

Title:

2015 New York Sweet Corn Pheromone Trap Network (SCPTN)

Project leader(s):

Marion Zuefle New York State Integrated Pest Management Program

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Cooperator(s):

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Abstract:

Four important insect pests of sweet corn, European corn borer, corn earworm, fall armyworm, and Western bean cutworm, cause damage to sweet corn ears in their larval stage. These pests are moths in their adult stage and can be monitored using traps baited with pheromone lures specific for each species. Traps are placed near sweet corn fields to monitor moth flights. The weekly trap catch information allows growers, consultants, Cooperative Extension and vegetable processor field staff to track the flights and make informed decisions about when sweet corn fields need to be scouted or treated with an insecticide. This project is funded in part by in-kind contributions from growers and consultants who host and check traps.

Background and justification:

Sweet corn for the fresh and processing markets is an important crop throughout NY. In 2012 fresh market sweet corn was grown on 21,700 acres in New York with a value of 68.4 million dollars. Four major pests of sweet corn, European corn borer (ECB-E and ECB-Z), corn earworm (CEW), fall armyworm (FAW) and Western bean cutworm (WBC) can be monitored in their adult stage using pheromone traps. Pest management is an especially important aspect of fresh market sweet corn production because the unhusked ear is marketed, and buyers are frequently very sensitive to insect damage or the presence of larvae in the ear. Harvest quality requirements are different for processing corn, which usually receives fewer insecticide applications than fresh market corn. Integrated pest management practices are widely used on both crops to determine the need for insecticide applications. Pheromone trap catches provide valuable information to growers, consultants, and processor field staff making pest management decisions. Pheromone trap catches help growers and consultants decide when to start scouting fields for egg masses and larvae, reinforce what scouts are finding, help choose the best spray materials for the pest complex that's present, and alert the industry to the arrival of the migratory pests, CEW and FAW.

Pheromone Trap catches from western NY are an integral part of weekly pest update newsletters sent by the Cornell Vegetable Program to subscribers in eleven counties. The Trap catches are posted weekly to the [sweet corn pheromone trap network blog](#) and linked to the [NYS IPM Program website](#), the [Network for Environment and Weather Applications website](#), and posted to a regional website ([PestWatch](#)) that includes trap catches from several northeastern states, making the information available to a large number of growers and extension personnel.

An additional 12 sites in Eastern NY are also monitored weekly. Trap catches for these locations are made available to subscribers of the 16 county Eastern NY Commercial Horticulture Program (ENYCHP) as well as the regional PestWatch website.

Objectives:

1. Establish and maintain a network of pheromone traps for sweet corn pests in NY.
2. Provide regional trapping information and recommendations to extension field staff and consultants working with sweet corn growers.
3. Provide regional trapping information to growers, along with scouting and threshold recommendations.

Procedures:

1. Sets of one each of ECB-E, ECB-Z, CEW, FAW, and WBC traps were placed at each of 37 trapping locations, 25 sites in western NY and 12 sites in eastern NY (Figure 1). Scentry Heliothis net traps were used to trap ECB and CEW. The BCS/Agrisense Unitrap was used for FAW and WBC. Lures from Trece Inc. were used for both races of ECB. Lures from Scentry Inc. were used for CEW, FAW and WBC. All lures were replaced every two weeks.
ECB, CEW, and FAW traps were set up in late-May at fresh market locations, and as processing fields approached tassel emergence in other locations. WBC traps were set up in early to mid June.
Traps were placed at least 40 meters apart in grassy areas near sweet corn fields, avoiding areas near hedgerows where air circulation is poor. Heliothis traps were mounted on posts such that the bottom of the trap is ~6" above the grassy canopy. Unitraps were hung from short stakes to which angle brackets had been attached and were placed either in the field or at the edge of the field. Whenever possible, traps were moved to new fields as the previous fields matured (silks became dry) and became less attractive to moths.
2. In Western NY, cooperators checked traps weekly on Monday or Tuesday and sent trap catch numbers to Marion Zuefle via phone or email. Weekly catches for each location were collated and posted, along with interpretation and scouting and thresholds recommendations for fresh market sweet corn, on the sweetcorn.nysipm.cornell.edu website.
3. Information posted on the website was used directly by subscribing growers, incorporated into crop and pest updates distributed weekly by regional extension programs, or provided to growers via direct contact with collaborating consultants. All catches are also posted on the [PestWatch](#) website.
In eastern NY, traps were checked weekly and reported in the weekly Eastern NY Commercial Horticulture Program's newsletter as well as posted to [PestWatch](#).

