

Electronic Mint Pest Alert Newsletter Regarding Control of Mint Root Borer, Cutworm Complex and Loopers (Year 3)

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Abstract

An electronic newsletter was developed for the peppermint production regions in Oregon to assist growers and fieldmen consider control of mint root borers, cutworms, armyworms and loopers during the growing season prior to crop damage. Recommendations of optimal insecticide application timing were based on the insect development models, and were provided through weekly e-Newsletters in each region from mid-June until the end of July. Extension Agents from the Willamette Valley, Central Oregon, and Union County provided scouting services to confirm insect development model accuracy. A formal survey of those receiving the newsletter indicates that the newsletter was well received, provided information valuable to growers and crop consultants, and respondents would all like to see the newsletter continue.

Introduction

Mint root borer is one of the more serious insect pests of commercial peppermint in the Pacific Northwest based on discussions with OSU entomologists, Ralph Berry and Glenn Fisher. In some regions, cutworms are considered an equally important pest, with the variegated cutworm being the most common and damaging species of the cutworm complex. Additional pests include loopers and armyworms.

Coragen® provides a new approach to control these insect pests prior to crop damage in an environmentally friendly manner. The traditional approach for mint root borer has been to apply Lorsban Advance® in the fall, which requires irrigation to move the product into the soil for larval control. In contrast, Coragen® provides control of eggs and first instar larvae feeding on foliage prior to dropping to the ground to enter the rhizomes. The life cycles of these larval pests, based on insect development models, offer a window of opportunity to provide control of more than one target pest with a single application of the new insecticide. This in-season and strategic insecticide application provides an opportunity to control mint root borers, cutworms and loopers before the pests cause damage during the growing season.

This was the third year of distributing an electronic Mint Pest Alert Newsletter that included information on larval insect development and control recommendations. The e-Newsletter was created and distributed with three objectives in mind:

1. To deliver region-specific, insect development information as an IPM-decision support tool for larval pest control throughout mint production areas in Oregon.

2. To assist growers, fieldmen and industry representatives in maximizing the effectiveness of Coragen® to control eggs and larvae of mint root borer (MRB), cutworms, armyworms and loopers.
3. In addition, to provide degree-day information that will benefit those using traditional products like Orthene® and Lorsban Advance®.

Methods and Materials

Regional cooperators on the project were Clare Sullivan (S. Willamette Valley), Darrin Walenta (Union Co.), and Marvin Butler (COARC). For this third year of the project, electronic templates and contact lists for the newsletter were updated for the three regions: Willamette Valley, northeastern Oregon and central Oregon. Insect pest degree-day development models (source: Integrated Pest Management on Peppermint Program) were generated using temperature data from AgriMet stations in each region: Corvallis (Willamette Valley), Imbler and Baker Valley (N.E. OR), Madras and Powell Butte (central Oregon). Links to AgriMet weather station data is available at: <http://www.usbr.gov/pn/agrimet/>.

Degree-day development models for mint root borer and variegated cutworm were run weekly using the models in IPMP from mid-June through late July and again in early September, with results provided through the weekly electronic Mint Pest Alert Newsletter. OSU faculty cooperators provided onsite confirmation of model accuracy for each region. Four commercial fields were used for field scouting in each region and were scouted weekly. Pheromone traps were used for mint root borer adults and sweeps were used for cutworms. Soil samples were taken for mint root borer larvae assessment in early September.

A survey was developed to evaluate the newsletter value and impact to Oregon mint growers and industry representatives. Regional OSU cooperators sent out an email with the survey in September. This information will be helpful for OSU faculty to assess the impact of their Extension program, determine whether the newsletter has accomplished its goal, and if there is ongoing value to the Oregon mint industry of continuing the newsletter.

Results and Discussion

Average MRB moth numbers were highest in the Willamette Valley. The MRB moth population first peaked during the June 29-July 6 trapping period, which lined up with the peak moth catch predicted by the model (July 2nd). The population then dropped, as the model predicted, but peaked again from July 20-28. Mint root borer moth numbers in Central Oregon were moderate. Culver trap numbers for MRB moths peaked July 7-14, and Prineville July 14-21; both of these times lined up with the peak moth catch predicted by the models. The MRB moth counts remained very low all season in Baker Valley. Moth catch peaked July 16-22 in Baker Valley, which was in line with the model's predicted peak moth catch of July 17th.

Cutworm moth and larvae numbers remained fairly low in all regions throughout the 2016 growing season. There were also no MRB larvae found in any of the soil samples taken in early September.

In 2016 the newsletter was sent to 115, of which ~60% are growers, ~35% are crop consultants/fieldmen, and ~5% are involved in other aspects of the mint industry. As of mid-November only 12 people had responded to the survey (5 growers and 7 fieldmen), the majority of which were from the Willamette Valley.

Based on these 12 respondents, the relative importance of the following insect pests across the regions was rated 1) mint root borer, 2) cutworm, 3) symphylan, 4) armyworm, and 5) looper. This was a positive result since the newsletter focuses on MRB and cutworm by providing specific insect development information for these two pests.

Level of knowledge about degree-day insect development models from reading the newsletter increased from 2.7 to 3.8 on a scale of 1 (uninformed) to 5 (fully informed). The degree to which the newsletter influenced insecticide application timing decisions was rated a 3.25, on a scale of 1 (no influence) to 5 (high influence). This was an increase from 2015 when the influence for application timing was rated at 2.9. Level of knowledge about the use of Coragen from reading the newsletter increased from 2.7 to 3.6 on a scale of 1 (uninformed) to 5 (fully informed). The degree to which the newsletter influenced decisions about insecticide product of choice was rated 3.2 on a scale of 1 (no influence) to 5 (high influence). This year an equal number (41%) of respondents used traditional insecticides (Orthene, Lorsban, etc.) to control larval pests as Coragen pre-harvest – last year ~70% of respondents used traditional insecticides. The other method of control was Mocap in the fall.

When asked whether future plans include the use of Coragen, 7 people said “Yes”, 1 said “No” and 4 said “Maybe”. If respondents did not plan to use Coragen in the future, the major reason given was the higher cost of Coragen (57%), as it was in 2015.

Respondents rated the newsletter effectiveness in assisting grower/crop consultants in using degree-day models and specifically targeting use of Coragen for mint root borer control of eggs and first instar as 3.5 on a scale of 1 (not effective) to 5 (very effective). This was the exact same rating as in 2015. When asked if the Mint Pest Alert Newsletter should continue as an ongoing project all 12 respondents unanimously “Yes”.

We also asked respondents how they planned to manage mint larval pests without chlorpyrifos if the EPA proposal to revoke all chlorpyrifos tolerances is enacted. The majority of respondents (53%) said they would use Coragen (Figure 3).

In answering how the Mint Pest Alert Newsletter could be improved in the future, the suggestions were more focus on life cycles, degree day models, and identifying characteristics of the different larval pests.

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