



Gen1-2011 - Ontario Western Bean Cutworm Trap Network

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Ontario Soil and Crop Improvement Association
And other Agricultural Organizations and Businesses

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Ontario Western Bean Cutworm Trap Network

Purpose:

To provincially coordinate the monitoring of Western Bean Cutworm (WBC) and disseminating timely management recommendations for this new emerging pest of corn and dry beans in Ontario.

Methods:

- Western bean cutworm trap network website was used to disseminate the weekly trap maps at www.cornpest.ca. Training material and WBC resources were also provided on this site.
- Trap supplies were ordered and distributed to trap participants with several pick up locations established across Ontario.
- New trap participants were provided with ID cards and a workbook.
- Traps were set up and monitored at least once a week from June 6th to September 15th. The antifreeze/water trapping mixture was kept topped up in the milk jug traps by participants and pheromone lures were changed once every three weeks. Each participant tallied the total number of moths captured in their trap site each week, and the data was sent to the principle investigator through the online trap data collection page of the WBC trap network website at www.cornpest.ca or via fax to the OMAFRA-Ridgetown office.
- Data collected was used to produce both weekly and accumulated trap catch maps for all trap sites. Regional trap count maps for Southern Ontario, Central Ontario, Eastern and Northern Ontario and Southern Quebec were produced each week. One accumulated map per region was also created.
- Any trap sites with significant moth activity (>100 moths captured) were scouted by the principle investigator and summer staff at least once during the season. Egg masses, larval activity and feeding damage were documented, if present.
- Sites with egg masses were returned to in the fall to assess feeding damage and an estimated yield loss was calculated from these assessments.

Results:

- There were 621 milk jug or bucket pheromone trap sites were established across Ontario and Southern Quebec, monitored by producers, crop consultants, OMAFRA staff and ag. reps who were trained through the WBC workshop/network. Of these 506 were in Ontario, 115 were in Southern Quebec. Of the traps deployed 47 were in dry bean fields, 14 in snap beans, 21 in sweet corn and 539 in corn fields.
- Weekly trap maps were produced from the week of June 6th to Sept 15th by the principle investigator. Results from traps were used to develop timely scouting recommendations delivered to growers and consultants through various media outlets. Fifty four trap count maps in total were produced and distributed to Ontario growers.
- The western bean cutworm (WBC) trap network was very successful this year. Based on this year's results, WBC is continuing to spread further north and east

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into Ontario and the Great Lakes Region. Traps were located in almost all of the corn producing counties of Ontario. All counties that had traps in Ontario during 2011 captured WBC moths, including the two trap sites located in the Timiskaming region. Eastern Ontario and Southern Quebec caught fewer moths than the rest of the province.

- A total of 159,076 moths were caught in Ontario and Quebec in 2011. Ontario trap catches totaled 157,523 moths in 2011 compared to 59,586 moths in 2010. Quebec trap catches totalled 1553 moths in 2011 compared to 986 moths in 2010. The first moth was in Newbury (Chatham-Kent) during the week of June 6th, which coincides with first captures in 2010. The last moth captured was in Bothwell (Chatham-Kent) during the week of September 15th, approximately 1 week later than the last capture in 2010.
- Highest total moth captures were in Middlesex County totalling 32,307 moths, however, per trap averages of 646 moths were not the highest (Figure 1). Lambton County had total moth captures of 21,453 moths, and had the highest per trap averages of 740 moths. Huron County trap captures totalled 29,675 moths, with per trap averages of 457. Chatham-Kent County trap captures totalled 28,243, with per trap averages of 403 moths. These four counties as well as Bruce County had per trap averages that were higher than the Ontario (provincial) per trap average of 311 moths.
- Moth catches peaked in most of Ontario during the week of July 25th, however, some counties peaked the following week of August 1st (Figure 2 & 3).
- When separated by region, the traps in the Timiskaming region peaked one week earlier than the rest of the province (July 18th) indicating that these moths must have been blown in via storm fronts from the US earlier that week.
- The number of moths captured at each trap site did not relate to infestation levels and feeding damage found in the adjacent fields, indicating that other factors are involved in field preference. Scouts were sent to trap site fields that captured over 100 moths to monitor for egg masses and larvae. In the fall, scouts returned to fields where egg masses were found to assess for damage. Feeding damage was observed in Chatham-Kent, Lambton, Elgin, Middlesex (primarily in a location where these four counties meet) and Norfolk Counties (Figure 1). Yield loss estimates were generated indicating a 3.4% yield loss due to WBC feeding damage. Feeding damage by insects such as WBC can also contribute to pathogen infections, which was seen in relatively high levels in corn in some areas of Ontario in 2011.
- Research Associate Jocelyn Smith from the University of Guelph, Ridgetown Campus, confirmed that WBC successfully overwintered in the Bothwell area when emergence was observed in the field during the 2011 growing season. Fields with high trap captures and feeding damage tended to have sandier soil types, indicating that the sandy soil may assist WBC in overwintering success.
- Observations were made of a high rate of parasitism of WBC eggs through the growing season within some of the infested areas of Bothwell. This demonstrates that there are natural enemies in the area and there is potential for some additional biological control for WBC.

