NORTHWEST CROPS & SOILS PROGRAM
UNIVERSITY OF VERMONT EXTENSION
CULTIVATING HEALTHY COMMUNITIES

Sunflower Insects: Scouting and Identification

Hannah Harwood, Scott Lewins, and Dr. Heather Darby

Currently, only a few insects are known to cause economic injury to sunflower crops in the Northeast. However, as sunflowers become more widespread, additional insect pests are likely to cause damage to this crop. Several insects that have become significant pests in other regions are able to survive here, but have not yet been seen in our sunflower crops. So far, only banded sunflower moth has caused serious crop injury, but other insects can cause yield problems on a field-by-field basis by predating on seed or burrowing into stems and causing lodging. There are also several common pests, as well as beneficial insects, that do not cause crop injury but should be identified and monitored.

Fig. 1. Scout for insects and damage at different sites on a sunflower plant, including the leaves, stem, and head.

Ideally, sunflower growers should scout their fields carefully on a regular basis. Walk into the field and note what you find on the heads, leaves, stems, and flowers of the plant, identifying insects to determine which are pests and which are beneficial or benign members of the natural population. Insects will be found at different life stages on different parts of the plant. Additionally, the lifecycles of different insects will dictate when they will appear in your sunflower field.

Banded Sunflower Moth ***Cochylis hospes***

The adult stage of this small moth can be identified by the dark brown stripe through the middle of the light beige-brown wings. The moths are typically 1/4" - 3/8" long as adults. Larvae are a creamy off-white, turning red and then green as they grow toward their pupal stage, and are around 0.5" by the time they emerge from the head. Banded sunflower moth (BSM) damage results in empty seed hulls, where the larvae have eaten the contents and then exited through the hole at the top of the seed. Presence of the larvae is revealed by loose webbing over the top of the florets in the area where the larvae are eating seeds. The larvae leave the hulls intact and attached to the head, which may lead scouting efforts astray without careful attention to the condition of the seeds.

Fig. 2. Banded sunflower moth adult.

BSM overwinter in the soil as pupae, emerging from the ground in early to mid-July over the course of 3 to 4 weeks, laying eggs within a week of emergence. They favor field edges, especially where there are grassy and shrubby field margins. Adults are most active in the early morning and late afternoon, though they can occasionally be found on the plants' upper leaves during the middle of the day. Adults will typically lay eggs on the upper leaves and developing flower bud. As larvae hatch, they move to the interior of the bud, and begin feeding on

developing florets, and eventually on seeds themselves as they grow. Their presence is difficult to detect until well into the reproductive phase (R 5.9-6.0), when larvae create loose white webbing over seeds that they have consumed. As the seeds begin to mature, larvae can be seen moving between seeds, and their exit holes can be seen in the top of the seed husk. Larvae emerge and drop to the soil to pupate sometime before the seeds reach physiological maturity.

Sunflower Maggot ***Strauzia longipennis***

Sunflower maggot fly is small (1/4–1/2") and yellow with brown striping on the wings that forms a distinct F-shape near the edge. The adults emerge from the soil in mid- to late June and are highly active throughout the day. These small flies lay eggs on the stem of the flowers and the maggots hatch and then burrow their way into the stems, feeding on the pith at the center of the stem. Infestation rates are typically very high; in any given field in Vermont, 60-90% of plants will have 1-10 sunflower maggots in the stalk. However, because the pith is not responsible for any movement of nutrients up and down the stalk or for contributing to the strength of the stalk, the sunflower maggots cause the plant no real harm.

Fig. 3. Sunflower maggot fly.

Sunflower Seed Maggot ***Neotephritis finalis***

Sunflower seed maggot is similar in size, in its adult stage, to the sunflower maggot fly (1/4-1/2" in length). However, the sunflower seed maggot fly has black wings with white dots, as well as a distinct cone-shaped abdomen. The larvae, which burrow into the receptacle, can cause deformation of sunflower heads, resulting in twisted, caved-in heads. There can be associated floret damage, but sunflower seeds can generally still be harvested, and damage is minimal.

Fig. 4. Sunflower seed maggot fly.

