



The status of western bean cutworm, *Striacosta albicosta* (Smith) in New York State

Ken Wise¹ Marion Zuefle², Dan Olmstead², Ryan Parker², Keith Waldron³, and Carol MacNeil⁴

¹NYS IPM Program, Cornell University, 2715 Route 44, Millbrook, NY 12545, ²NYS IPM Program, Cornell University, 630 N. West Street, Geneva, NY 14456,

³NYS IPM Program, Cornell University, Geneva, NY (Retired), ⁴Cornell Vegetable Program, CCE Ontario County, Canandaigua, NY (Retired)

Introduction

In 2009, Western Bean cutworm (WBC), a Lepidopteran pest of corn and dry beans native to North America's Great Plains region and west, was found in NY state.

Females lay 20-200 eggs on pretassel corn. Larvae feed on tassels, leaves, and silks and eventually make their way into the corn ear. Once the corn begins to shed pollen they will preferentially lay on dry bean leaves, if available.

In dry beans, larvae feed on leaves, flowers, pods, and developing beans. Scouting in dry beans is extremely difficult as the larvae feed at night and retreat to the soil during the day.

After larvae feed they will burrow into the soil and overwinter in earthen chambers. They pupate in the spring and emerge as adults in late July.

WBC have been expanding eastwards and now pose a serious risk to field corn, sweet corn, and dry bean growers in NY. In 2010, a monitoring network was established to track the movement of this pest into the state and to warn growers of potential risk.



Adam Sisson, Iowa State University, Bugwood.org
Adult Western Bean Cutworm



M. Zuefle, NYS IPM
WBC egg mass on sweet corn leaf



Ken Wise, NYS IPM
WBC larva and frass in ear tip



C. DiFonzo, Michigan State University
WBC damage on dry bean pods

Materials and Methods

Green bucket traps that included a pheromone lure and an insecticidal kill strip were placed directly next to field corn (2010), sweet corn (2010) and dry beans (2012). The annual number of traps averaged 66 in field corn, 25 in sweet corn, and 12 in dry beans.

Buckets were set the first week of June and monitored weekly through late September or harvest. Growers, CCE staff, consultants, and agribusiness staff checked the contents of traps on the same day each week. Numbers of WBC moths were recorded and weekly alerts were posted to the Sweet Corn Trap Network Blog, NYS IPM Weekly Field Crops Pest Report (blog), VegEdge newsletter and the Weekly Vegetable Update newsletter.



M. Zuefle, NYS IPM
WBC green bucket trap

Results and Discussion

Average trap catch for field corn, sweet corn, and dry beans increased since monitoring was initiated (Fig 1). Mean trap catch in field corn increased from 13 moths per trap in 2010 to 570 moths per trap in 2017. Sweet corn and dry bean trap catches also increased but at slower rates. Peak flight occurred during the last week of July / first week of August in all three crops (Fig 2).

The range of WBC has expanded eastward over the last two decades, in part due to the increased practice of reduced tillage which would allow greater overwinter survival of the larvae. Local overwintering populations are becoming established in several areas throughout the state leading to earlier first trap catches as well as greater overall numbers.

Based on 100 WBC traps throughout NY state in 2017, the greatest trap catches occurred in the Northern part of the state, partially due to moths flying in from Ontario, Canada, as well as areas closest to Lake Ontario (Fig 3). Soils near Lake Ontario are much sandier and allow larvae to burrow deeper into the soil to overwinter.

Economic damage

- 18% of damage in field corn trials (Northern NY 2017)
- 21% of damage in field corn trials (Northern NY 2016)
- 11% damage in sweet corn (Oswego County farm, 2015)
- 20% damage in field corn trials (Northern NY, 2015)
- Pod feeding observed in dry beans (western NY, 2015)
- Possible corn ear molds produce mycotoxins in silage

Management guidelines for NY

- Plant early corn to get past pretassel before the peak WBC flight
- Plant corn varieties that contain Vip3a Bt (*Bacillus thuringiensis*) protein, effective against WBC.
- Monitor pheromone traps to determine peak flight
- Scout corn for eggs, larvae, or damage. Thresholds are 5% for field corn, 4% for processing sweet corn, and 1% for fresh market sweet corn.
- Dry beans - scout nearby corn when cumulative trap catch reaches 100 moths. If WBC feeding is observed in dry beans a foliar insecticide is recommended.
- The development of an app using Survey 123 in combination with ArcGIS online allowed us send weekly moth counts in the field.
- An online adult WBC flight model will be validated for use on NEWA (newa.cornell.edu), using local real time weather data from grower owned stations throughout the eastern United States.

Further Information

NYS IPM Program (<https://nysipm.cornell.edu/>)
Sweet Corn Trap Network Report (<http://sweetcorn.nysipm.cornell.edu>)
Weekly trap catches for sweet corn and dry beans
Field Crops Newsletter (<https://blogs.cornell.edu/ipmwpr/>)
Weekly trap catches for field corn

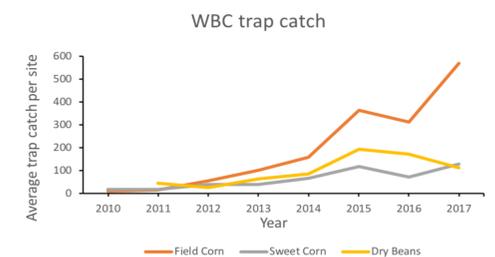


Figure 1. Average trap catch by year for field corn, sweet corn and dry beans.

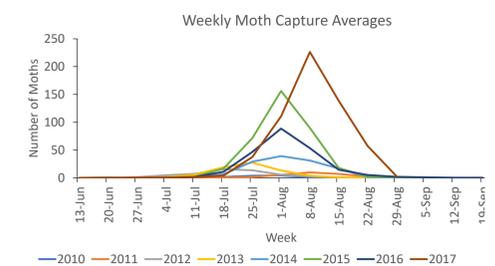


Figure 2. Combined average weekly trap catch for field corn, sweet corn and dry beans.

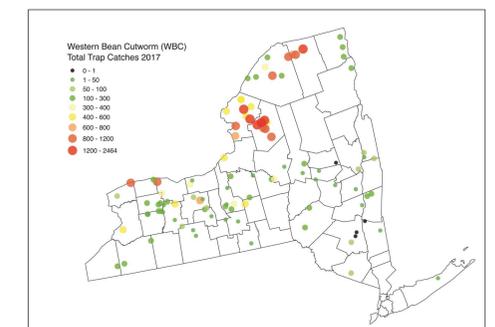


Figure 3. Total WBC trap catch by site in 2017 for New York State.

Acknowledgements

This work was supported by the USDA National Institute of Food and Agriculture, USDA-NIFA project 2014-70006-22505. As well as a grant from the New York Dry bean industry. We would also like to thank all the cooperators that checked traps weekly