

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 for participants to attend and collect their supplies
- ID cards and a workbook was provided to new trap participants to aid in proper identification
- Traps were set up and monitored at least once a week from June 5th to September 6th. The antifreeze/water 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 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.

Results:

- 471 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. 379 were in Ontario, 92 were in Southern Quebec. 43 trap sites were in dry bean fields, 319 were in corn fields.
- Weekly trap maps were produced from the week of June 5th to Sept 6th by the principle investigator. Results from traps were used to develop timely scouting recommendations delivered to growers and consultants through various media outlets. 54 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 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 in 2010 captured WBC moths, including the two trap sites located in the Timiskaming

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- region. Eastern Ontario and Southern Quebec caught a lower number of moths than the rest of the province.
- Moth catches peaked in Ontario during the week of July 26th (Figures 1-3). This peak was nearly three weeks earlier than in 2009, indicating that weather conditions were more ideal for WBC development in 2010.
 - When separated out by region, the traps in the Timiskaming region peaked two weeks earlier than the rest of the province (July 12th) 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. They were not able to find any egg masses or larvae at these specific fields. However, Ontario did experience significant infestations in the Bothwell and Delhi areas. There were no traps at these locations, but traps within the area were not catching exceptionally high numbers of moths. Despite Huron County having the highest trap counts, egg masses and larvae were not found in either dry bean or corn fields and very little ear feeding damage was found in that county in the fall. Further research is needed to determine what factors are at play in field selection for egg laying. Work is underway to follow 2010 infested fields in the Bothwell and Delhi area to determine what factors put them at risk and whether they will be again at risk in 2011.
 - Though traps do not seem to indicate which fields are experiencing threshold levels of WBC infestations, the traps do indicate when peak moth flight occurs and therefore peak egg laying shortly thereafter. Growers should still consider using traps to help indicate the presence of moths in their fields and the appropriate time to scout for WBC eggs.
 - Trap data from neighbouring states were collected and summarized in a 2010 trap count map, created by the principle investigator (Figure 4). Peak flight occurred during the weeks of July 5th for Indiana and Ohio, July 19th for Michigan and Pennsylvania, July 26th for Ontario and Quebec and August 1st for New York (Figure 9). WBC moths have now been captured as far east as Long Island New York in the US and Montmagny Quebec in Canada. The most northern moth catches in North America occurred in Thornlea Ontario (Timiskaming region).

Summary:

471 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 2010. Results from this study in 2010 indicate that the pest has expanded further into the Great Lakes Region, with Thornlea, Ontario and Montmagny, Quebec trap sites capturing the most northern and eastern WBC moths in North America, respectively. Valuable information on pest range expansion, feeding activity and phenology were also documented.

Next Steps:

The Western Bean Cutworm Trap Network has been a huge success in 2010. 2011 will be the final year of this project. The principle investigator will determine over the course of this year whether there is a need to continue the trap network after 2011 and the

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steps required to enable it. A follow up investigation will take place in the Bothwell area in 2011 to determine if they are at risk for threshold levels that year and what factors are enabling that. 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. We hope to continue to host an annual meeting for the next few years for this working group to continue this collaboration. 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

