

# **New York Western Bean Cutworm Field Corn, Black Cutworm and True Armyworm Monitoring Program Progress Report (2021)**

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## **The Pest Problem**

Western bean cutworm (*Striacosta albicosta* [Smith]) attacks corn (*Zea mays* L.; including field, sweet and popcorn) and dry beans (*Phaseolus vulgaris* L.), feeding on developing kernels or beans inside husks and pods, respectively. Western bean cutworm (WBC) infestations can cause significant yield losses and may facilitate subsequent colonization by pathogens, furthering damage and impacts. This pest has become an economic issue for many growers ranging from the Midwest through the Northeast US and Southern Ontario and Quebec. Losses from this insect can be as high as 8-10% in dry beans and 40% or more in field corn grain yields. WBC was first found in New York in 2009. This pest has expanded and has steadily increased across the state since first discovered. A trapping network was established in 2010 to monitor WBC populations as they invade NYS. There were not a lot of reports of economic damage by WBC this year. We also established a migratory insect pest-monitoring network for black cutworm (BCW) and true armyworm (TAW) with 25 locations in 2021. This was useful for knowing when BCW and TAW arrived in New York, and could potentially be used to. We could calculate degree-day models from the biofix dates.

## **Monitoring Procedure:**

WBC, BCW and TAW male moths are trapped using a green “universal” bucket trap hung on posts at the edge of cornfield sites. Traps contain the pheromone lure that mimics a female scent to attract male moths. In addition, an insecticide strip is placed in the trap to kill the moths once inside. WBC trapping was initiated the second week of June and continued until early September. BCW and TAW traps were established in the field in mid April. Traps were checked weekly, and the number of moths collected was recorded. Moth capture data shared with the local and regional agricultural community through timely newsletters including the NYS IPM Field Crops Pest Report as well the use of social media and other digital venues.

## **2011-2021 Results**

Since the discovery of western bean cutworm in New York in 2009, we have monitored its progression across the state. In 2010, we established a WBC pheromone trap monitoring network. This network of Cornell Cooperative Extension Educators, crop consultants and agricultural professionals placed bucket pheromone traps to capture moths each year, targeting June through August. Each week the number of moths is reported by the location. These traps are deployed to monitor moth presence and determine the peak flight. Traps help us identify fields at risk and when scouting should take place, but we cannot use trap counts to determine when a field should be sprayed with an insecticide. In 2021, we had 25 volunteers and WBC 57 traps in 27 counties.

**Table 1. New York Western Bean Cutworm 2011 – 2021 Collection Data Summary\***

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>No. Counties</b>	23	27	32	25	25	27	27	27	27	27
<b>No. Traps</b>	27	42	52	53	48	52	70	66	63	57
<b>Avg. No. WBC / Trap</b>	69	115	169	363	310	569	479	536	478	571
<b>Range in Totals</b>	0 - 344	0 – 853	0 – 1019	0 – 1688	0 – 1662	0-2464	0-2964	0-2812	0-2316	0-2460
<b>Peak Flight Week of</b>	25-Jul	28-Jul	3-Aug	2-Aug	31-Jul	8-Aug	1-Aug	15-Aug	24-July	July-25

The total number of WBC moths captured per trap in New York by year are depicted in Table 1. In 2021, we had 59 traps (Figure1) that caught 33,690 moths with an average of 571 moths per trap. Some traps in northern NY caught from 1000 to about 2460 moths in a single trap. Northern NY is the hot spot for WBC, and the number of moths caught in this region of the state far exceeds the rest.

When looking at the average number of moths caught per trap in 2021, 77% of the traps caught more than 100 moths and only 9% caught less than 20 moths. St.Lawrence had a single seasonal trap accumulation of 2,460 moths. The range of trap counts were 0 to 2,460. The average was 571 moths/trap. The average number of moths caught per trap is the most ever in NYS. In wet summers, the numbers are higher than in drought conditions. This seems to be the case this year.

A very important aspect of managing WBC is knowing when peak flight occurs. The annual peak flights are outlined in table 1. Peak flight for this year was the week of July 24<sup>th</sup>. By knowing the peak flight, you know when most of the moths will be laying eggs in pre-tassel corn, because the female moths prefer to lay eggs on this stage of corn growth. And this peak flight time is when we should be vigilant about scouting for WBC egg masses and small larva.

We did have high trap counts in 2021 in Northern NY. The rest of the state had much lower populations this year. Figure 1 shows that WBC has established statewide and has leveled off.

