

Regional Western Bean Cutworm Monitoring Program Final Report (2012-2014)

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October 13, 2014

The Pest Problem

The Western Bean Cutworm (WBC; Lepidoptera: Noctuidae: *Striacosta albicosta*) is an emerging problem in Vermont. This is a late season pest that attacks corn (including field, sweet and popcorn) and both dry and snap beans. Moth larvae (Fig. 1 & 2) feed on developing kernels in husks or beans in pods causing economic damage. In corn, infestations of one larva per plant over an acre can lead to a yield loss of four bushels per acre. Infestations typically involve multiple larvae per ear, so yield losses can reach 30-40% in heavy infestations. In beans, feeding causes direct loss of beans, but also decreases bean quality; 2% of damaged beans can cause the quality of a batch of beans to be down-graded and heavier levels of infestation will lead to batches being rejected by processors, seriously influencing growers' revenues. WBC can also indirectly cause disease in the crop, increasing damage and yield loss and posing health risks to domestic animals and humans.



Fig. 1. WBC larvae.

Prior to 2000, economic losses were limited to the western Corn Belt states. Since then it has moved East, causing damage in Iowa and Minnesota in 2000. It was found in Ontario in 2008, Pennsylvania and New York in 2009, and Vermont in 2011. This is an emerging pest in the Eastern US. To understand the movement of this pest, it is important to identify the current range and timing of WBC activity to develop suitable management strategies. During the summer of 2011, scientists at the UVM Entomology Research Laboratory collaborated with Penn State and Cornell Univ. on a WBC survey, which resulted in the first detection in the state in Chittenden County. In 2012, we expanded our survey to three VT counties (Franklin, Rutland and Addison) to better understand WBC distribution and abundance over the next three years. This will allow farmers to be prepared for WBC management in the future if necessary. It is expected that this could become a serious pest in this region.



Fig. 2. WBC adult.

Monitoring Procedure

During the summers of 2012-2014, the UVM Entomology lab monitored twelve corn fields across 4 western VT counties: 5 in Franklin, 1 in Chittenden, 3 in Rutland and 3 in Addison. One green bucket trap was hung on posts at each site to trap male moths (Fig. 3). The traps contained a WBC pheromone lure to mimic a female and attract male moths. In addition, one insecticidal strip was placed in the traps to kill the moths once they enter the trap. In 2013 at two of the sites, the traps had to be relocated to another nearby corn field due to crop rotation from corn to hay (Fig. 4). Traps were checked every 1-3 wks from mid-June to early-Sept in 2012 and every 2 wks from late-May to early-Sept. in 2013 and 2014.



Fig. 3. WBC trap setup.

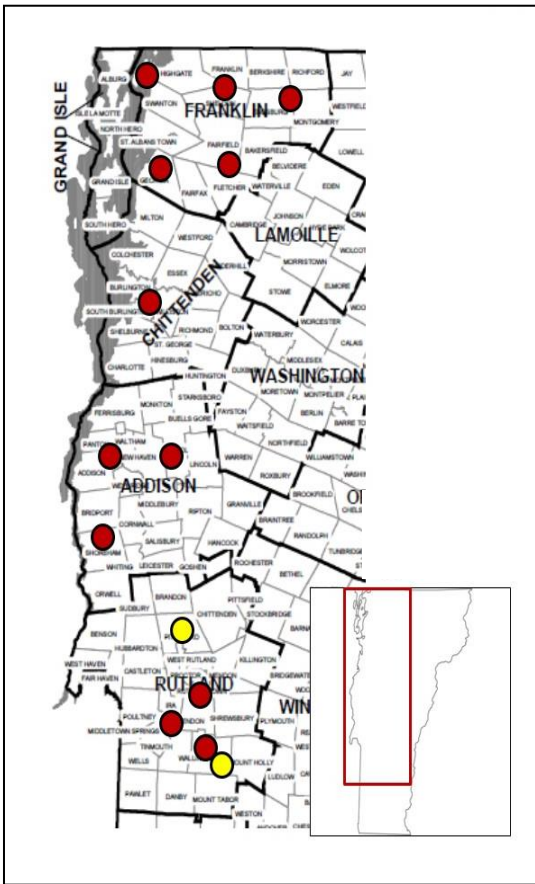


Fig. 4. VT WBC trap sites. Note: Red circles indicate location of 2013/14 sites, yellow circles are sites used in 2012 that were relocated.

