

## **Electronic Mint Pest Alert Newsletter to Promote Optimal Application of Coragen® to Control Mint Root Borer, Cutworms, Armyworms and Loopers**

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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. The newsletter was designed as a two-year project to help with timing of this new insecticide application strategy, and to be used in conjunction with existing field monitoring programs. Extension Agents from the Willamette Valley and Union County were valuable cooperators and 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/scouts, and respondents would overwhelmingly 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 OUS entomologist, 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 three pests, based on developmental models, offer a window of opportunity to provide control of more than one target pest with a single application of the new insecticide.

This new application strategy timed earlier in the growing season provides an opportunity for growers and industry representatives to control mint root borers, cutworms and loopers before the pests cause damage during the growing season. The objective of this project was to deliver region-specific insect development information in the form of an electronic Pest Alert Newsletter to assist growers, fieldmen and industry representatives in maximizing the effectiveness of Coragen® applications throughout Oregon. A secondary objective was to evaluate the Newsletter's impact on current pest management programs and knowledge of pest phenology.

## Methods and Materials

Regional cooperators on the project were Darrin L. Walenta (Union Co.), Clare Sullivan (S. Willamette Valley) and Nicole Anderson (N. Willamette Valley), in addition to the involvement of Ralph Berry, Entomology Professor Emeritus. For this second 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 June 12 through July 10 and August 28 through September 4, with results provided through the weekly electronic Mint Pest Alert Newsletter. OSU faculty cooperators provided onsite confirmation of model accuracy for each region. Two commercial fields from two mint production areas in each region were used for this field scouting activity. Pheromone traps were used for mint root borer adults and sweeps were used for cutworms. Soil samples were used for mint root borer larvae assessment in September. There was general consensus from data across regions that the insect development models are reliable, even during the exceptionally warm 2015 season.

A survey was developed to evaluate the newsletter value and impact to Oregon mint growers and industry representatives. An email was sent out by regional OSU cooperators in late August asking those on the mailing list for that region to participate in the online survey. The last newsletter in early September provided follow-up reminders about the survey, followed by a reminder in mid-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

The newsletter was sent to 107 individuals, 67 growers, 37 crop consultant/field scout and 3 others involved in the mint industry. Twenty-eight individuals responded to the survey, which represents 26% of those who received it. Of the 28 who responded to the electronic survey, 43% were growers, 50% crop consultant/field scouts and 7% mint industry representatives (Figure 1). Respondents by region were 68% from the Willamette Valley, 14% from the Grande Ronde and Baker Valleys and 18% from central Oregon (Figure 2).

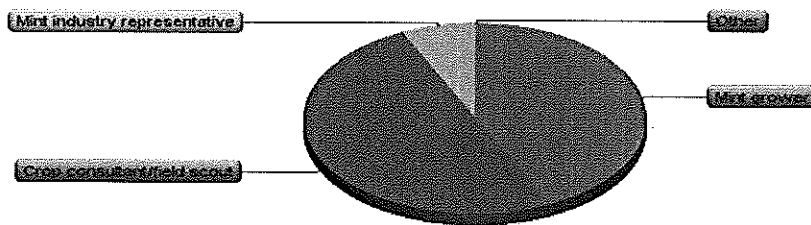
Across regions the relative importance of the following insect pests was rated 1) mint root borer, 2) cutworm, 3) looper and 4) armyworm. Level of knowledge about degree-day insect development models from reading the newsletter increased from 2.9 to 4.0 on a scale of 1 (uninformed) to 5 (fully informed). The degree to which the newsletter influenced insecticide application timing decisions was rated a 2.8, on a scale of 1 (no influence) to 5 (high influence). Confidence in degree-day insect models during this extremely warm season was rated 3.5 on a scale of 1 (no confidence) to 5 (high confidence).

Level of knowledge about the use of Coragen from reading the newsletter increased from 3.4 to 4.1 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 2.8 on a scale of 1 (no influence) to 5 (high influence). Current practices for controlling larval pests were 72% use of traditional insecticides (Orthene, Lorsban, etc.), 36% applied Coragen pre-harvest and 12% applied Coragen post-harvest (Figure 3). When asked whether future plans include the use of Coragen, 63% said “Yes”, 19 percent were “No” and 19 percent said “Maybe” (Figure 4). If respondents did not plan to use Coragen in the future, the major reason given was the higher cost of Coragen (57%).

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). When asked if the Mint Pest Alert Newsletter should continue as an ongoing project 75 percent indicated “Yes”, 25 percent said “Maybe” and 0 percent indicated “No” (Figure 5). Maybe respondents were asked to explain, with the explanations largely positive about the need for this area-wide information for fieldmen that the grower depends on for scouting and recommendations. In addition, four individuals provided comments at the end of the survey; all were very positive and appreciative of the newsletter.

### Acknowledgements

The primary author would like to thank the Oregon Mint Commission for their support of this project, Darrin L. Walenta, Clare Sullivan and Nicole Anderson for their cooperation and active participation, and Ralph Berry for his expertise and ongoing interest in the project.



**Figure 1.** Survey respondents by category.

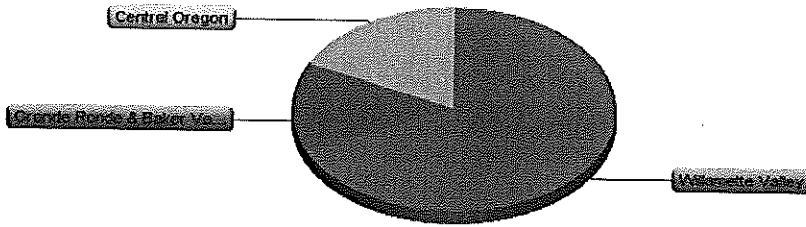


Figure 2. Survey respondents by mint production region.

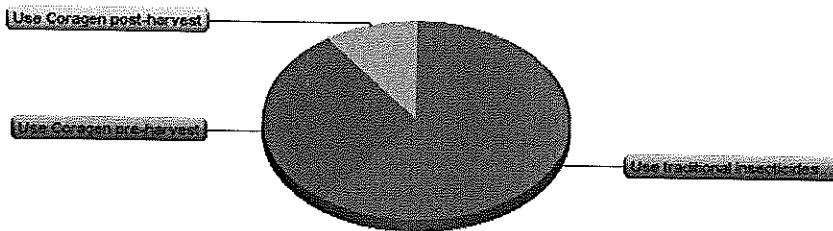


Figure 3. Insecticide product preferences and Coragen use application timing.

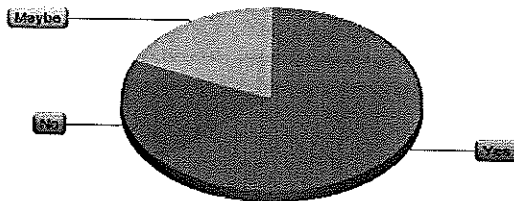


Figure 4. Whether insecticide plans for the future include the use of Coragen.

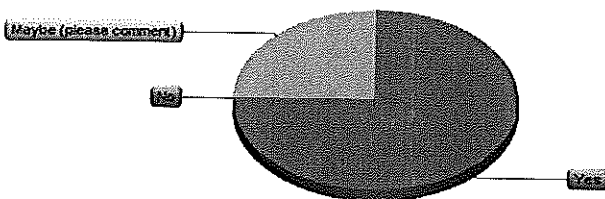


Figure 5. Response to whether the Mint Pest Alert Newsletter should continue as an ongoing project.