UConn Extension and Department of Plant Science And Landscape Architecture

Crop Talk

Commercial Vegetable and Fruit Crops Newsletter

Volume 15, Issue 2 – April 2019

In This Issue

Calendar of Events

April 16th - FREE One-on-One Agricultural Advising Session @ Wamogo Agri-Science Center, Litchfield, CT 9am-3:30pm. There are still openings available, contact MacKenzie today at mackenzie.white@uconn.edu or 860-875-3331

April 27th - Solid Ground Equipment Day
Fort Hill Farm, New Milford, CT. Contact: Charlotte.ross@uconn.edu *(see page 7)*

June 4th - CT Pomological Society Twilight Meeting and Field Day

Beginning at 5 pm with the field day – vendors, equipment and exhibitors; followed by dinner and an educational meeting. Pesticide credits provided. Belltown Hill Orchards, Matson Hill Rd, South Glastonbury.

June 19th - CT Grape Growers and Wine Council Twilight Meeting

Beginning at 5 pm at Paradise Hill Vineyards, 15 Wind Swept Hill Rd, Wallingford. Pesticide credits provided.

Scouting Your Fields – What You Should Know!

By: Shuresh Ghimire, Assistant Extension Educator, Commercial Vegetables

Whenever a crop is being grown in a field, there is always a chance that the crop is being attacked by insects or plant pathogens, which can cause heavy crop loss when problems are not identified early enough to act. Field scouting is a crucial step in integrated pest management. A detailed assessment of pests or abiotic problems helps to make appropriate management plans. Scouting assesses the magnitude of pests or abiotic disorders within a field.

Figure 1. Scouting for pests in a sweet corn field.

Photo: S. Ghimire

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Using Degree-days for Pest Management Decision Making Made Easier With NEWA

Compiled from Gabriella Zilahi-Balogh and Douglas G. Pfeiffer, VA Tech; Juliet Carroll, Cornell; Mary Concklin, UConn Visiting Associate Extension Educator, Fruit IPM & Production

The understanding of insect development plays an increasingly important role in insect pest management decision making. This is because timing is crucial to the implementation of pest management decisions. For example, knowing or predicting that an insect pest is in the egg or larval stage is important for initiating sampling programs or timing sprays. This is where the concept of degree-days comes in. Degree-days is a way of measuring insect growth or development in response to daily temperatures.

Growth or development of trees and insects are dependent on several environmental factors including temperature (heat), light and humidity. Because insects are cold-blooded, temperature has the greatest effect on insect development rates.

Development rate increases as temperature increases. In the temperature range from 10 to 30 degrees F, development rate changes almost linearly with increasing temperature. At very low temperature there is no development, and at very high temperature development is retarded. Since temperature influences tree growth in a similar manner to insects, development of the various growth stages in the tree is dependent on temperature. Each stage of tree development requires a certain amount of heat units before growth to the next stage will occur. This measure of accumulated heat over time is known as physiological time. To illustrate this point, if there is a hot spell around bloom on apples, pink to petal fall stage can occur within three to four days compared to cool, rainy weather where bloom can extend for several weeks. The same amount of heat units are accumulated in both situations. However, the heat units accumulate faster under warmer conditions.

For many years, growers have observed the arrival or development of a particular insect pest with flower bud or leaf development and have timed the applications of sprays in the spring. This is an indirect use of physiological time. Using these natural timers are most useful early in the growing season when tree growth stages are readily observable. However, making accurate predictions on insect life stages throughout the growing season are needed. This is done by measuring degree-days of the pest insects in question.

How development thresholds and degree-days are determined

Entomologists have determined lower threshold temperatures and degree-day totals for the life stages of many insects by studying their development in the field and the laboratory. The lower developmental threshold for a species is the temperature below which development stops. The upper developmental threshold is the temperature at which the rate of growth or development begins to decrease. Phenology models are then developed and used to predict various events or life-stages of an insect.

