Pheromone Trapping Mint Root Borer in Central Oregon

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Abstract

Twelve pheromone traps that attract male mint root borer moths were placed in three fields throughout central Oregon on June 8, 2011. Adult mint root borer moths observed in trap peaked from mid to late July which correlated well with the prediction model. Larvae were found in two of the three fields, verifying suspected infestations. It appears the Integrated Pest Management on Peppermint 3.0 model may adequately predict egg laying, as a basis for applying ovicides.

Introduction

The mint root borer is a common pest in mint production areas of the Pacific Northwest. Pheromone traps, which emit a scent that attracts the male moths, were used to determine the timing of the moth hatch. The *Integrated Pest Management on Peppermint 3.0* (IPMP) computer model designed by Berry and Coop (www. http://uspest.org/mint/) was used to predict peak moth catch, with trappings in the field used verify model accuracy.

The objective of this project was to determine accuracy of development model dates using pheromone traps for mint root borers in commercial fields.

Material and Methods

Four traps were placed in each of 3 fields located on the Agency Plains, Culver, and Prineville on June 8, 2011. Traps were checked on a weekly basis from June 15 until August 1, when fields were harvested. Traps were moved to the edge of fields at locations where counts were high just prior to harvest. After harvest, roots were dug weekly from August 30 to October 4 to monitor developing larvae.

Mint plants were removed with a shovel to a depth of 8 inches, pulled back to expose soil and roots. Samples were shaken lightly to remove loose soil from the roots. This soil was examined for larvae, then plant and root samples were placed in a bucket and transported back to Central Oregon Agricultural Research Center. Plant samples were processed for seven days using Berlese funnels.

Berlese funnels are used for extracting insects and other arthropods from soil and litter samples. Insects and other arthropods that live in soil or roots will move away from a heat source that is drying out the soil. Therefore, a heat source above the soil samples is used to cause the insects to move downward, where they will fall through a screen holding the sod sample down a funnel and into a container for collection. Insects were collected, identified, and counted.

Results and Discussion

The number of mint root borer moths collected in individual traps were quite low for 2 of the 3 fields. IPMP development model predicted June 1 as the first moth catch; first moth appeared in pheromone traps the week of June 14. Peak flight occurred July 12 through July 20 in the Culver field. This was somewhat earlier than the development model's prediction of August 3. Traps were moved to the side of the field during mint harvest, with numbers decreasing dramatically either due to location or timing of the end of the flight.

Early stages of larvae were found immediately after harvest in the Culver location. Unfortunately, the field was removed from production, preventing further sampling. Early stage larvae were also found at the Prineville location, where sampling was halted due to insecticide application to the field. Using the IPMP development model as a guide to determine peak egg-laying dates should be adequate for timing of new ovicides that potentially provide control of the mint root borer at the egg stage.

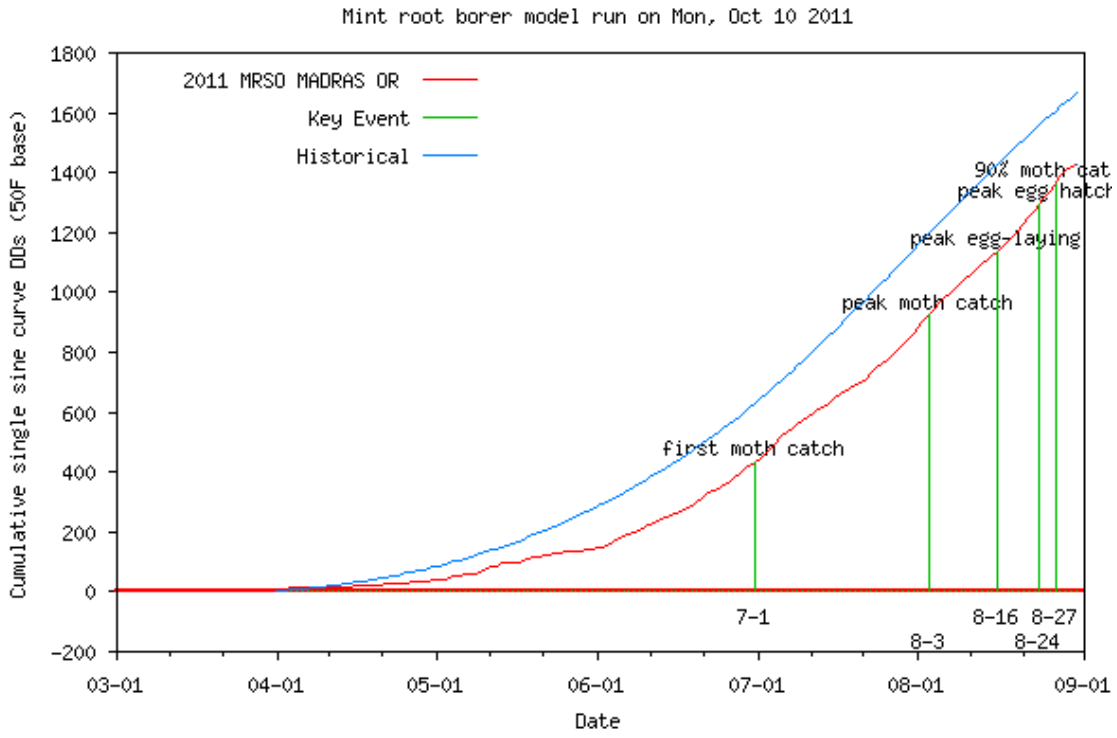

Figure 1. Prediction model for Madras, Oregon, 2011.