## Average Number Moths Caught Per Trap 2010-2021

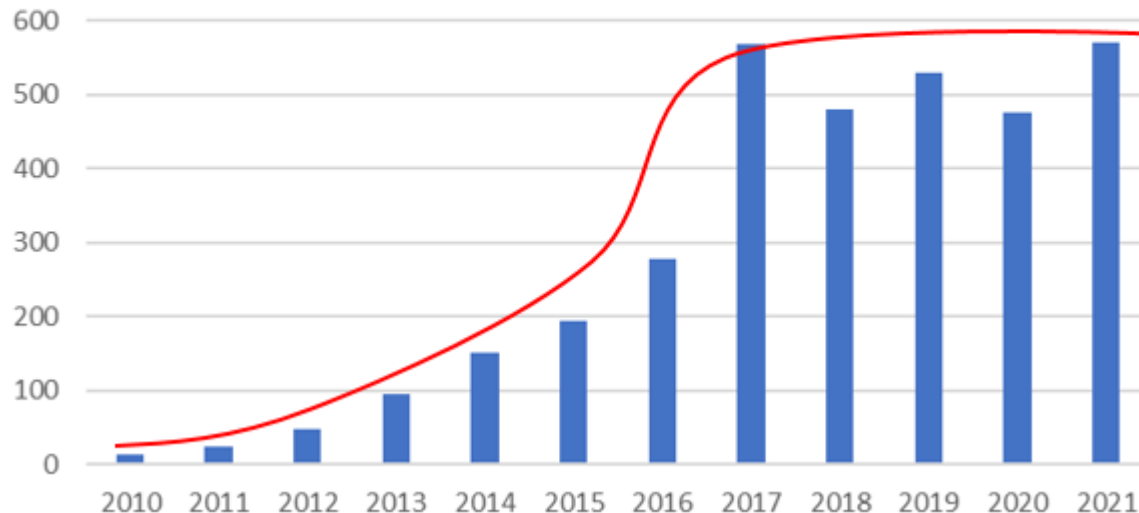


Figure 1: Average number of moths caught per trap from 2010-2021

Alt text: The bar graph shows the average number of moths caught per trap from 2010-2021

### Migratory Insect Pest Monitoring Network-Black Cutworm and True Armyworm

Black cutworm(BCW) were found at moderate to high levels around NYS in forage grasses, small grains and corn this growing season in several areas of NY. True armyworms (TAW) flight counts were very low this year and was not a problem in fields.

These migratory insect pests travel on weather fronts from the South and Midwest. We developed a pheromone trapping network to better understand when they arrived and at what levels. We were able to alert farmers, extension field staff and crop consultants about the potential infestations. Many extension educators and crop consultants educated the growers on correct identification and how to assess a population in the field to determine when management efforts might be needed. Armyworm was not a problem in NYS in 2021. Figure 2 and 3 indicates the number of BCW and TAW moths caught in 20 traps across the state by week.

