

Improved NEWA Vegetable Models

Annual Report for Smith-Lever Funded Projects

Executive Summary

Weather based pest forecast models are important tools for IPM implementation. The Network for Environmental and Weather Applications (NEWA) (<http://newa.cornell.edu>) provides forecasts for important pests of fruit and vegetables. A 2007 survey (Carroll et al.) of farmers using NEWA showed that use of pest forecasts saved an average \$19,500 in spray costs and prevented an average of \$264,000 in crop losses each year. The survey also found that vegetable growers comprised only 30% of users, a level we hope to increase through this project. We will update the NEWA vegetable models to improve the user interface and incorporate forecast weather. We will also investigate new vegetable models that could be added to NEWA.

To date, have updated the models for late blight, a serious pest of potato and tomato, the degree-day model for cabbage maggot, a pest of multiple crucifer crops, and are in the process of updating the onion disease and insect models. We have identified three new models to add in the next funding cycle.

Project Status

1. Progress Summary

In collaboration with Bill Fry and Ian Small, we have implemented a new late blight forecasting system and a new user interface for potato and tomato late blight. We revised the user guides to reflect these changes. In collaboration with Tony Shelton, we developed a new user interface for the cabbage maggot degree-day model and updated the user guide for that model. We consulted with Christy Hoepfing, who did an extensive evaluation of the NEWA onion models in 2006, on best ways to improve the onion models. We developed a new user interface based on Christy's work, which is currently under review. We identified three potential new models: leek moth, swede midge, and carrot foliar diseases that we will start working on once the onion models have been completed.

Lessons learned: It is not currently possible to track use of individual models on NEWA so we won't be able to use web statistics to measure increases in use of the vegetable models.

2. Expected and Observed Impact/Outcome (economic, environmental, and social)*

Expected impacts include increased use of vegetable forecast models and improved user experience with the new interfaces. This will result in improved pest management outcomes for users through better timing of pesticide applications while maintaining crop quality, and may decrease pesticide use, especially for disease pests in drier years.

Communications

3. Communications

The models have been implemented on the NEWA web site: <http://newa.cornell.edu>.

Presentations

4. Presentations

The late blight models were presented at three grower workshops and one intensive late blight forecast training:

1/16/14: NEWA resources for vegetable growers. Long Island Ag Forum, Riverhead, NY

1/26/14: Late blight forecasting. NOFA-NY Winter Conference, Saratoga Springs, NY

3/20/14: Late blight forecasts on NEWA and what's available on usablight.org. Late blight Decision Support System training, Rochester, NY

10/21/14: Late blight forecasting. NOFA-NY Disease Management Workshop, Geneva, NY

Other

5. Other

We've revised the user guides on NEWA for the late blight, cabbage maggot, and onion disease models

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