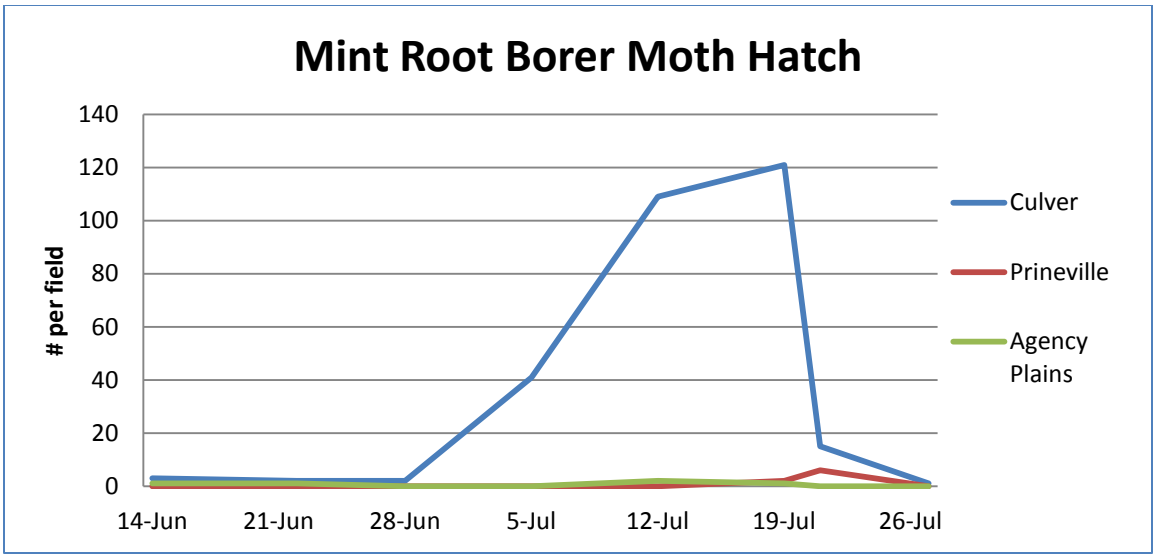

Figure 2. Number of mint root borer moths collected per field, 2011.

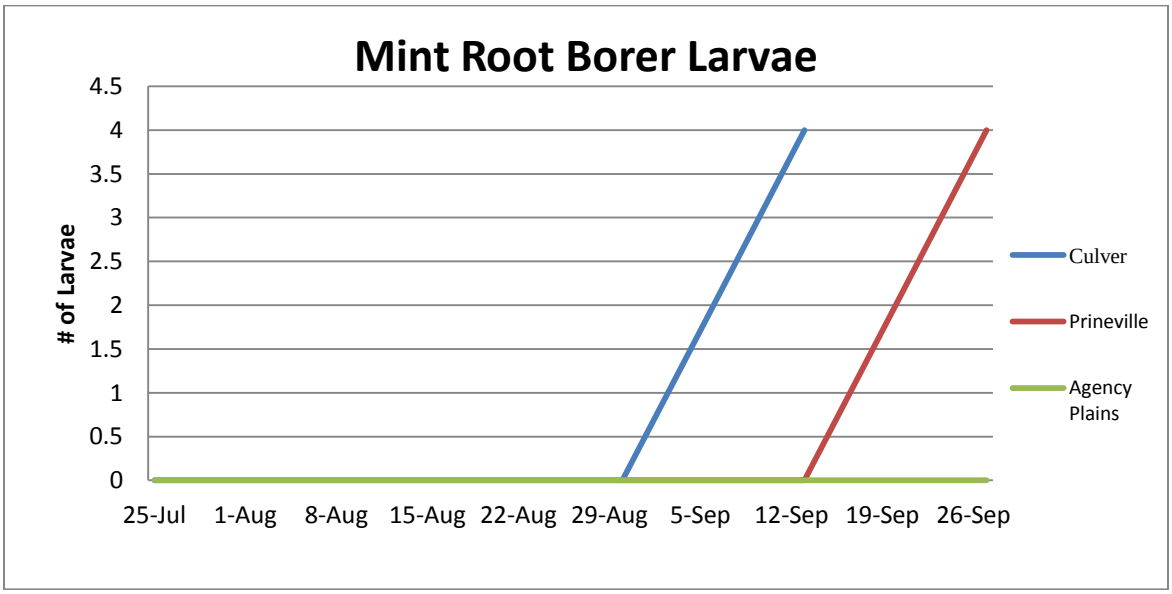

Figure 3. Numbers of mint root borer larvae from Berlese funnel soil samples. Sampling was discontinued at Culver and Prineville, Oregon due to treatment or field removal. No larvae were collected at the Agency Plains location.