

The University of Vermont

December 26, 2019

**LEEK MOTH RESEARCH UPDATE**

Research Background

For the past five seasons, our team, the Vermont Entomology and Participatory Research Team (VEPART), in collaboration with the Agroecology and Livelihoods Collaborative and UVM Extension has led an on-going research program to build an effective IPM program for the management of leek moth (LM), *Acrolepiopsis assectella*, in allium crops.

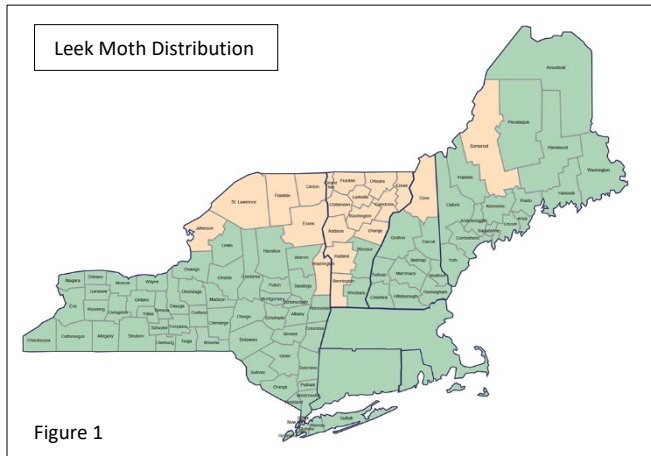
Our team is currently conducting a multi-year project to answer the following research questions:

1. What is the current and potential distribution of the leek moth?
2. How do allium varieties differ in their susceptibility to leek moth damage?
3. What cultural and/or biological control tactics are effective for the management of leek moth in onion crops?

Leek Moth Distribution

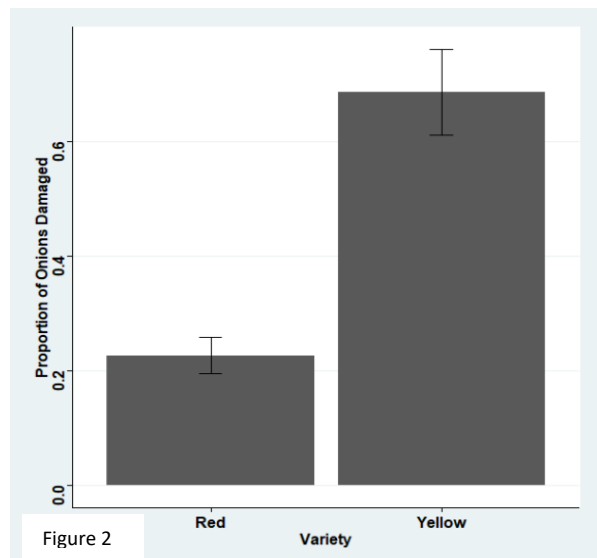
Thanks to the efforts of numerous growers throughout the NY/VT region, our research team has been tracking the expansion of the leek moth distribution from its original introduction in northern NY for the past several years. According to our most recent data, the current distribution of the moth, indicated in yellow, includes northeastern NY, a large majority of VT, northern NH and western Maine (Figure 1).

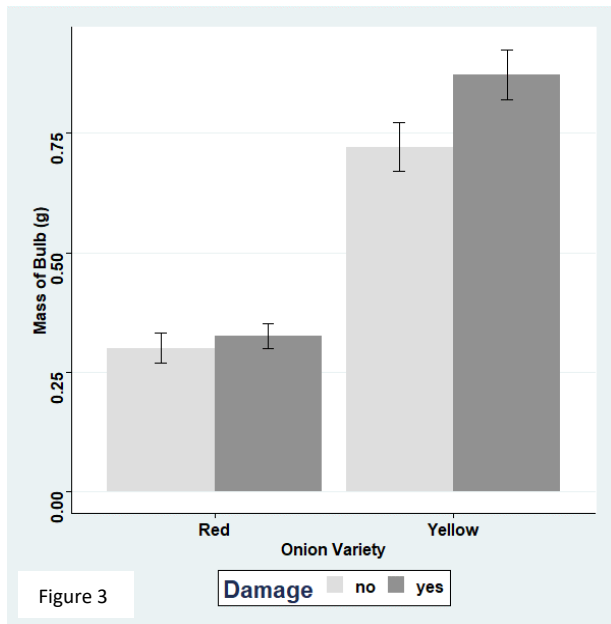
For growers interested in participating in our leek moth monitoring program, we will have a limited number of traps and lures available for the 2020 growing season. Please contact us directly via our email contacts at the end of this brief if you are interested.



