Meet the Maggots -and the flies that make them...

Seed Corn and Cabbage maggots are now out and about, Onion coming soon...

All three of these flies are in the genus *Delia*, and have similar life cycles. As can be seen below, they resemble small house flies, though the onion fly is about twice the size of the other two. They all overwinter as small brown pupae in the soil. The adult flies complete their development as early spring warmth accumulates (known as Growing Degree Days: GDDs). Because these insects resume development at low temperatures, GDDs are computed from a base of 40°F. If the average temperature on a given day is 48°F, 8 GDDs (base 40) have accumulated. For cabbage maggot fly, 450 to 460 GDDs represents the amount of heat accumulation at which 50% of the local population has emerged, which was on May 2 of this year. By the time you see this, we will have flown way past that because of the unseasonal heat from Wednesday through Friday. Compare to 2017: the 50% emergence date was April 27. As cool as this year has been, we are only about 5 days behind last year. Without all the fancy measuring and computing: if you see yellow rocket, also known as wintercress, in bloom, you can be sure that cabbage maggot flies are out. Cabbage maggot flies are specific to Brassicas, but Seed Corn maggot flies have a much wider host range (40 host plants at least) but are most important for growers of beans, corn, peas, cucumber, and melon. Their 50% emergence date is at only 360 GDDs so they are active. All of these flies lay eggs shallowly in the soil at the base of germinating or young seedlings. Using a pencil point, move soil crumbs away from stem bases and look for slender white eggs. (Photo on next page.)
If you have a history of problems with these flies in your fields, yellow sticky cards can be installed in several locations in your planting to monitor presence of the flies. This will help you time your control measure if you are not using row covers. Even if you are using row covers, it's a good idea to check on what's going on under there now and then. The tell-tale signs of underground feeding damage are wilting of young seedlings, yellowing and purpling of oldest leaves while the new foliage is dull green, and total seedling collapse. At this point gently pull up the plant and look for damage on the underground stem and presence of larvae.

The number one prevention method on smaller plantings (up to an acre or two) is the use of floating row cover, which provides that added benefit of flea beetle protection. Preventative insecticide application was shown at UMass to have positive effects, including one OMRI approved product, but multiple applications were required. You can see that research report here: https://ag.umass.edu/sites/ag.umass.edu/files/newsletters/vegnotes-11-13-14.pdf.

As for onion maggot flies, 50% emergence is at about 735 GDDs. Temperatures over the next week will control when this will be reached, but most likely by around May 15. A few may have begun to emerge already. If this is historically a problem pest for you, consider row covers. While there is little field testing, as opposed to laboratory and greenhouse testing, the entomopathogenic nematode Steinernema feltiae can successfully kill onion and cabbage maggots. They can be applied through drip irrigation or directly onto the bases of plants, either in the field or while still in plug/cell trays. It’s important to apply during cloudy, if not rainy, weather to insure survival of the nematodes. Nematodes are sold by the millions or even by the hundred-millions. Since field conditions are more challenging than in a pot in a greenhouse, more is better. Here is the forecasting site for several pests through the Network for Environment and Weather Applications, based at Cornell: http://newa.cornell.edu/#. If you look under the “Pest Forecasts” menu, you will find some important pests and diseases that are covered.

### Hive Bumble bees causing tomato flower damage

Word has gone around from NY and VT about first cluster flowers dropping off of plants in high tunnels and greenhouses. Turns out that they ordered colonies that were too large - too many bees foraging on too few flowers! Bumble bees do an aggressive “buzz” pollination: they grasp the flower and vibrate it by flapping their wings. Unless you are growing very early tomatoes where it’s not possible to open the house up wide for big breezes to blow through, you may not need to bring in bumble bees - unless you regularly have fruit set problems. Here’s an excellent article about bumble bee pollination of tomatoes from Ben Phillips of Michigan State Extension: http://msue.anr.msu.edu/news/are_bumble_bees_causing_my_tomato_flowers_to_fall_off.
This week’s disorders...

Cutworms at work: Approximately 12% of this lettuce planting has been taken out by cutworms. If this is a regular issue, you might consider a B.t. kurstaki (Javelin, Dipel) spray to the base of every seedling. While it won’t reduce damage to zero (since larvae have to feed in order to get poisoned), it will reduce your local overwintering population.

A couple of Crucifer Flea Beetles preparing to dine on young arugula seedlings: these beetles over-winter as adults on the edges of fields and find your unprotected seedlings quickly. Where infestations are reliable, floating row covers are very useful. There are many strategies for holding the edges down, but some of the best may be the use of long, heavy poles or saplings. The cover edges last for more seasons, and opening for harvest and re-closing is quick and easy. Check the New England Vegetable Management Guide for materials labeled (both organic and conventional) for this perennial pest.

High tunnel tomato growing...

Using four drip tapes per High Tunnel tomato bed may promote a healthier soil environment and also make sure that all applied nutrients become available to plants.

At least 80% of plants checked had eggs laid.
Out and about at the URI Agronomy Farm

All Praise the Mighty Asparagus!

A hefty winter rye cover crop, planted in mid-September. A thickly sown rye cover (90 to 160 lbs broadcast, 60 to 120 lbs drilled) really recaptures soil nutrients and makes them available for the following spring. Maintaining lots of living roots in the soil over winter is great for ensuring lots of soil biological activity early in the spring. Planting depth is important- try for 1 to 1-1/2 inches, no deeper.

This is a small spring grain demonstration planting for a class that will be taught in the fall. From this picture, it’s hard to tell the difference, but there is spring wheat, barley and oats. Can cereal grains be grown profitably in New England? Here’s an operation in Maine that is having real success- Malting Barley for Beer making, as grown and processed by the Buck Brothers of Maine Malt House: https://bangordailynews.com/2015/10/06/news/arоostook/mainе-brothers-working-to-be-malt-suppliers-for-beer-economy/