Summary:

621 milk jug or bucket trap sites were established in field corn, sweet corn, dry bean and snap bean fields and monitored by OMAFRA staff and properly trained growers, ag. reps

and consultants in 2011. The northern-most trap catches were recorded at Timiskaming, Ontario and the eastern-most trap catches were recorded at Kamouraska, Quebec. Valuable information on pest range expansion, feeding activity and phenology were also documented. Based on this year's results, WBC is continuing to spread north and further east in Ontario and the Great Lakes Region.

Next Steps:

Weekly surveying will continue in 2012 and further research will be conducted on WBC life cycle and feeding impact on yield and quality. It is recommended that growers continue to scout for WBC, especially in areas that had high levels of egg laying/larval numbers in 2011 and fields nearby with sandy soil types.

The development of the WBC working group has been fundamental in synergizing our efforts in understanding the biology/phenology, monitoring and potential management options for this pest. Pooling our resources and synergizing our efforts will expedite the production of sound management recommendations for this new emerging pest in the Great Lakes Region.

Acknowledgements:

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Location of Project Final Report:

Grain Farmers of Ontario Research Report

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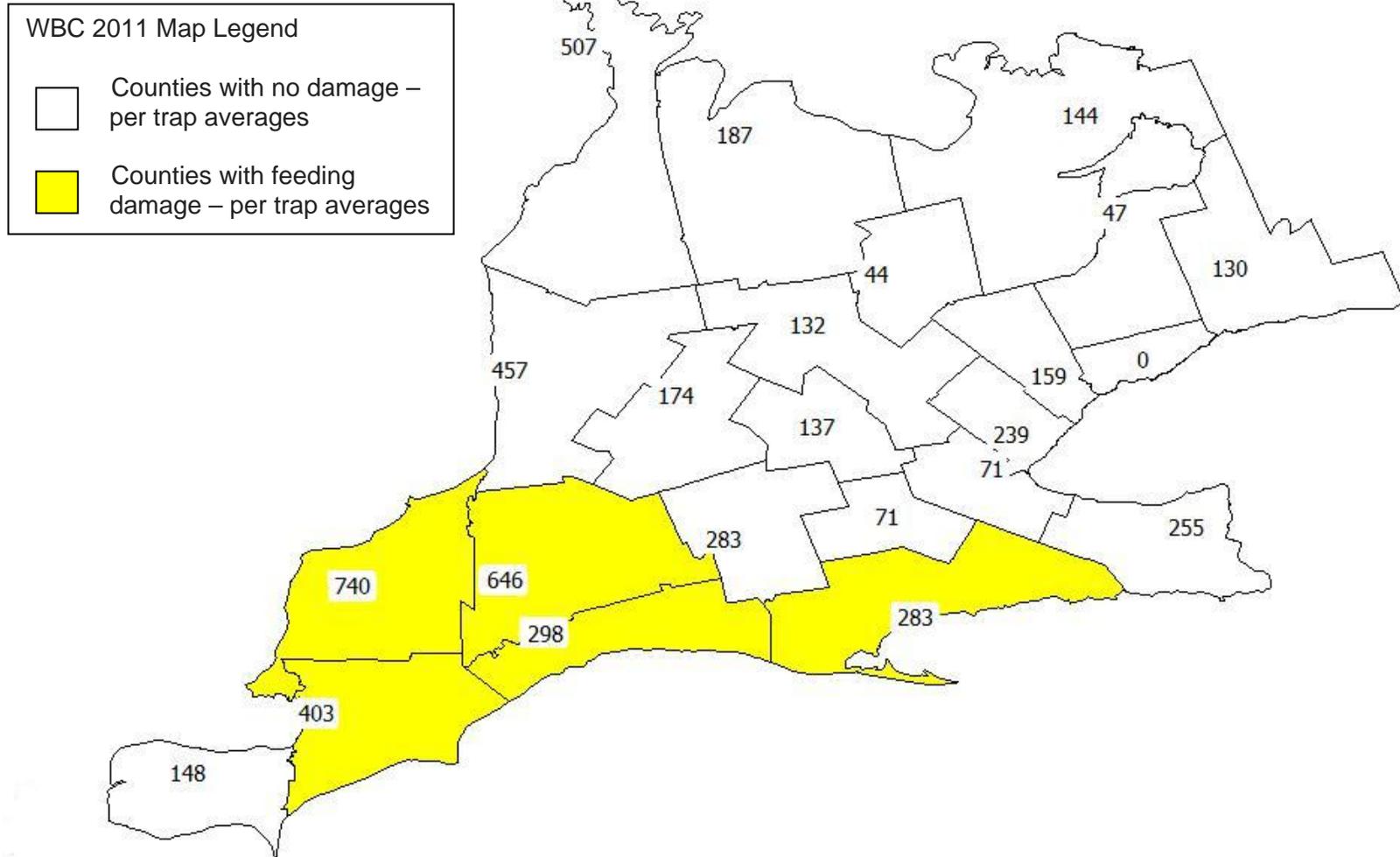


