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Scouting and Monitoring for Vegetable Pests on Farms in Massachusetts

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United States Department of Agriculture
National Institute of Food and Agriculture

Summary

During the growing season, farmers across the state will rely on people known as pest scouts to carefully comb through their crops and identify any insect pests or diseases that may be present. Scouts and other Extension professionals share their findings through a larger, region-wide network where they compare their findings, discuss pest outbreaks and recommendations, and make predictions for future years. As an undergraduate scout, I visited a total of 7 farms over the summer and monitored them for a total of 12 weeks. Along with the weekly scouting, I managed a network of 10 farms throughout Massachusetts who use pheromone traps to monitor vegetable pest activity and compiled trapping data for European corn borer (NY and IA), corn earworm, fall armyworm, and squash vine borer. The scouting and trapping data is published via a weekly newsletter for farmers and gardeners, to help them learn about what pests are active in their area and what they can do to manage them.

While this information mainly benefits medium to large-scale farmers who work for profit, anyone can utilize this knowledge to improve their own home vegetable garden. As a scout, I learned how to identify various crop diseases and insects, the damage that they may cause to a particular crop, along with their life cycle and biology. I am then able to pass this information on to the growers and, working with the UMass Extension Vegetable Program staff, to provide recommendations growers can follow to mitigate pest damage.

Notable Diseases of the Season

Gray leaf spot – Is caused by a fungus, *Stemphylium solani*, with the most obvious signs of this disease being oval-shaped, tan-to-brown lesions that appear on tomato foliage. The lesions begin as yellow streaks and then will turn brown and spread across the leaf. As the disease progresses, multiple smaller lesions may merge to cause entirely blighted leaves. This disease is not new, but it occurs only sporadically, typically in very wet years like this one. It looks different from other more typical tomato diseases which cause dark spots and lots of leaf yellowing, so growers were very concerned by the unusual symptoms they saw this year.

Figure 4: Stemphylium blight merging into large spots on a tomato leaflet

Figure 5 (left): Severe Stemphylium blight tomato leaflets

Phytophthora blight – Is caused by the oomycete pathogen *Phytophthora capsici*. This pathogen lives in the soil and therefore infects plant roots, causing them to rot from the base of the plant. Plants can be affected at any stage of growth, usually starting after a big rain event which causes release of swimming spores known as zoospores. Early signs of this disease include darkish discoloration at the base of the stem due to the root rot. Eventually, the entire plant loses turgor and becomes extremely wilted or collapses entirely. The disease affects all cucurbit crops (cucumbers, melons, squash, and pumpkins) and solanaceous crops such as tomato, eggplant, and pepper. Squash and pumpkin fruit laying on the ground can also be infected and rot occurs in the field or in storage.

Figure 6: Late-stage phytophthora blight in peppers

Figure 7 (left): Phytophthora fruit rot in tomatoes

Sweetcorn Trapping Data

Every year, sweetcorn is an important crop on many vegetable farms, so it is susceptible to a variety of caterpillars that bore into the ear, reducing their marketability. Through moth monitoring, we can learn when and where egg-laying happens to reduce it in future years.

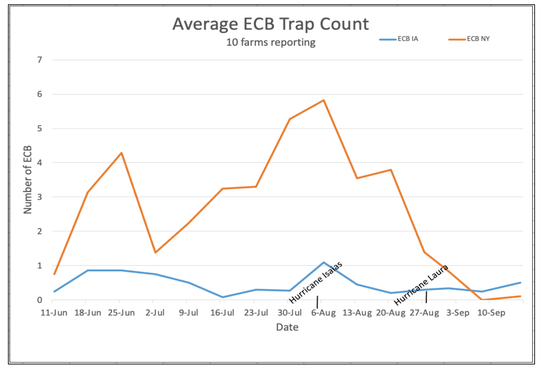


Figure 1: Average number of European corn borer (Ny and IA) caught in traps between May 26th and August 25th

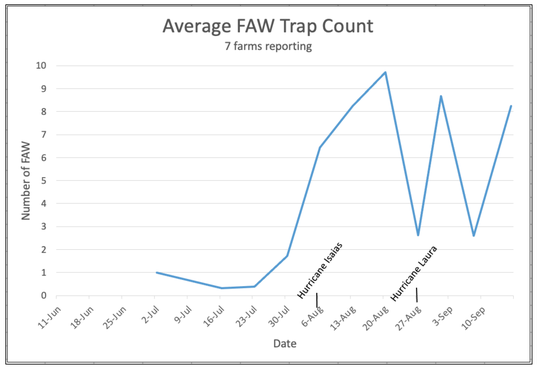


Figure 2: Average number of fall armyworm (FAW) caught in traps between May 26th and August 25th