Average # of WBC Moths Captured in Ontario in 2010 versus 2009

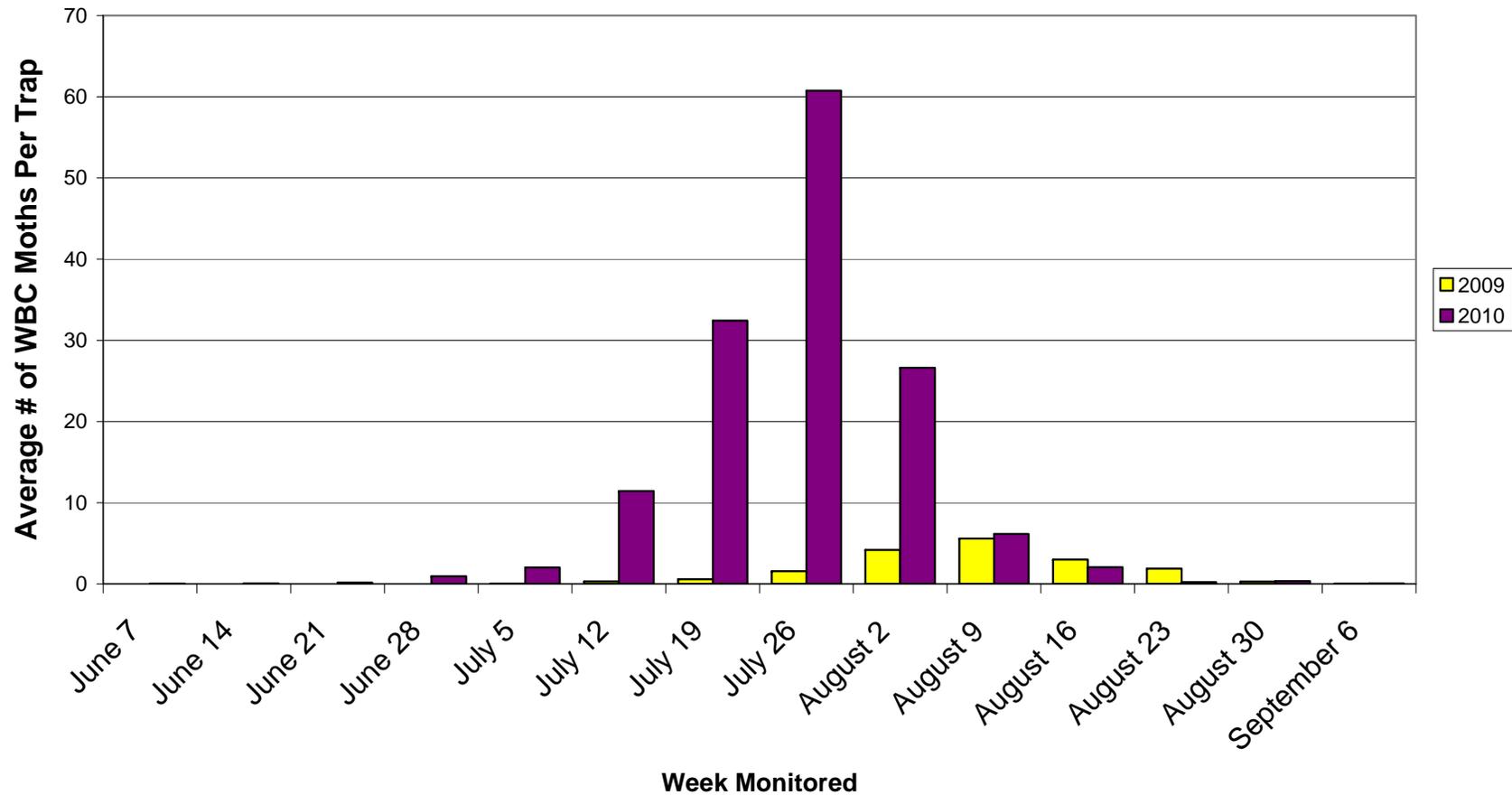


Figure 1. Peak Western Bean Cutworm Moth Flight for Ontario for 2010 versus 2009.

