

Monitoring the corn earworm population in the Treasure Valley

The Situation

A key pest of sweet corn is the corn earworm (*Helicoverpa zea*, Figure 1). There are three generations of corn earworm annually in the Treasure Valley. The second generation is of most concern to sweet corn seed and sweet corn growers because these adult moths emerge when corn is silking. Earworm moths lay eggs in fresh corn silk within 2 to 8 days of their emergence. Larvae hatch from the eggs in 2 to 5 days and then feed on the fresh silk for a short time before moving into the corn ear through the tip of the ear (Figure 2). Once larvae are feeding in the ear there is no effective treatment. Therefore, timing insecticide treatments to target the eggs and early instar larvae is critical to control this pest. There is zero tolerance for earworm damage in sweet corn and damage to sweet corn seed negatively impacts yield and profitability.



Figure 1. Adult corn Earworm Moth.

Our Response

In 2009, a University of Idaho Critical Issues Grant was applied for and awarded to a collaborative team of Extension personnel and allied industry to conduct a research-based field project. Next, a meeting be-



Figure 2. Corn Earworm Larvae.

tween collaborators was held to plan out the project. After the planning meeting, supplies were ordered and trap locations were plotted on maps and then traps were placed in sweet corn seed fields.

In late July 2009, 12 corn earworm traps along with pheromone lures (Figure 3) were placed in sweet corn seed fields from Melba to Weiser, Idaho. Traps were placed in fields about 2 weeks prior to the predicted emergence of the second generation of corn earworm larvae based on the growing degree day model developed by Hartstack et. al¹. Traps were checked and adult moths counted once a week and the results were distributed to growers and industry through www.PNWPestAlert.net.

Starting on approximately August 3, 2009 the moth counts began to increase rapidly (Figure 4). These adult moths would soon be laying eggs in corn silking at that time, and the larvae that emerge a few days later would begin feeding on the corn ear. This

information was put into a “pest alert” message along with a recommendation to increase field scouting for corn earworm eggs and larvae. Also included were chemical control recommendations from the Pacific Northwest Insect Management Control Handbook if the grower determined an insecticide application was necessary.

Program Outcomes

At the conclusion of the 2009 growing season an evaluation of this project was conducted. The following question was inserted within the annual www.PNWPestAlert.net evaluation: “Were the alerts about corn earworm useful to you?” Approximately 70 percent of survey respondents marked yes, indicating the corn earworm alerts were useful. Next we asked survey respondents how the alerts were useful. Following are some of the responses we received:

- Alerts let me know when they were detected and at what levels,
- Data confirmed our scouting reports, it helped to time our insecticide sprays,



Figure 3. Corn Earworm Trap with Pheromone Lure.

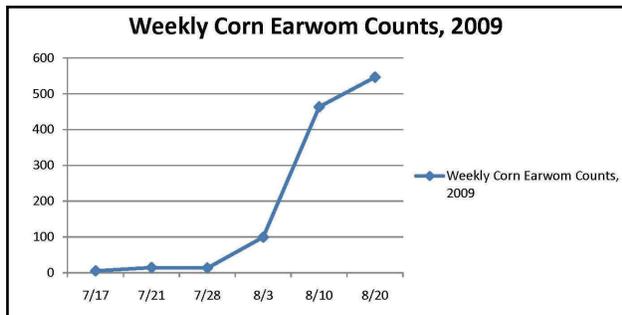


Figure 4. 2009 Weekly Corn Earworm Counts.

- I was able to monitor for harvest for fresh market,
- It alerted me when to scout fields carefully.

The data collected with this project was passed on to growers in a timely manner through the www.PNWPestAlert.net website enabling them to increase field scouting and make insect treatment decisions efficiently

The Future

The program collaborators found that the actual emergence of the second generation of adult moths matched very closely with the emergence date predicted by the growing degree day model. In the future, pest alerts pertaining to the emergence of the second generation moths will be based solely on the growing degree day model.

Cooperators and CoSponsors

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References

¹ Online Phenology and Degree Day Models for Agricultural Pest Management Decision Making in the U.S. <http://uspest.org/cgi-bin/ddmodel.pl?spp=cew>.

FOR MORE INFORMATION

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