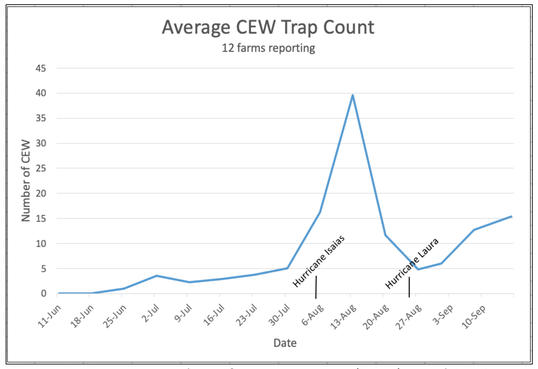


Figure 3: Average number of corn earworm (CEW) caught in traps between May 26th and August 25th

The European corn borer overwinters in their larval stage, in debris from previous corn. Moths emerge in late-May, mate and lay eggs on undersides of leaves in early corn. The caterpillars can be light brown or pinkish-gray with a dark and flattened head capsule and will initially feed within the whorl until they emerge through the tassel. When looking for evidence of this pest, one can either look at the undersides of leaves for eggs or at tasseling corn for frass or caterpillars within the tassels themselves.

Figure 8: ECB caterpillar on tassel

Figure 9: Adult ECB female (left) and male (right)

The fall armyworm does not overwinter in New England, but rather is carried here from overwintering sites in the southern US during storms that occur in the summer months. Therefore, the timing of their outbreaks are sporadic and monitoring with pheromone traps is very useful. Females lay eggs in clusters on host plants on whorl stage corn so feeding damage from larvae is extreme and can be devastating to a field of corn. Caterpillars are smooth and dark colored with lengthwise stripes while adult males have mottled brown forewings with a slanting white bar across the wing.

Figure 10 (above): Fall armyworm caterpillar

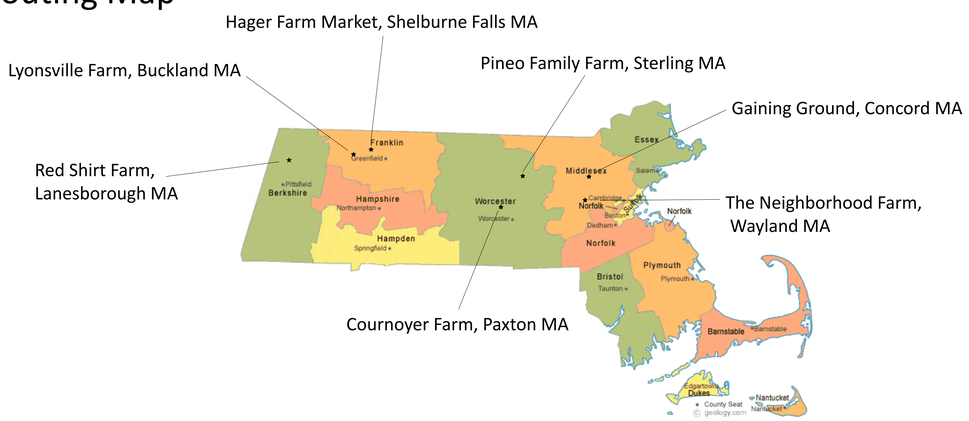
Figure 11 (below): Fall armyworm adult male

The corn earworm also migrates to the Northeast from overwintering sites in the southern US and arrives earlier than FAW, in June. Severity of infestations varies from year to year and may change suddenly during the season depending on stormfronts that move them around. Adults are light tan with a distinct spot on each forewing and a band of dark brown on the back of each hindwing. Females will lay eggs directly on fresh silk, which will hatch in 2.5 to 6 days. Larvae my be brown, tan, green, or pink, with light brown stripes that run down their body, and a plain light brown head capsule.

Figure 12: Fall armyworm larvae

Figure 13: Fall armyworm adult

Scouting Map



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Acknowledgements

I would like to express my thanks toward the University of Massachusetts Amherst, as well as my mentor Susan Scheufele for the opportunity to participate as a Summer Scholar and learn so much about integrated pest management. Also, I would like to acknowledge the funding from the MA Grange and help from the USDA/NIFA towards this project.