Red/Yellow Onion Trials

Recent onion varietal trials performed at UVM’s Horticultural Research and Education Center (HREC) revealed that **leek moth exhibit a marked preference for yellow onions**. When red and yellow onions were planted in the same bed, adult leek moths preferentially laid eggs upon the leaves of yellow onions, **leading to significantly higher amounts of LM damage in yellow onions** when compared to red onions (Figure 2). LM did not exhibit a distinct preference for particular cultivars within red or yellow varieties.

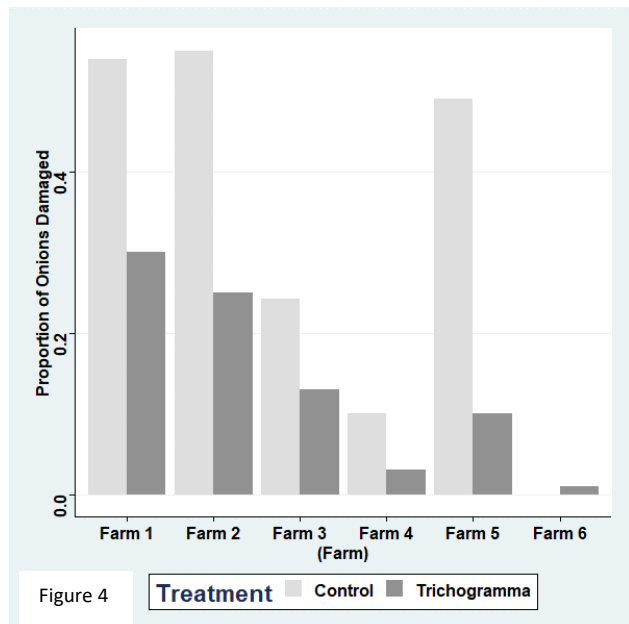




In addition to their preference for yellow onions, LM adults also prefer to deposit eggs on the leaves of larger onions. This result may not be surprising, as larger onions likely release higher amounts of the volatile odors that attract LM to their host plants. However, it is important to note **that leaf damage from LM larvae does not affect the size of onion bulbs** (Figure 3). The primary concern for onion growers, is therefore, bulb damage stemming from LM larvae moving into the bulb during curing and/or storage.

#### Biological Control Trials

In collaboration with the Canadian biological control company, [Anatis Bioprotection](#), we are currently testing the efficacy of the parasitoid wasp, *Trichogramma brassicae*, as a biological control option for managing LM in onion crops. Preliminary data from our first field trials replicated across six Vermont farms are promising. **The release of *T. brassicae* within onion plots significantly reduced the incidence of LM larvae in onion leaves** (Figure 4.) Provided these results, our team will be advancing our trials to include other allium crops and release protocols.



#### Post Harvest Trials

Because leek moth typically lay their eggs in the above ground tissue of onions, **a grower suggested that we test the utility of onion topping as a strategy to remove larvae before they can move into the onion bulb.** The resulting research trials testing the effect of onion topping on bulb damage and storage quality are on-going as we await storage quality data. Please stay tuned.

#### Research Support and Participation

Participatory Action Research (PAR) is an essential component of our research and drives our research agenda. Thanks to the input of the local grower community, much of our work aims to directly address issues with grower informed strategies. In the spirit of PAR, **we are including a link to our most recent grower survey on LM to inform our research efforts moving forward.**

<https://forms.gle/ZC7bxytwRtKKGrpbA>

For more information regarding any of our research and/or monitoring efforts or participating in any of our future research, please contact our research team.

#### **Vermont Entomology and Participatory Action Research Team (VEPART)**

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