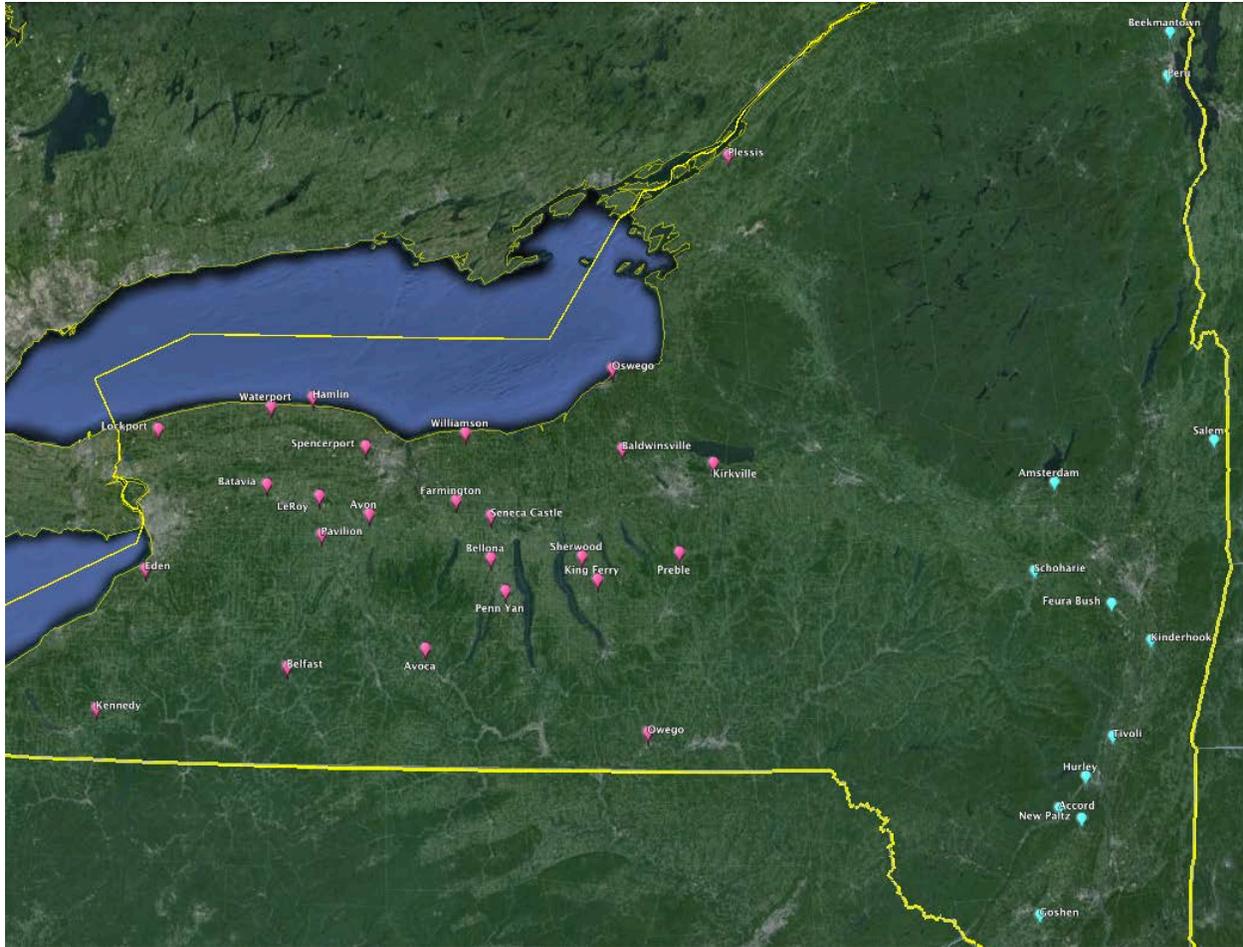


Figure 1. Map showing the 25 trap locations in western NY (pink) and the 12 trap locations in eastern NY (blue).