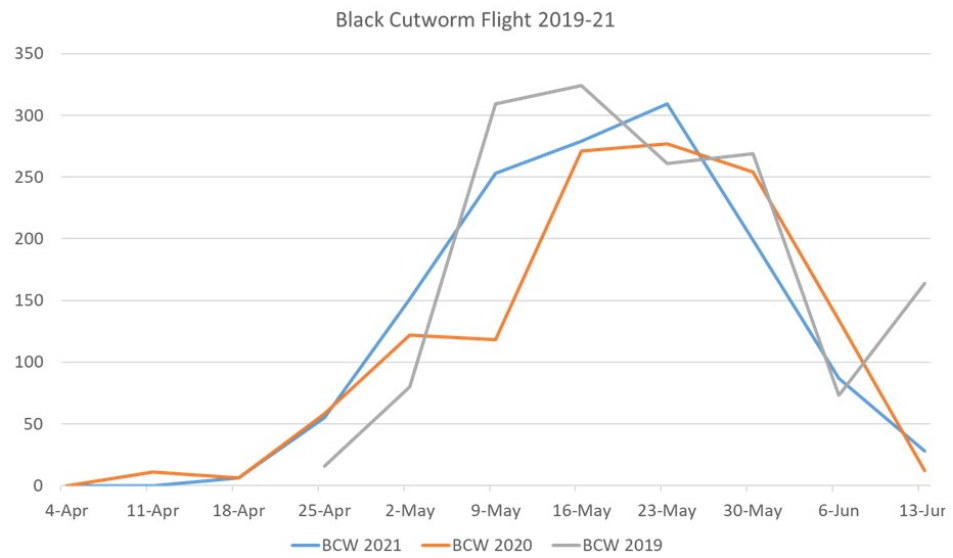


Figure 2: Black Cutworm Weekly Trap Count

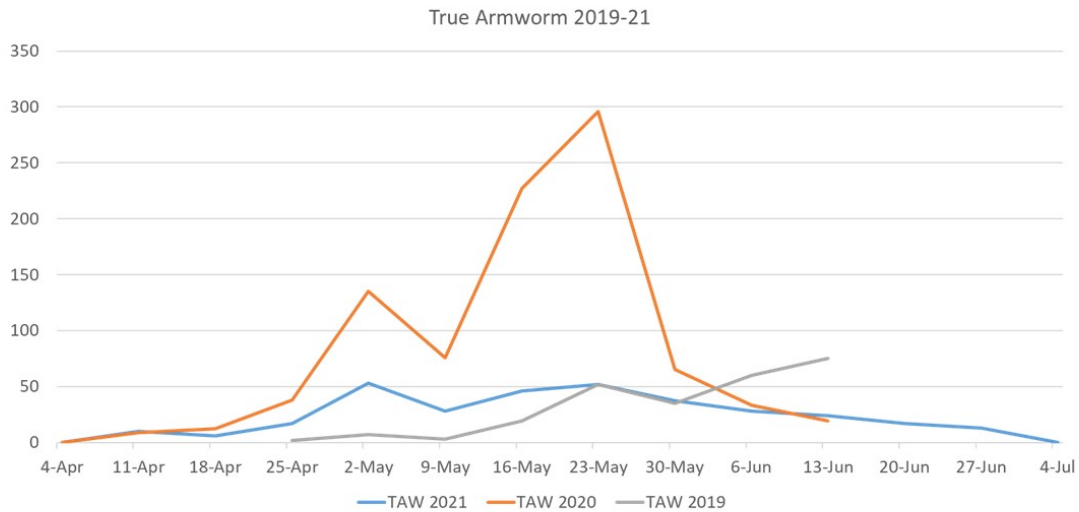
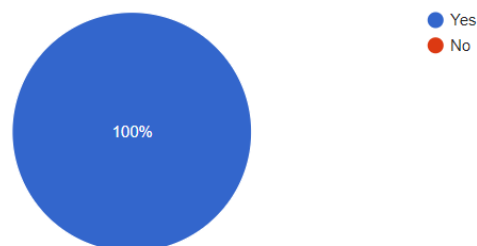


Figure 3: TAW Trap Weekly Trap Counts

### **Evaluation of the pheromone-trapping network by extension educators and crop consultants**

The following is an evaluation of the field corn pheromone-trapping network with crop consultants and the extension educators involved. Of the 25 volunteers involved 14 responded to the survey.

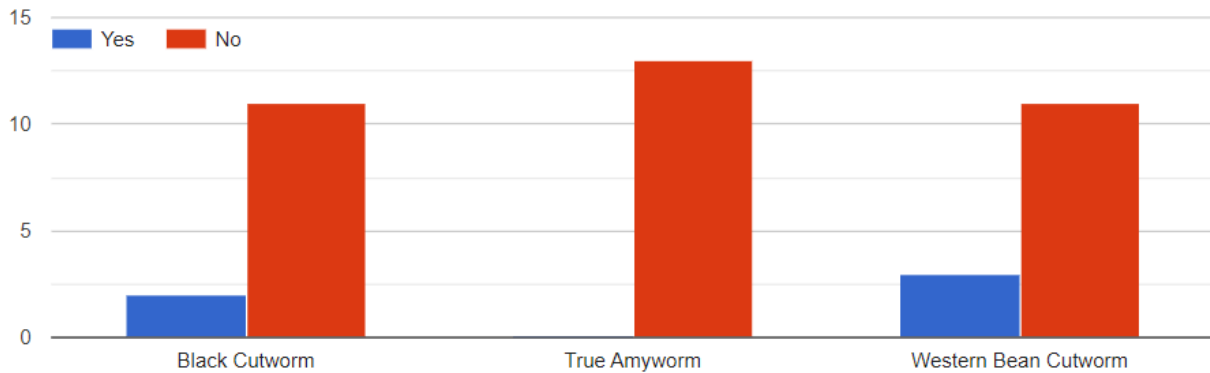
Each cooperator in the project also consulted growers and when asked found that 100 percent of those that responded found the network beneficial.



N=14

Figure 4: Was the monitoring for black cutworm, true armyworm and western bean cutworm beneficial to you or your growers?

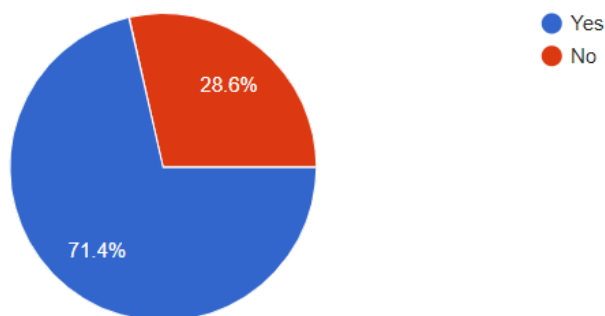
Of those, the responded found very little economic damage with black cutworm and western bean cutworm. No one found damage from true armyworm in 2021.



