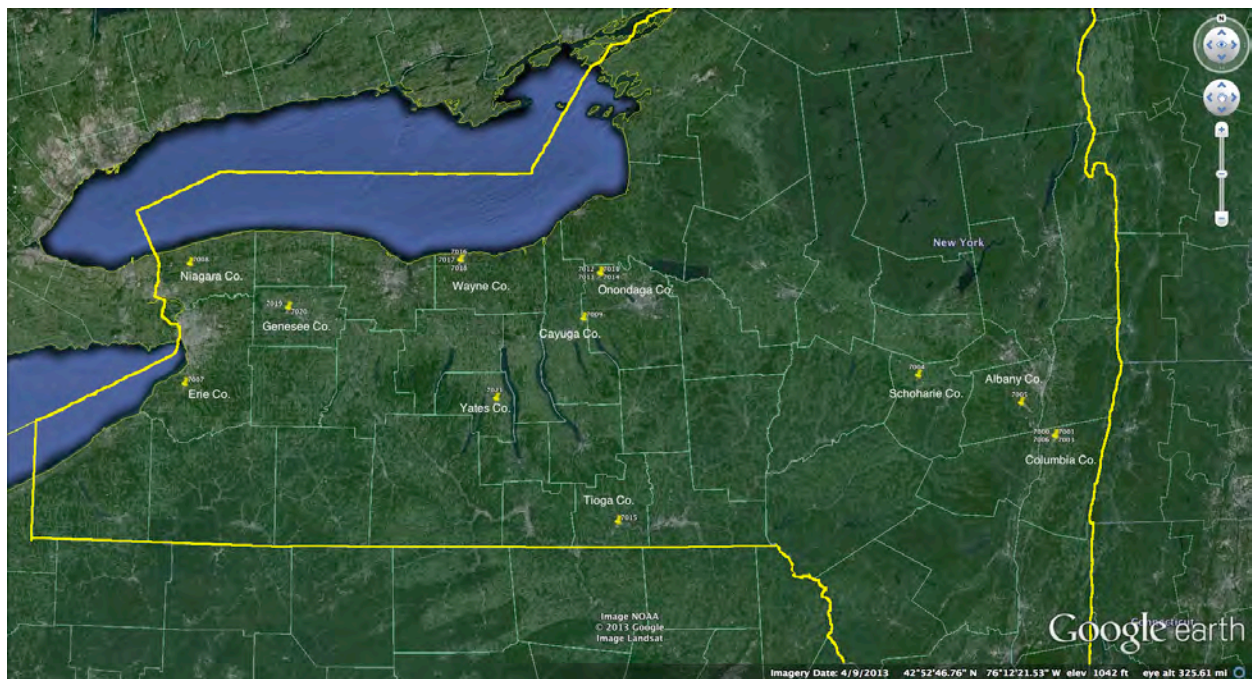


Figure 1. Map of NY showing the placement of the 11 survey sites.

Table 1. County locations for the 11 sites, including total tomato acreage surveyed, start and end dates, total services for the season, and results for TLM (tomato leafminer), BW (bacterial wilt), BS (bacterial spot), UKV (unknown virus) and BC (bacterial canker).

County	Acre	Start Date	End Date	# Services	TLM	BW	BS	UKV	BC
Albany	1	7/22/13	9/6/13	3	0	0	0	0	0
Cayuga	1	7/11/13	10/16/13	7	0	0	0	0	1
Columbia	5	7/19/13	8/30/13	3	0	0	0	0	0
Erie	1	8/6/13	10/1/13	4	0	0	0	0	0
Genesee	2	7/17/13	10/24/13	7	0	0	0	0	1
Niagara	1	7/30/13	9/24/13	4	0	0	0	0	0
Onondaga	5	7/11/13	10/16/13	7	0	0	0	0	1
Schoharie	1	7/19/13	9/9/13	4	0	0	0	0	0
Tioga	1	7/16/13	10/24/13	7	0	0	0	0	0
Wayne	3	7/17/13	9/25/13	5	0	0	0	0	1
Yates	1	7/16/13	10/10/13	6	0	0	0	0	1

Results and discussion:

Of the 11 farms surveyed, no exotic pests were found during the span of this survey. Two insects were submitted to the insect diagnostic lab and both came back negative as *Tuta absoluta*. Only one sample of potential bacterial spot was submitted to the plant disease diagnostic clinic and it too came back negative for *Xanthomonas gardneri*, and was identified as *Xanthomonas perforans*, one of a complex of four *Xanthomonas* species causing bacterial spot in tomato.

In addition five samples were submitted to Dr. Chris Smart at the New York State Agricultural Experiment Station (NYSAES) as potentially having bacterial canker *Clavibacter michiganensis* subsp *michiganensis*. (Figure 2). All five samples were positive and the growers were notified and advised on possible treatments. During the survey other diseases were detected, including late blight, sour rot, blossom end rot, and white mold, growers were immediately informed and advised on treatment options.



Figure 2. Bacterial canker on tomato in Genesee County on August 14, 2013.