Results and discussion:

Results for the 25 sites in western NY are given here. European corn borer numbers remained low throughout most of the season with ECB-E showing an increase in early August probably due to the second-generation flight (Figure 2). Flights for ECB-E were higher than in 2014 but flights for ECB-Z were lower than the previous year. Both of these moths are declining overall when looking at the 22-year trend (Figure 4) primarily within the last 7-8 years. This decline has been attributed in part to the increase use of Bt field corn.

Corn earworm trap catch numbers in 2015 had a small peak in late August and averaged in the single digits for the remainder of the trapping season. The peak was much smaller as compared to 2014 when the average trap catch for all sites peak at 45 moths in mid September (Figure 3). Fall armyworm trap catches for 2015 were very similar to those of 2014. There was a small initial peak late July followed by a much larger peak in early September. Fall armyworm numbers have fluctuated over the 19 years of data and were at their highest in 2015 (Figure 5).

In 2010 we began monitoring the flight of Western bean cutworm in NY. Since that time trap catches have been steadily increasing (Figure 5). WBC flight usually begins in late July and lasts through the end of August. In 2015 the average trap catch for the 25 sites was 35 moths, the

highest reported since 2010. This was also the first year where economic loss due to WBC was observed in a fresh market sweet corn field. Greater than 10% damage was recorded in this field due to WBC.

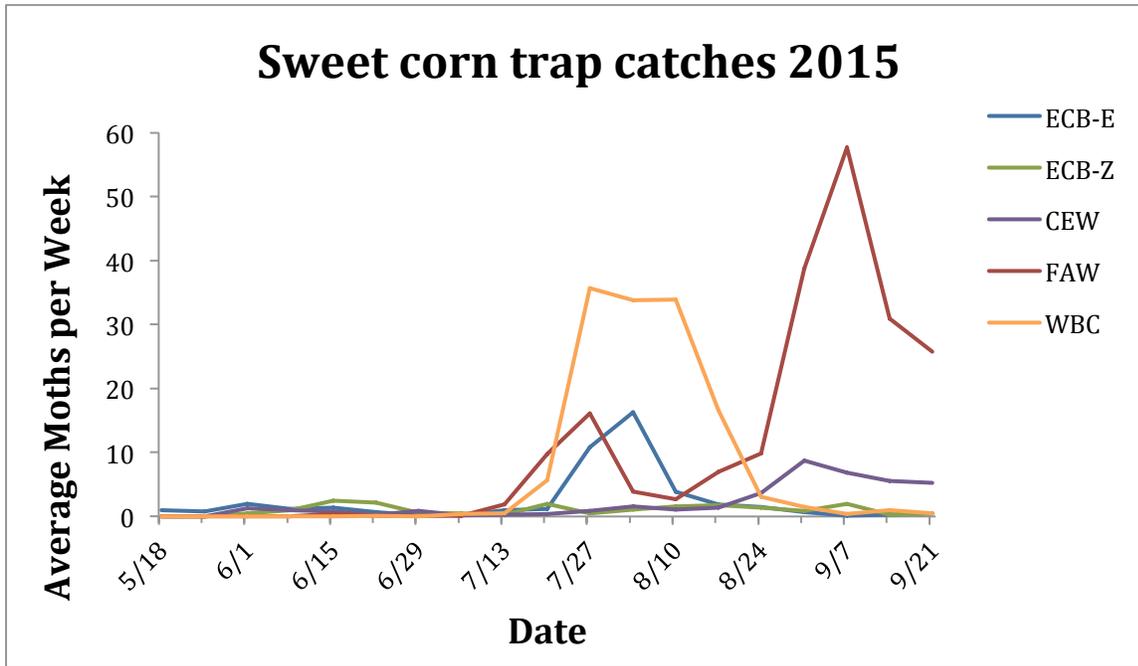


Figure 2. Average number of moths caught per week for all 25 Eastern NY sites in 2015.