N=14

Figure 5: Did you have economic damage to corn by the following pests in 2021?

The communication of flight data to growers is the most important factor in the network. Did those that consult growers pass on pest the flight information and potential damage to their growers to prevent economic losses? Seventy one percent of those that cooperated did communicate information collected from the network directly to growers. The remaining 29 percent may have not had numbers that constituted an alert to growers.



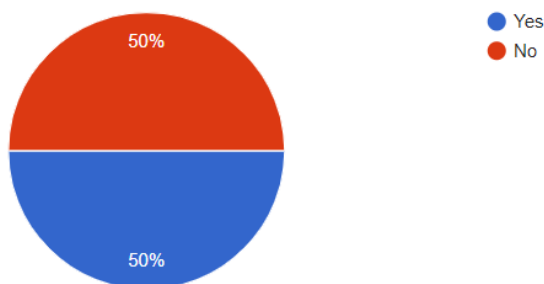
N=14

Figure 6: Did you alert growers to the potential damage based on the moths caught in your traps?

The following are comments made on how the information was transferred to growers:

- Weekly email crop report reaches 180 growers and agribusinesses
- CCE County Newsletter
- Text messages; phone calls, emails; CCE Cayuga AG ALERT! and e-AG ALERT! monthly newsletters
- electronic Ag Report (to 1500 recipients) and personal communications
- Crop Alert - Blog
- Phone, email alert, County Newsletter
- direct contact with growers
- text, phone calls, email and AG ALERT monthly newsletter
- we use our newsletter, blog, facebook posts and an email bulletin

Of those, that responded 50% stated that they did have to recommend a treatment of one of the 3 pests monitored.



N=14

Figure 7: Because of the pheromone trapping were you able to recommend management to avoid damage by these pests?

Of those that responded yes to figure 7 they provided a comment on how this was accomplished.

- When flight counts spiked was able to alert growers in area via text or phone calls to scout for insects/damage and take appropriate action
- I was asked a couple of times if it would be beneficial to include an insecticide with the late season fungicide application for the control of WBC.

- Warnings were put out about fields that had exceeded economic thresholds of BCW in corn. Because of our alerts, other farm/consultants scouted more diligently in those areas and other fields of significant BCW populations were found and treated that would have not been discovered prior to economic plant loss.
- we simply recommended scouting for damage when trap catches were high enough

## **Conclusions**

### **Black Cutworm and True Armyworm**

- We had significant issues with black cutworm in 2021.
- We did not have issues with true armyworm in 2021.
- We will continue to improve our black cutworm and true armyworm degree day models to better predict when larvae are feeding in fields.
- With climate change and increases in weather fronts there could be increases in the level of black cutworm and true armyworm infestations/flights in the spring.
- We will expand the number of traps to better capture when and where black cutworm and true armyworm flights occur in 2021.
- We might include fall armyworm in some locations in 2022 since it was a big issue in 2021.

### **Western Bean Cutworm**

- Peak flight statewide was the last week of July 24<sup>th</sup>.
- Northern NY has extremely high populations and flights of western bean cutworm.
- The rest of NYS had low to moderately high populations.
- There are a few hotspots in areas outside of Northern NY depending on the year.
- Northern NY is at high risk of economic losses due to western bean cutworm to grain corn when resistant corn is not grown.
- The increase in population from 2010 to 2021 has leveled off. This means that we should expect similar number of moths each year with minor exceptions. The main exception is that wet years produce more moths than drought years.

### **Pheromone trapping network evaluation**

- Because of the network those involved communicated the information to growers.
- This helped increase scouting across the state for black cutworm, true armyworm and western bean cutworm.
- The network helped better identify areas of the state that were at higher risks and thus avoid damage.
- Those that use the network find it very beneficial
- The network has grown and is making an impact with growers.

## **Acknowledgements:**



**2021 New York WBC Pheromone Trap Monitoring Network:** Thanks to cooperating growers for allowing us to use their fields for sample sites. Special thanks to the following individuals for their enthusiasm, dedication, excellent data collection and maintenance of the WBC trap network: Paul Cerosaletti, Mike Davis, Janice Degni, Dale Dewing, , Cassidy Fletcher, Jennifer Fimbel, Aaron Gabriel, Erik Smith, Mike Hunter, Joe Lawrence, Jodi Lynn Putman, Josh Putman, Jeff Miller, Ron Kuck, Grace Ott, Erik Smith, Kitty O'Neil, Christian Malsatzki, Paul Stackowski, Mike Stanyard, Katherine Vail, Anastasia Yakaboski, Glenn Yousey. Michelle Proscia