

A Comparison of Industry Standard IPM Strategies to High Intensity Scouting Methods as a Means to Improve Lepidoptera Control in Processing Sweet Corn

Elaine Roddy, Vegetable Crops Specialist – OMAFRA, Ridgetown

Cheryl Trueman, College Professor – University of Guelph, Ridgetown Campus

In 2016 the Ontario sweet corn processing field staff indicated a desire to improve the implementation of integrated pest management. Over the past decade, there have been changes in the pest complex, control products and the methods used to monitor Lepidoptera insects. While trapping and scouting procedures are well established, it has been a number of years since these methods have been verified or calibrated for Ontario conditions.

Monitoring sites were set up at 4 locations in Kent County, 4 locations in Elgin/Middlesex and 3 locations in Middlesex (Strathroy area). Fields were monitored for pest populations and crop stage at each visit. Stand assessments were taken at the 4-6 leaf stage of each field. The monitoring strategies to be compared are as follows:

Industry Standard IPM Strategy

Fields are monitored an average of 4 times per season (stand establishment, tassel emergence, green silk and pre-harvest). Fifteen regional trapping locations provide information about European corn borer (diamond traps) and western bean cutworms (unitraps).

Weekly Monitoring Program

Fields are scouted once during stand establishment and then weekly from mid-whorl stage to harvest. Scouting may begin earlier if the trapping network suggests there is pest activity in the area.

Intensive Monitoring Program

Fields are scouted once during stand establishment and then twice weekly from mid-whorl stage to harvest. Scouting may begin earlier if the trapping network suggests there is pest activity in the area.

Each area had one site designated as the regional hub. At those locations, traps were set up for European Corn Borer. Three different types of traps were used to compare relative efficacy of each type. The types compared were diamond, milk carton, and heliothis. Growing degree day (GDD) information was collated for each of the three regional hubs.

The regional hubs were also used as an on-farm comparative spray threshold trial. The field was into 4-treatments. Each treatment was monitored and assessed separately, so that the scheduled spray date can be compared to the threshold values identified by each level of scouting.

1. One spray - applied at early tassel
2. Spray thresholds triggered by visual assessments and/or trap counts for corn earworm
3. Two sprays - applied at early tassel and full silk
4. One spray - applied at full silk.

Harvest assessments were conducted at the Kent Bridge and Strathroy sites. A total of 100 plants (10 groups of 10 plants) were assessed for each of the four treatments. Plant damage, cob feeding and foliar diseases were recorded.

Results

No lepidopteran pests were collected in the trap network. High level of armyworm were present at several sites, pre-tasselling; and low numbers of western bean cutworm eggs were also recorded. Harvest data was collected at the Kent Bridge and Strathroy hubs, however scouting data was not available for the Strathroy site.

Location	Begin Scouting	Finish Scouting	Corn Borer Feeding (Threshold date)	Armyworm	Western Bean Cutworm
Kent Bridge Hub	17-Jul-17	23-Aug-17	4% (Aug 8)	5-25%	1% egg masses
Eberts	17-Jul-17	23-Aug-17	2-9% (Aug 4)	5-35%	6% egg masses
Kent Bridge 2	17-Jul-17	23-Aug-17	25% (Aug 23)	10-40%	1-3% egg masses
Dawn Mills	17-Jul-17	23-Aug-17	2%	5-40%	3%
Strathroy Hub	data not available				
Watford	02-Aug-17	25-Aug-17	0	10-40%	2% egg masses
Caringorm	20-Jul-17	25-Aug-17	0	10-30%	2-5% egg masses
Strathroy 2	20-Jul-17	25-Aug-17	4-9% (Aug 9)	5-20%	present but numbers not available.
Glanworth Hub	31-Jul-17	29-Aug-17	0	20-40%	0
St. Thomas 1	31-Jul-17	29-Aug-17	2%	10-30%	0
Tilsonburg	31-Jul-17	29-Aug-17	10% (Aug 18)	20-35%	3% egg masses
St. Thomas 2	31-Jul-17	29-Aug-17	13% (Aug 18)	20-40%	0

At the Kent Bridge Hub there was limited pest presence at the harvest assessment. Eight fall armyworm and 1 corn earworm were found in Treatment 4 (one insecticide applied at full silk). One fall armyworm was found in Treatment 2 (threshold based spray) and one corn earworm was found in treatment 3 (two spray program).

At the Strathroy Hub, 7 western bean cutworm were found in treatment 4 (one insecticide applied at full silk).

Due to the low levels of corn borer pressure, and the lack of results for the trapping network, we plan to continue this project for the 2018 season at no additional cost.