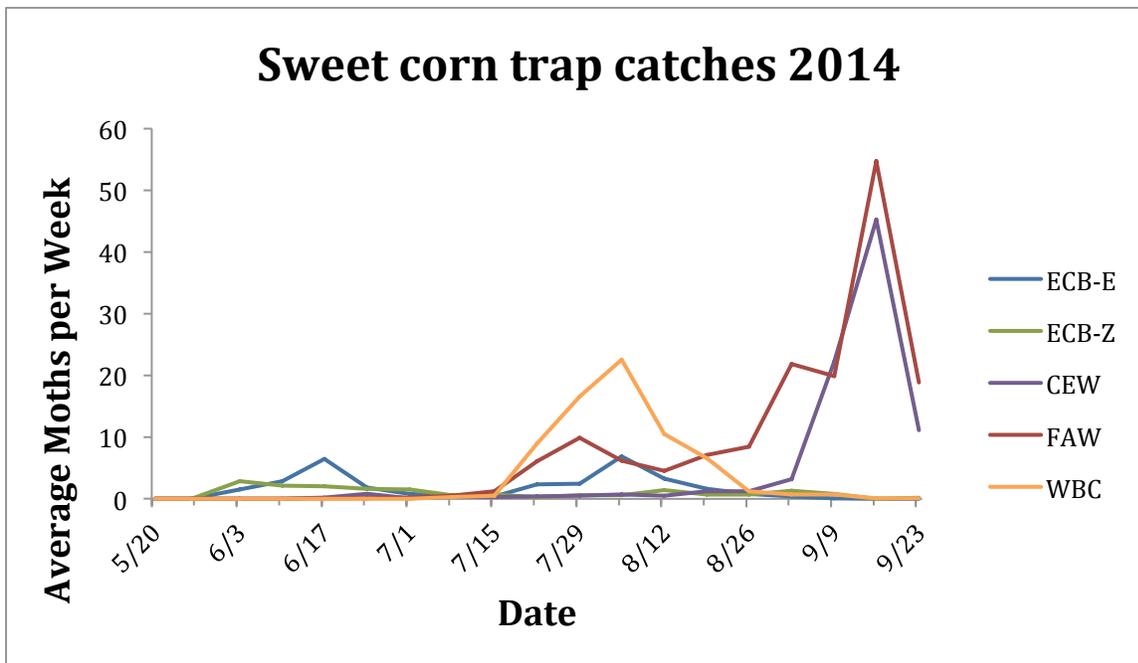


Figure 3. Average number of moths caught per week for 24 Eastern NY sites in 2014.

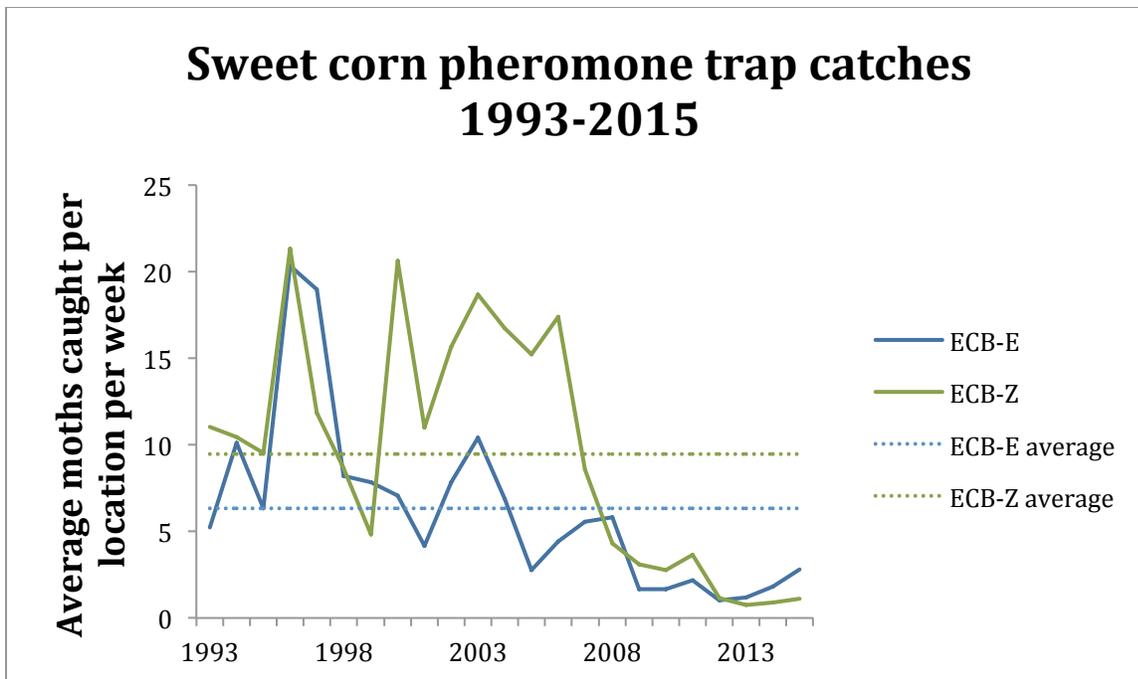


Figure 4. Average number of European corn borer, both E and Z race, moths caught per trapping location per week from 1993-2015.

