Final Report – NYS IPM grant 2012

Targeted outreach to growers and service providers dealing with disease introduced by 2011 flooding

Project leader(s):

Laura McDermott and Crystal Stewart, Cornell University Cooperative Extension Eastern New York Commercial Horticulture Program (CCE ENYCHP, formerly Capital District Vegetable and Small Fruit Program)

Cooperator(s):

- Dr. Chris Smart, Cornell University, NYSAES, Geneva, NY
- Dr. Michael Mazourek, Cornell University, Ithaca, NY
- Dr. Margaret McGrath, Cornell University, LIHREC
- Chuck Bornt, CCE ENYCHP

Abstract:

Flooding in 2011 spread *Phytophthora capsici* into fields with no history of the disease. Growers who have not managed *P. capsici* previously could inadvertently and permanently spread the disease to additional fields and could experience high rates of crop loss due to improper management of the disease. A series of three webinars and articles on identification and proper management of this disease will reduce the probability of these negative outcomes on eastern NY farms. This efficient outreach, combined with traditional field meetings and the development of a management checklist will help us reach growers quickly and effectively.

Background and Justification*:*

The catastrophic flooding associated with Tropical Storms Irene and Lee in the fall of 2011 not only did millions of dollars of damage to farm fields, buildings, crops and equipment, but the floodwater carried with it a fungal pathogen that will provide an unwelcome reminder of the floods for years to come.

Phytophtohora blight is caused by the water mold *Phytophthora capsici* and causes fruit rot, rapid wilting, and plant death in many vegetables of high importance to fresh market farms. Storm flooding introduced the pathogen into fields with no history of the disease. The long lived spores create a management challenge because of their wide host range, as well as the ease in which they "move". Spores can be transported on soil that clings to farm machinery, on cull fruit, and in water which is intentionally introduced in the form of irrigation or unintentionally by flooding. The introduction of *P. capsici* spores infects "clean" fields and growers who have not managed *P. capsici* previously could inadvertently and permanently spread the disease to additional fields and could experience high rates of crop loss due to improper management of the disease.

Prior to the flooding events in 2011, Eastern NY state, specifically in the mid and lower Hudson Valley and eastern Long Island, had been identified as having many production fields infected with *P. capsici*. Work done by Dr. Chris Smart identified surface water irrigation ponds and some streams as has having *P. capsici* spores present. Dr. Margaret McGrath has been conducting research into cover crops and fungicides as *P. capsici* management tools and Dr. Michael Mazourek has been working on *P. capsici* resistant cultivars of several crops – some of the lines have been tested in Eastern NY fields known to be infested.

Because of the research done by Cornell University scientists, extension educators were aware that *P. capsici* infection would likely increase dramatically during the 2012 growing season. This was born out during seasonal inspections of target fields making educational outreach imperative.

To address this need, three webinars were held during the fall of 2012. The webinars discussed disease identification and short and long term disease management. The webinars were recorded and posted on the Eastern NY Commercial Horticulture program website. These recordings, in concert with more traditional forms of outreach like newsletter articles, fact sheets etc., have provided in-depth, flexible and complete educational resources for farmers. Improved access to this information will reduce the probability of farmer created *P. capsici* infection on Eastern NY vegetable farms. Specifically, farmers will be able to identify infested fields and know how to manage those fields for short and long term sustainability. Growers that do not have infested fields may need to alter management strategies to lower the risk of P. capsici infection.

This project addresses tomato, pepper and cucurbits and IPM priorities listed in the IPM RFA: "Addressing Phytophthora blight issues related to 2011 ENY flooding". Educational efforts will result in a better understanding and utilization of:

- farm irrigation water quality
- the importance of erosion and flooding prevention techniques
- the necessity of crop rotation
- the importance of improving field drainage through the use of sub-soiling/soil "ripping"
- the necessity of using resistant/tolerant varieties
- the importance of including cover crops in a crop rotation
- the importance of rotating fungicide chemistries in a spray program.
- the importance of good sanitation (ie managing culls and refuse) in an affected crop system.