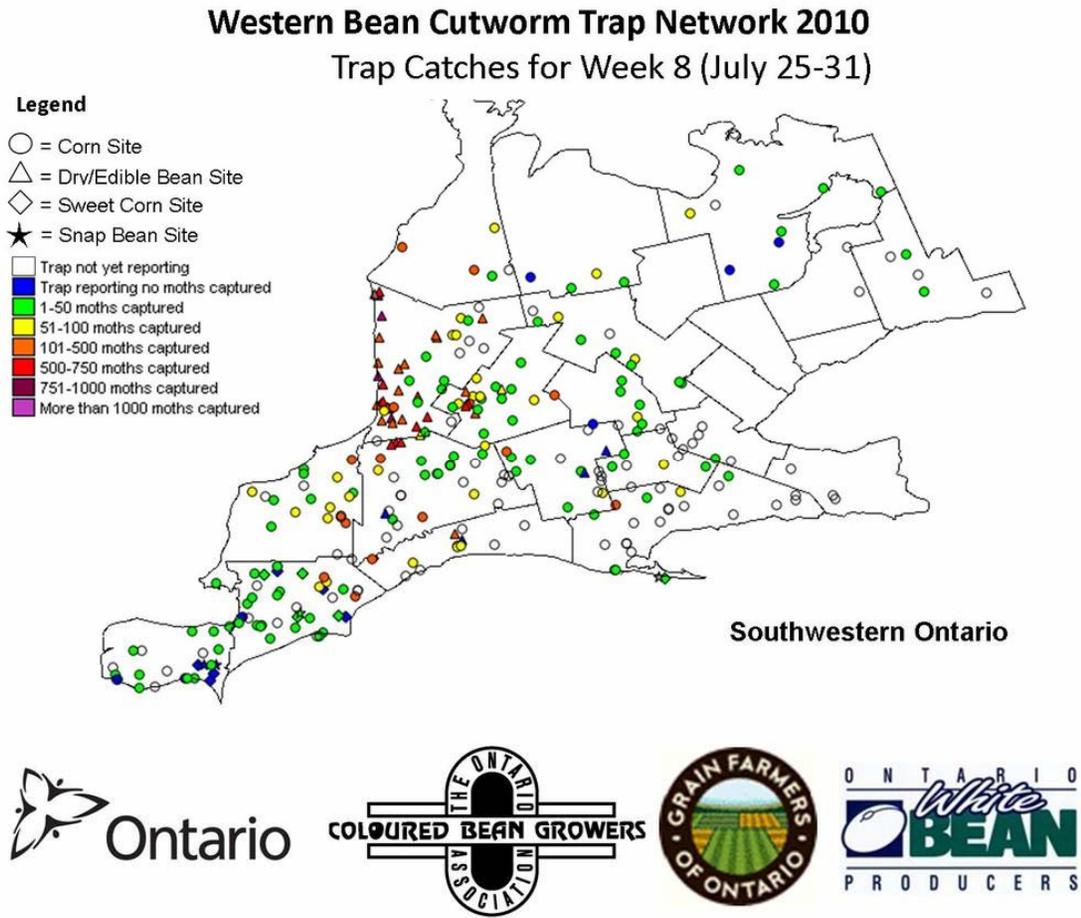


Figure 2. Total Number of WBC Moths Captured During the Week of Peak Flight for Southern Ontario Sites.

Western Bean Cutworm Trap Network 2010 Trap Catches for Week 8 (July 25-31)

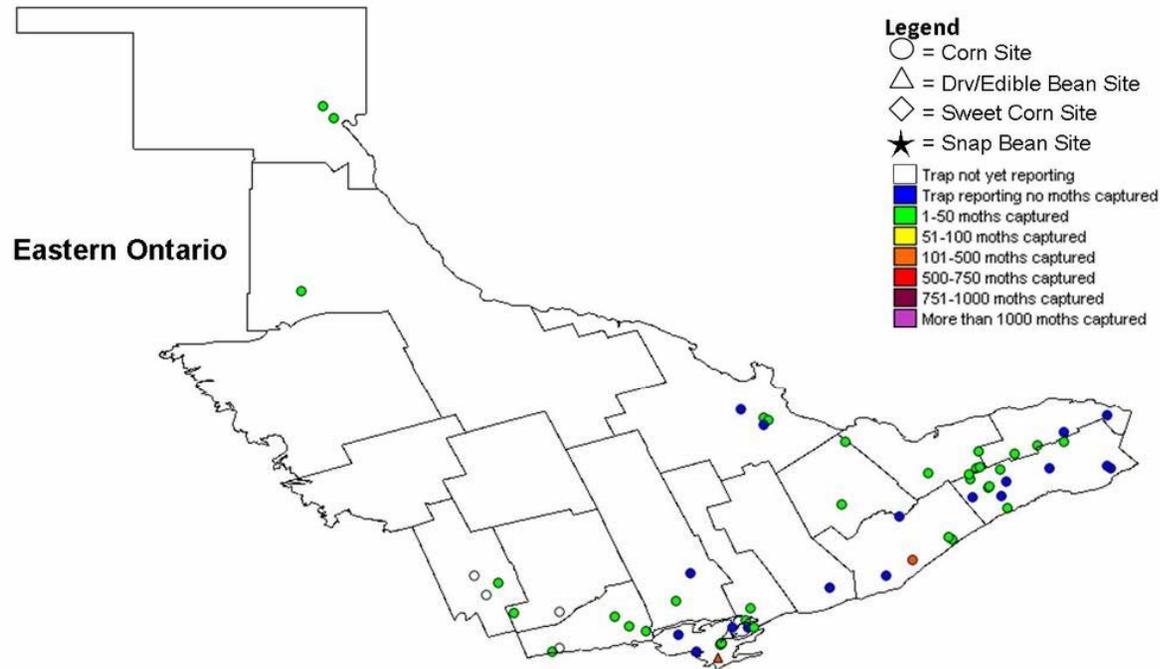


Figure 3. Total Number of WBC Moths Captured During the Week of Peak Flight for Central, Eastern and Northern Ontario Sites.

