



Where do our field crop insect pests spend the winters?



By Mike Hunter, Regional Field Crop Specialist

Do you ever wonder where some of our insects spend the winter? When it is really cold outside how do our field crop insect pests survive our Northern New York winters? Will milder than normal temperatures increase our field crop insect pest problems in 2020? These are all common questions that arise during the winter months.

Where do insects spend the winter months? Some insects head south to warmer climates in the fall and avoid the freezing cold temperatures altogether. When we experience those subzero temperatures it certainly sounds like a good idea for most of us. Some of our common corn insect pests that do not overwinter in New York include the corn earworm, armyworm and black cutworms. Potato leafhoppers are a very destructive insect pest of alfalfa. The potato leafhopper is another insect that spends the winter in warmer southern climates and returns in May and early June.

Insects that do spend the winters in New York have different ways of coping with the freezing temperatures in order to survive. Some insects are freeze tolerant and others are freeze susceptible. Freeze tolerant insects are able to withstand ice crystals forming within their bodies. The insect will produce a protein that controls the formation process of the ice crystals. These insects will not totally freeze solid. It is only the fluids within the insect that freezes.

Freeze susceptible insects accumulate specialized carbohydrates prior to the winter that serve as an antifreeze. This antifreeze compound is referred to as a cryoprotectant. The antifreeze lowers the freezing point of the fluids in the insect and prevents ice crystals from forming.

A key to the survival of the insect is to avoid super cold and fluctuating temperatures. To do this some insects will burrow under plant debris to spend the winter. Others will burrow deeper into the soil to a more stable environment. If the frost does not go too deep below the soil surface it may improve the survival of some of our insects that spend the winter below ground.

Not all insects that overwinter in our area are adult insects. Some insects overwinter as eggs and others overwinter as larva. The Western Bean Cutworm is a common pest found in corn and dry beans in New York. Some of our Western Bean Cutworms will spend the winter in a soil chamber in the pre-pupa stage in NNY (Note: many of the Western Bean Cutworm moths we find in our area migrate to New York in early July). European corn borers will overwinter as larva in the corn stalks and soil. Western and Northern Corn Rootworms will overwinter as eggs in the soil. In our area, slugs will primarily overwinter as eggs but some adult slugs can survive our winters if it is very mild.

The alfalfa weevil will overwinter as an adult along the edges of alfalfa fields under plant debris. The alfalfa snout beetle has a two year life cycle. Depending on the stage of the life cycle, the alfalfa snout beetle will either be an inactive adult deep in the soil or as a larva.

The soybean aphids will overwinter as eggs on the buckthorn trees in fencerows near soybean fields. Two spotted spider mites are an occasional soybean pest in our area and spend the winter as an adult in plant debris. The Japanese beetles that are found in many field crops, fruit trees and ornamentals in New York overwinter as larva in the soil.

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Will milder than normal temperatures increase our field crop insect pest problems in 2020? The answer is probably not. It is very hard to predict the field crop insect populations from one season to another. There are many factors other than weather that contribute to their survival. In nature, there are also beneficial insects and pathogens that kill some of these field crop insect pests. If the mild winter is favorable for the survival of a particular insect it would also likely favor the development and survival of some of these beneficial insects and parasitoids.

If you have any additional questions about any of these field crop insect pests feel free to contact me at (315)788-8450 or meh27@cornell.edu.

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