Pest Alert: *Allium* or onion leafminer

Phytomyza gymnostoma

IPPM Insect Pest Prevention & Management

Oregon Department of Agriculture

Introduction

Allium leaf miner (ALM) or onion leafminer, *Phytomyza gymnostoma* Loew (Diptera, Agromyzidae), is one of the most important *Allium* (garlic, leek and onion) pests in Europe. In 2015, ALM was found in the United States in Pennsylvania. So far, ALM infestations have been found in 17 counties in Pennsylvania, three counties in New Jersey and possibly one county in New York. ALM has been moved throughout Europe but is native to Germany and Poland.

ALM is a threat to Oregon's onions, one of Oregon's top 20 agricultural commodities valued at over $125 million in 2016. ALM also threatens Oregon's garlic and leek production valued at over one million dollars in 2014. Home and organic *Allium* production are likely at the greatest risk.

There is a high risk of importing ALM in host plant material, including bulbs with no vegetative growth due to ALM's habit of pupating in bulbs. The highest risk is from importing *Allium* from infested states (currently NJ, NY, and PA). The US continues to import fresh onions and other *Allium* from infested areas of Europe, including Belgium, Netherlands, and Spain.

Despite protests from the Oregon Department of Agriculture and regulatory agencies of other states, the USDA has deregulated this new pest. This means that the pest will not be stopped when found during port inspections and it will likely spread to more areas in the US. There will no longer be federal restrictions on the movement of this pest within the US. ODA contends that this is irresponsible because of the threat ALM poses to agriculture in the US and the limited areas currently infested. Oregon is considering a quarantine on *Allium* from infested states and needs the support of the public and the agriculture industry to prevent this pest from arriving and establishing in Oregon.

Damaged onions due to ALM larval feeding. Modified from image by Sven-Erik Spichiger, Pennsylania Department of Agriculture

Host Range

All members of the genus *Allium* are potential hosts, including leeks, onions, garlic, chives, shallots and green onions. Leeks and chives appear to be preferred hosts. Ornamental plants are also at risk as are the many native *Allium* in Oregon.

Pest Status

Larval feeding can cause the death of small plants and also twisted and curled leaves. Severe infestations can result in 100 percent crop damage. The pest is most damaging to organic and backyard *Allium*, but severe damage is also reported from commercial farms.

Fall populations overwinter as pupae. Two generations are expected: one in spring, possibly March to May, and another in fall, possibly September to October.

Adult *Allium* leafminer. Modified from image by Sven-Erik Spichiger, Pennsylania Department of Agriculture

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Identification

The most obvious signs are the feeding punctures made by the female and the curling of the leaves caused by larval feeding. The feeding punctures appear as pale spots, typically in a row down the leaf. In heavy infestations, larval feeding will cause leaves to be curled and distorted.

Adults can be found on host plants. They are gray flies about 3mm (1/8 inch) long with mostly yellow heads and yellow markings on the sides of their abdomen. There are other species of leafminers that might attack *Allium*, but an expert is needed to tell them apart.

Larvae are yellowish white maggots up to 8mm (5/16 inch) long. Larvae feed down toward the base of the leaf and their "mine" becomes wider as they grow.

Pupae are reddish brown to dark brown and about 3.5mm (little over 1/8 inch) long. They will be found at the end of feeding mines and can be down in the bulb. It may be necessary to peel back the leaves to see them.

Field Identification

Look for:

- Feeding punctures along leaves
- Curling and distorted leaves
- Mines and pupae in leaves
- Black and yellow adults on host plants

Female feeding punctures (left) and pupae in leak leaves (right). Image by Sven-Erik Spichiger, Pennsylania Department of Agriculture

References

Fleischer, S. and Elkner, T. 2016. Pest Alert: Allium leafminer. PennState College of Agricultural Sciences Department of Entomology. http://ento.psu.edu/extension/vegetables/pest-alert-allium-leafminer accessed September 6, 2017

New Jersey Agricultural Experiment Station. 2017 Critical Updates: Mid Atlantic Vegetable Recommendations. http://nj-vegetable-crops-online-resources.rutgers.edu/2017-critical-updates-mid-atlantic-vegetable-recommendations/ accessed September 6, 2017

What can you do?

The Oregon Department of Agriculture is not offering control suggestions at this time due to our intention to eradicate this pest. If you believe you have found ALM, notify ODA immediately. Early detection is vital. Please contact the Oregon Department of Agriculture at plant-entomologists@oda.state.or.us or 503-986-4636.

For more information

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