Results

A total of 204 moths were collected over the 3-year sampling period. In 2012, 82 moths were collected, 22 were collected in 2013, and 100 in 2014. In 2014, moths were first detected in traps on 17 July, in 2013, on 23 July, and on 11 July in 2012. When data from all sites were combined, the average number of WBC/trap was 8.3 in 2014, 1.8 in 2013, and 6.8 in 2012, and the peak flight period was from mid-June – mid-August (Fig. 5).

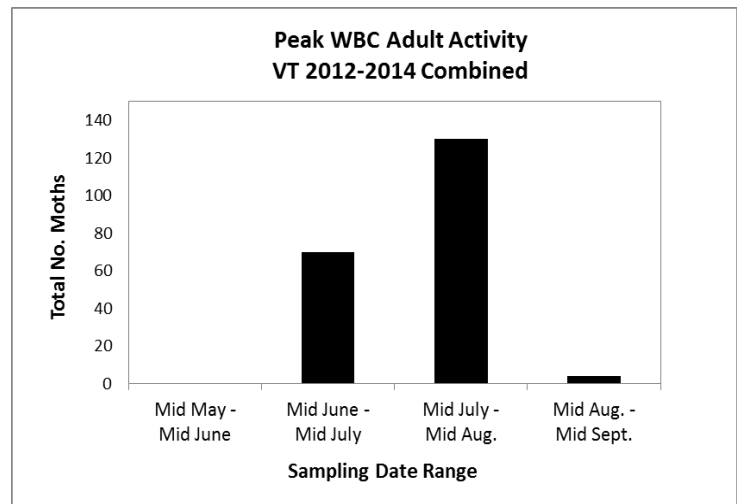


Fig. 5. Peak activity of WBC adults; 2012 - 2014 data combined.

In all three years, most of the WBC were collected in Addison County, totaling 133 moths (Figs. 6A&B). Franklin County had the second highest total with 38 moths, followed by Rutland Country with 29 moths, and then Chittenden County with 4 moths. For the first two years, Rutland County had the second highest number of moths and Franklin County the least. However, in year 3, twice as many moths were collected in Franklin County than in Rutland County. In 2013 and 2014, no moths were collected in Chittenden County, whereas a few were observed in 2012.

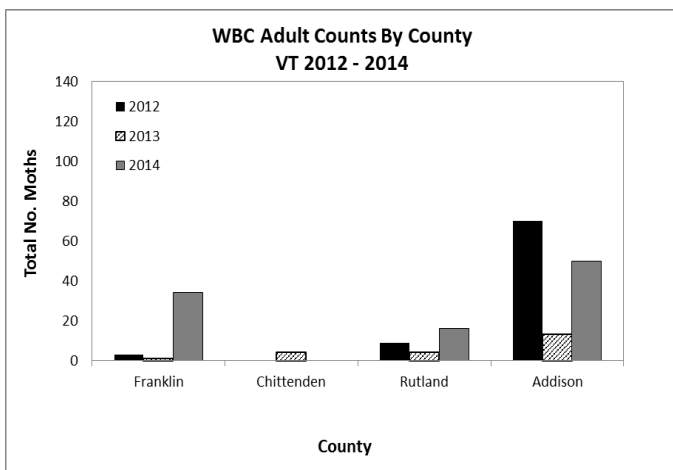


Fig. 6A. WBC adults collected from each county each year.

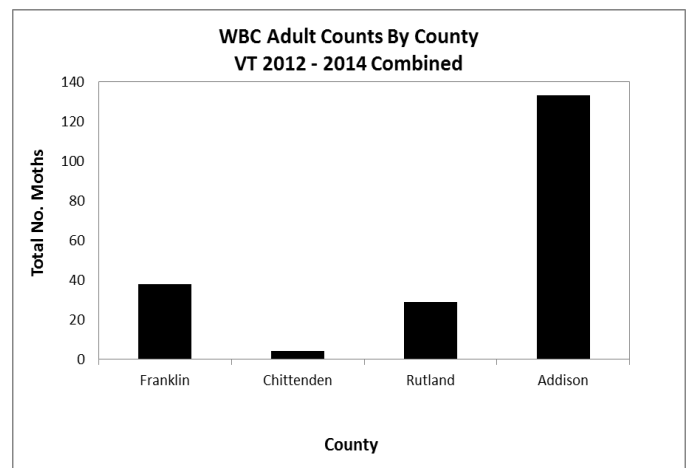


Fig. 6B. WBC adults collected from each county combined years.