Figure 1. Average Number of Western Bean Cutworm Moths Captured per Trap in Southwestern Ontario in 2011.

Average # of WBC Moths Captured Per Trap in Ontario in 2009, 2010 and 2011

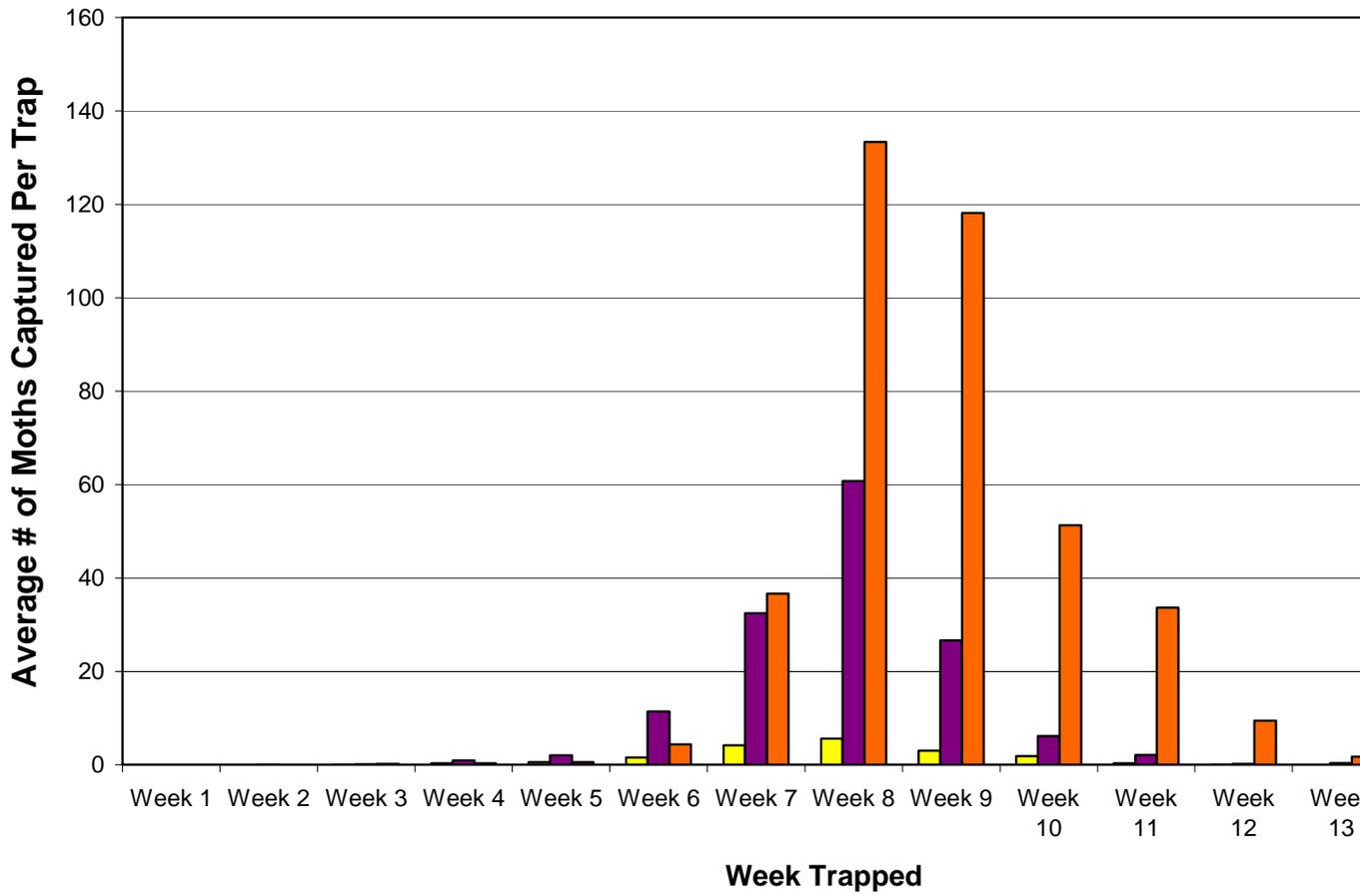
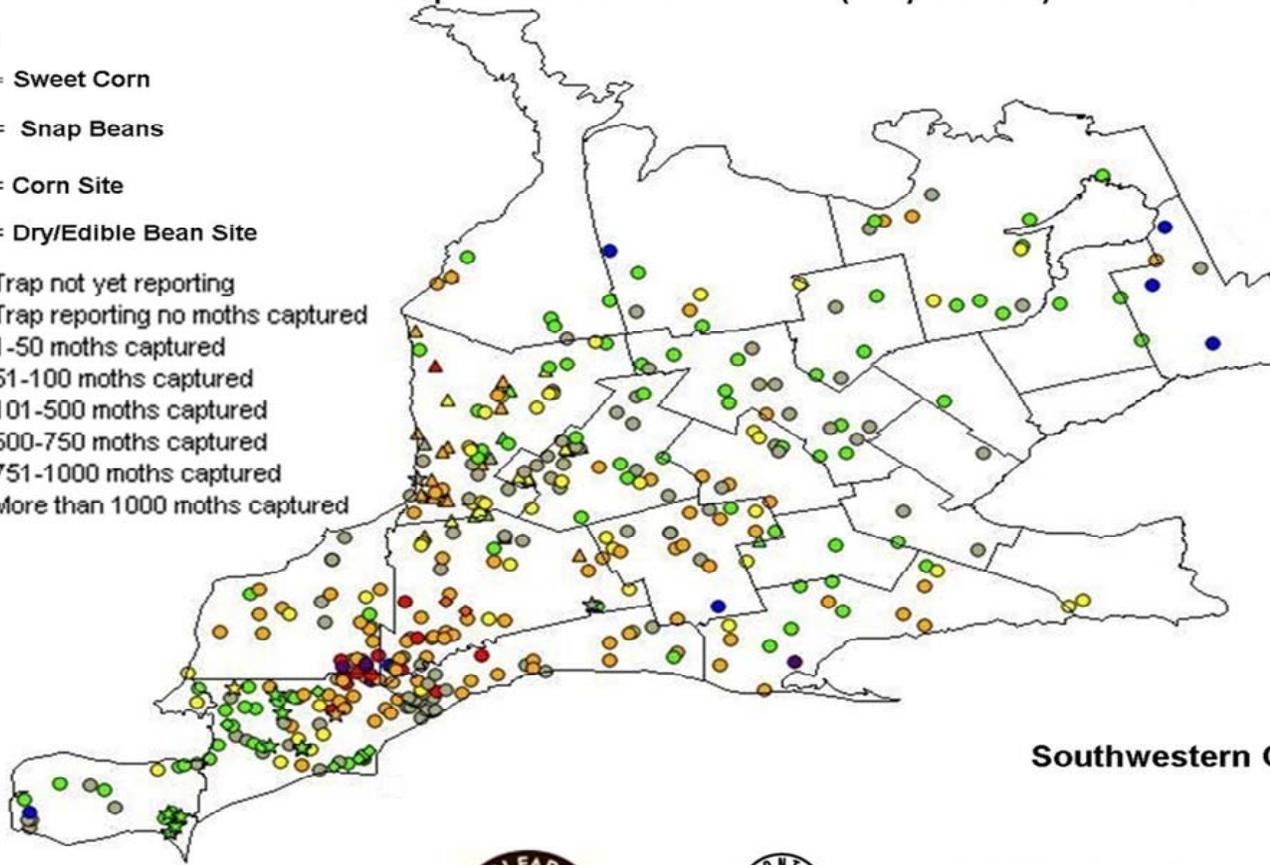


Figure 2. Peak Western Bean Cutworm Moth Flight for Ontario for 2011 versus 2010 & 2009

Western Bean Cutworm Trap Network 2011 Trap Catches for Week 8 (July 25-31)

Legend

- ☆ = Sweet Corn
- ◇ = Snap Beans
- = Corn Site
- △ = Dry/Edible Bean Site
- (grey) = Trap not yet reporting
- (blue) = Trap reporting no moths captured
- (green) = 1-50 moths captured
- (yellow) = 51-100 moths captured
- (orange) = 101-500 moths captured
- (red) = 500-750 moths captured
- (dark red) = 751-1000 moths captured
- (purple) = More than 1000 moths captured



Southwestern Ontario



Figure 3. Total Number of WBC Moths Captured During the Week of Peak Flight for Southern Ontario