Improved understanding and adherence to best management practices of P. capsici will help reduce the use of pesticides and should also have a positive impact on soil health characteristics.

Objectives:

- Growers can identify *P. capsici* infested fields based on plant symptoms
- Growers know how to manage *P. capsici* fields to minimize crop loss and disease spread.

- Growers are aware of management techniques that may reduce disease severity in the future.

Procedures:

The webinars were broadcast during the fall of 2012 on these three dates: September 27th, October 25th, and November 15th. Farmers could log on from their home computers or could attend the broadcast at physical sites located in Riverhead, Highland, Schoharie, Troy and Middletown. The average attendance at the webinars was 12 people, with just a few growers attending in person. The tracked viewership of the webinar recordings indicates that nearly 100 people have viewed at least one of the webinars.

Additionally, CCE county educators participated in the program, allowing the project to act as an unintended "train-the-trainer" event. The 6 extension educators that received training via the webinars reported to have worked with 25 farmers on P.cap related management issues. The CCE project leaders/collaborators have worked with 65 growers specifically on Pcap related topics. This includes farm visits, pest ID, management consults discussing fungicide rotation and choices and deep tillage consults.

Related newsletter articles did appear in CCE Veg Edge publication with a circulation of 431 throughout the winter of 2012-13, and information from the webinars continue to be extracted and developed into written material. The estimate of viewership of the recorded webinars is nearly 100 hits. Develop a webinar and newsletter article entitled

The titles of the three webinars were:

- "How do I know if I have P-Cap in my fields?" taught by Dr. Chris Smart.
- "Farming with P-Cap: Managing your crops and minimizing spread" taught by Dr. Michael Mazourek and Dr. Chris Smart.
- "Management practices to reduce P-Cap" taught by Dr. Margaret McGrath and Dr. Chris Smart.

DEC credits were made available for the 2nd two webinars. This was the first time NYS DEC had issued pesticide application recertification credits for webinars.

Expected Outcomes/Impacts:

We exceeded the number of farmers reached by the newsletters and field meetings (estimated 200, touched nearly 500), but did not reach our goal for number of farmers attending or access the webinar and/or recordings. The growers served by this project represent a conservative estimate of 2500 acres of farmland. The economic benefit to the vegetable industry would be several millions of dollars. This figure may be a gross understatement given that if cropland is infested it becomes ineligible for planting certain economically important vegetable crops. This is a huge problem for eastern NY farmers, many of whom are land limited already.

An unexpected outcome was the train the trainer aspect of the program. That allowed us to reach growers in counties outside of our original project area.

A second unintended consequence was the ability of us to get permission to offer NYS DEC pesticide application recertification credits for webinars. We see this as a way to incentivize webinar attendance in the future.

The third unintended consequence is a level of comfort developed by those farmers that attended the webinars as well as for CCE educators that were using the WebEX software for the first time.

Project location(s):

Albany, Columbia, Dutchess, Fulton, Greene, Herkimer, Montgomery, Orange, Putnam, Rensselaer, Saratoga, Schenectady, Schoharie, Suffolk, Sullivan, Ulster, Warren, Washington, Westchester

Samples of resources developed:

Below are the links to the three webinars. At this time, these webinars are posted on the Cornell Vegetable teams linked websites (http://cdvsfp.cce.cornell.edu/). They are searchable on those websites through accessing the affected crops, soil health and disease pest tabs.

Webinar #1 - How do I Know if I have P. cap in my fields?

Webinar #2 - Farming with P-cap: Managing your crops and minimizing spread.

Webinar #3 - Management practices to Reduce P-cap.

Keywords for Search:

- any disease pest
- blight
- foliar disease
- fruit disease
- fungus
- root disease
- rot
- wilt
- any cucurbit
- beans - fresh & dry
- melons
- peppers
- pumpkins
- winter squash
- chemical control
- cultural control
- monitoring
- research
- resistant varieties/cultivars
- spray technology
- education