In Addison County, when data for all years were combined, the highest number of moths was collected from Shoreham (74 moths) followed by Addison (56 moths) (Figs. 7A&B). In Franklin County, the greatest number of moths was found in Sheldon (15 moths). WBC populations in Vermont overall are greatest in the Addison and Franklin County regions, but relatively high numbers of moths were found in some sites in Rutland County (e.g. E. Wallingford with 19 moths). In all years, no larvae were observed in the fields nor was there evidence of feeding damage at any sites.

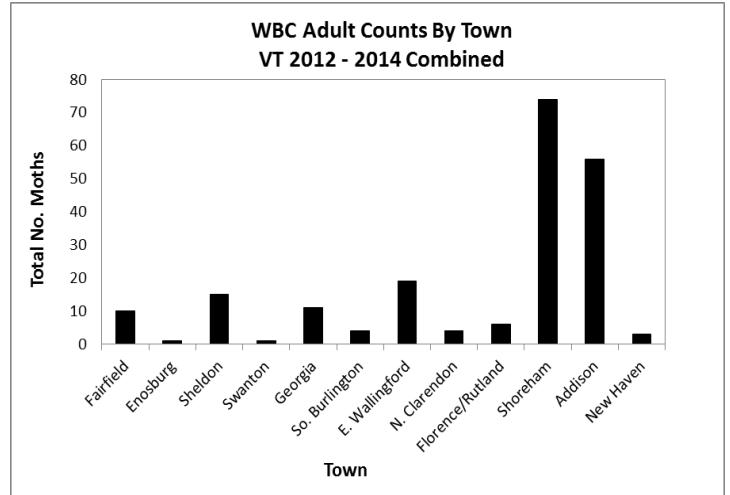
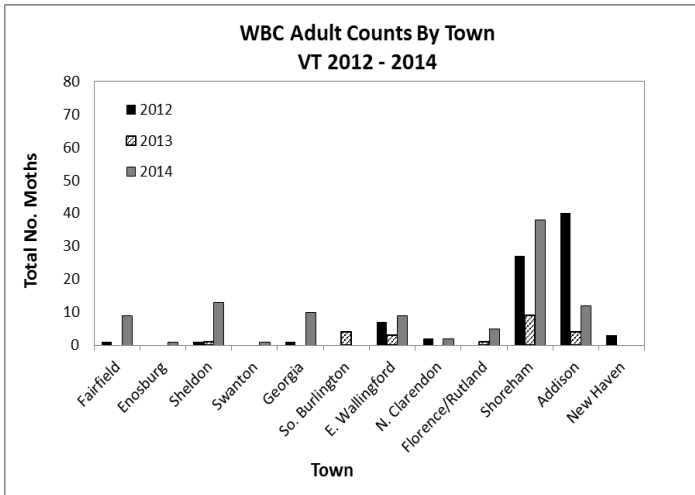


Fig. 7A. WBC adults collected from each sampling site each year.

Fig. 7B. WBC adults collected from each sampling site combined years

It is very possible that WBC is established in VT and can survive over the winter. Many of the moths collected from the traps from all years exhibited minimal damage, suggesting that they may have overwintered here and emerged from local fields, rather than being blown in from NY or Canada. The weather over the three seasons may have been a factor in differences observed in the annual number of moths collected. Though WBC populations remain low compared with those in New York, in most locations at least a few were collected each year, suggesting that a pest reservoir exists in this state, which could increase to damaging levels given suitable conditions. It can't be predicted how this pest could impact crops in the future or where its populations are highest in the state of VT. At this time, there is no reason for concern about WBC in the areas of Vermont surveyed, based on the numbers of moths collected over the past 3 years. These data provide baseline information from which management approaches could be developed if this pest reaches damaging levels in the future.

For more information on WBC catches and distribution, please visit:

Pest Watch: <http://www.pestwatch.psu.edu/>

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Acknowledgements: We thank the cooperating growers for allowing us to use their fields for sample sites, and Donald Tobi for assisting with sample collection.

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 This is a cooperative project between John Tooker at Penn State and Keith Waldron at Cornell University and UVM.
 It is funded by the USDA Northeastern IPM Center Competitive Grants Program.