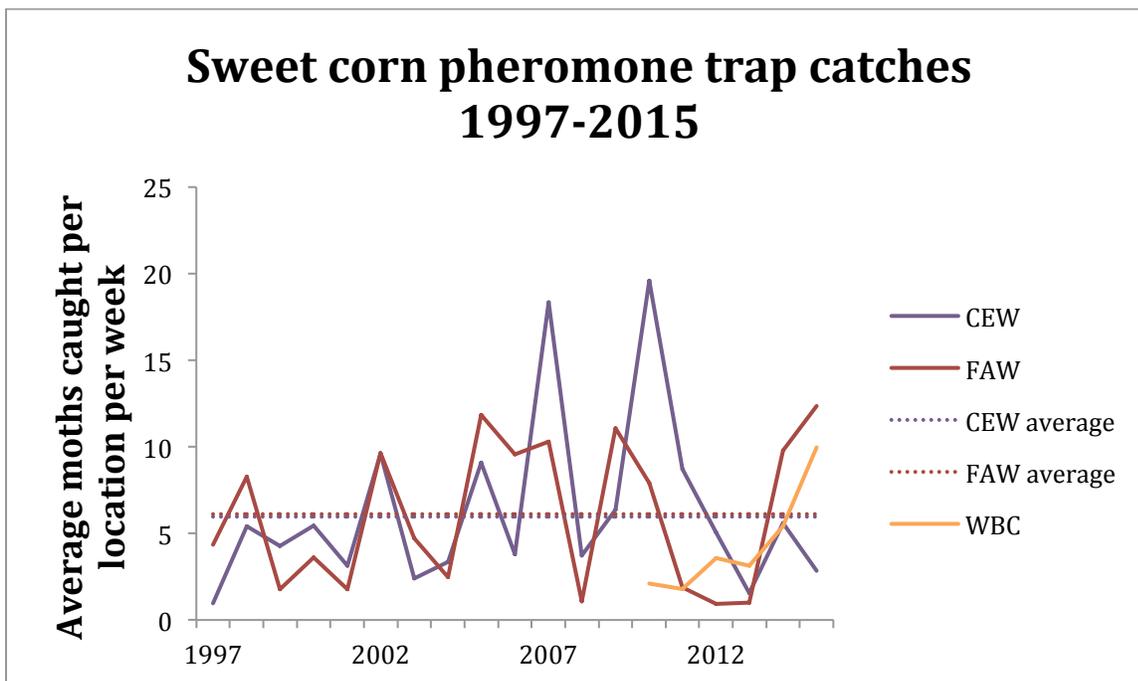


Figure 5. Average number of corn earworm (CEW), fall armyworm (FAW) and western bean cutworm (WBC) moths caught per trapping location per week from 1997-2015.

Project location(s):

Avoca, Steuben Co.; Avon, Livingston Co.; Baldwinsville, Onondaga Co.; Batavia, Genesee Co.; Belfast, Allegany Co.; Bellona, Yates Co.; Eden, Erie Co.; Farmington, Ontario Co.; Hamlin, Monroe Co.; Kennedy, Chautauqua Co.; King Ferry, Cayuga Co.; Kirkville, Madison Co.; LeRoy, Genesee Co.; Lockport, Niagara Co.; Oswego, Oswego Co.; Owego, Tioga Co.; Pavilion, Genesee Co.; Penn Yan, Yates Co.; Plessis, Jefferson Co.; Preble, Cortland Co.; Seneca Castle, Ontario Co.; Sherwood, Cayuga Co.; Spencerport, Monroe Co.; Waterport, Orleans Co.; and Williamson, Wayne Co.

Samples of resources developed:

Weekly blog posts from 5/26/15 to 9/22/145; totaling 18 posts were posted to the Sweet Corn Pheromone Trap Network Report blog found at:

<http://sweetcorn.nysipm.cornell.edu/>

There are 86 subscribers to the blog and within the last year this blog has received 2,582 page views by 843 unique visitors.