Sunflower Midge ***Contarinia schulzi***

Sunflower midge is a small gnat-like insect (just over 1/16") that is difficult to spot in the field, with transparent wings and a tan, striped body. Maggots are very small (just under 1/8"), and are initially found along the edge of the sunflower head, between the bracts and the florets. Sunflower midge maggots feed on tissue between the bracts and the head, slowly migrating into the center of the head as the florets mature. As the maggots migrate into the head, their feeding causes the head to cup toward the center, and seeds will not develop properly. In severe infestations, the head will be almost completely closed, the receptacle enlarged, and there will be no seeds in the head. Damage from sunflower midge in Vermont is not widespread; most fields have only low levels of midge infestation. However, where sunflower midge does exist in high populations, significant percentages of the flowers (10-15%) can be cupped strongly enough to reduce seed development and complicate harvesting.

Fig. 5. Lygus bug.

Lygus Bug ***Lygus spp.***

Many plant bugs, including lygus bugs (also called tarnished plant bugs) are very common in Vermont in virtually all vegetable and fruit crops. In sunflower they feed on developing flowers, which results in brown spots on the seed inside the husk. While this presents a significant problem for confection sunflower seeds, no yield loss in seed weight or oil has been observed even with heavy infestations of tarnished plant bug, and therefore there are no established control measures in oilseed sunflower.

Insect Pests Common in Vermont Sunflower Fields

Common name	***Scientific name***	***What to look for***	***When to look***	***Sunflower plant damage / symptoms***	
Banded sunflower moth	*Cochylis hospes*	Adult: beige moths with triangular bands on wings Larvae: small coral-colored or green maggots	Adults arrive in July, scout for eggs at sunflower R3-R4 stage (late July/early Aug), seed damage at maturity/harvest	Loose webbing over mature heads, seeds with tell-tale exit holes in seed and little to no meal inside	
Sunflower maggot	*Strauzia longipennis*	Larvae: off-white maggot Adult: small, yellow fly with brown stripes on wings in an F-shape	Slice open stem during season, check for pith damage and maggots	Maggots in stalk can weaken stem	
Sunflower midge	*Contarinia schulzi*	Small, gnat-like insect—difficult to find in the field, flies away quickly, very small eggs can sometimes be found along bracts	Adults appear in June and July; maggots can be found in head as florets mature	Cupped, deformed heads where plant tissue has died back around the edges of the sunflower receptacle	
Lygus bug	*Lygus spp.*	Lygus bugs are plant bugs, with slender, delicate legs and antennae, and angled patterns, often found on the head of the sunflower	Adults are present throughout the growing season	Damage along leaves and stems (and the intersection), where lygus bug feeds	
Japanese beetle	*Popillia japonica*	Shiny brown beetle with green head	Adults are present throughout the growing season	Skeletonized (lacey/holey) leaves	

Other insects in the sunflower fields may either be very minor insect pests, pollinators, or beneficial insects. It is important to understand what species are prevalent in the field in order to make management decisions. Keep an eye out for the following insects in your sunflower field, and contact us if you have questions or photos to share!

Fig. 6. Ants on plant petiole (neutral species).

Fig. 7. Honeybee (pollinator).

Fig. 8. Ladybug larvae on sunflower leaf (beneficial).

Fig. 9. Spiny-shouldered soldier beetle (beneficial).

This research and publication was supported, in part, with funding from the Northeastern IPM Center (NortheastIPM.org) and the USDA National Institute of Food and Agriculture. The Northeastern Integrated Pest Management Center fosters the development and adoption of IPM, a science-based approach to managing pests in ways that generate economic, environmental, and human health benefits. The Center works in partnership with stakeholders from agricultural, urban, and rural settings to identify and address regional priorities for research, education, and outreach. UVM Extension would like to thank Roger Rainville at Borderview Research Farm in Alburgh, VT, as well as the participating Vermont growers who allow on-farm scouting and data collection.

Northeastern IPM Center

USDA
United States Department of Agriculture
National Institute of Food and Agriculture

UVM Extension helps individuals and communities put research-based knowledge to work.

Any reference to commercial products, trade names, or brand names is for information only, and no endorsement or approval is intended. Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. University of Vermont Extension, Burlington, Vermont. University of Vermont Extension, and U.S. Department of Agriculture, cooperating, offer education and employment to everyone without regard to race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or familial status.

UNIVERSITY OF VERMONT EXTENSION
CULTIVATING HEALTHY COMMUNITIES

© 2013, University of Vermont Extension

Photographs by Hannah Harwood