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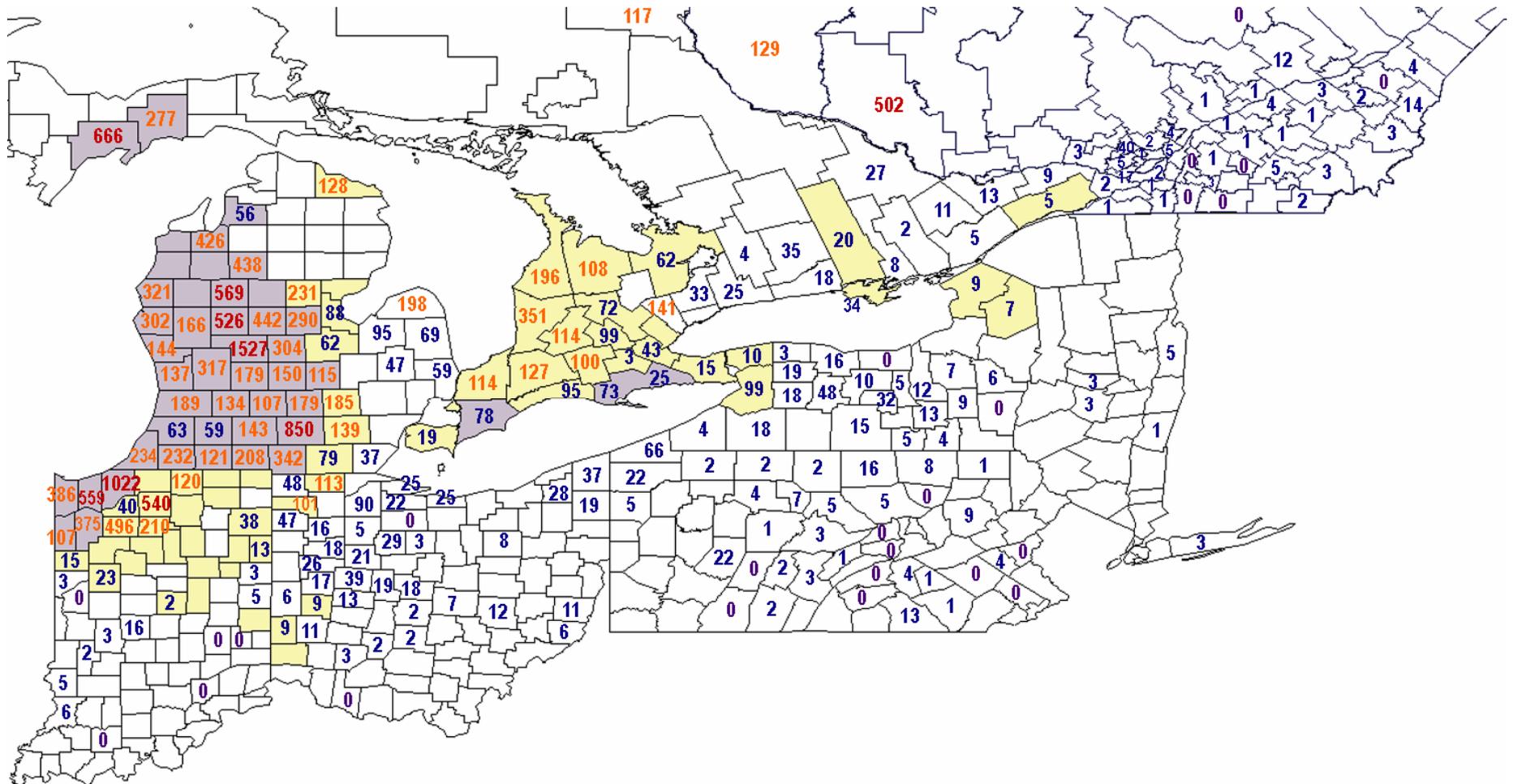


Figure 4. 2010 Western Bean Cutworm Trap Results for the Great Lakes Region. Numbers indicate the average number of moths accumulated per trap by county for the 2010 season. Shaded counties reported having WBC damage. Purple counties experienced economic levels of damage (spray required or significant feeding found).