The biofix is the date when degree-days begin to be accumulated, usually associated with a biological event, such as first sustained trap catch of male codling moth or oriental fruit moth in pheromone traps. The term "sustained catch" often causes some confusion. If 1-2 moths are collected in traps, followed by a period of no captures before resumption of more or less continual captures, then those early males are ignored. The "sustained catch" is the beginning of the continual period of moth activity; catches in more than one trap on

two consecutive trapping days. Obviously this can't be determined on the day of the capture, rather only after the overall pattern of flight is seen. But since this event is only the beginning of accumulating degree-days, and not the treatment signal, the grower has time to make this evaluation. In practical terms, there may not be an important difference between first catch and first sustained catch. If 1-2 males are captured followed by an interval of no catches caused by cool weather, then very few degree-days will accumulate in the days between first catch and first sustained catch. The critical number of degree-days to signal the timing of a spray may occur at almost the same date.

Each insect stage requires a certain number of degree-days before it will develop to the next stage. Upper and lower development thresholds have been determined for many of the tree fruit pests through carefully controlled laboratory and field experiments.

Several crop, pest, and disease phenology models are programmed into NEWA (Network for Environment and Weather Applications; http://newa.cornell.edu) – a system housed at Cornell, with weather data from weather stations in fourteen states. CT has 33 active weather stations across the state at farms and schools with weather data funneled to the NEWA system for use in pest models. Some models rely solely on DD tables, some display results directly (DD accumulations are not apparent to the user), and some provide DD ranges when IPM decisions and interventions are needed (hanging traps, spray timings, etc.)

Degree Days (DD) calculated in NEWA at http://newa.cornell.edu/index.php?page=degree-days
and the insect phenology and disease models for which they were developed.

Base Temperature	Insect Phenology Model or Disease Development Model
14.3°C (57.7^{0}F)	brown marmorated stink bug
4°C	cabbage maggot
0°C	apple scab
40°F	onion maggot
43°F	obliquebanded leafroller, spotted tentiform leafminer
45°F	oriental fruit moth
47.14°F	grape berry moth
48°F	alfalfa weevil
50°F	growing degree days (GDD), codling moth, plum curculio, apple maggot
55°F	fire blight shoot blight symptom development

Scouting Your Fields – What You Should Know! (continued)

By: Shuresh Ghimire, Assistant Extension Educator, Commercial Vegetables

In order to efficiently scout for pests, you need to know what you are mainly looking for at that particular time, where they live, what they look like, and how to find them. Efficient scouting requires you to take a close look at what is going on within your fields. It is important to examine all parts of the plant parts where pests are most likely to be found, for example, whiteflies will most likely be found on the underside of the leaves while thrips will most likely be found on young leaves. Look out for protected, damp areas under plants as these are often favorite places for insects and diseases. Sometimes, physical traps are more efficient than trying to find the pest on plants, for example, European corn borer trap and yellow sticky trap (for adult white fly in tunnels).

When scouting fields, have the necessary tools, equipment and resource information. These include clipboard with scouting sheets and pen or smart device with a scouting app, a camera, hand trowel or shovel, pocket knife, 10X magnifying lens, and flagging tape, pin flags, or hand held GPS to mark field sites. Sweep net to catch insects and vials to collect them, clear sample bags to collect disease samples, soil sample bags and labels for samples may also be needed. Have reference materials to assist with identification of weeds, diseases and insects. University of Massachusetts Amherst has scouting resources that include scouting forms, scouting guides, scouting toolkit, and scouting calendar, which might be very helpful. Here is the link https://ag.umass.edu/vegetable/resources-services/scouting-resources.

It is important to have a good history record for each field. For each field, list field name, history of previous crops, soil fertility problems or nutrient deficiencies, previous problems with overwintering insects such as wireworms or Colorado potato beetles, past weeds including any herbicide-resistant weeds, and previous disease problems. For the current crop year, list the specific crop variety, seeding date, fertilizer used including rates and placement, and tillage operations.

Following are some tips to make your scouting effective and easy.

1. Use the Z, W, or X walking technique. If you just check one straight row or the edges of the fields you are likely to miss potential problem areas.
2. Know when you can expect certain weeds, insects, or diseases in your area so that you will know when to focus for what. UConn Extension Vegetable program provides weekly pest updates from ~May to ~September that can help you scout by highlighting current crop concerns and local pest outbreaks.
3. Inspect all parts of plant where pests are most likely to be found. You should also check fields by elevation since low areas are often more susceptible to disease.
4. In each scout, select five widely spaced points and at each point check a minimum of 10 plants for signs and symptoms of pest pressure.
5. Scouting fields weekly is recommended. When degree day tools or forecasting systems are available to predict the emergence or arrival of certain pests, use them to gauge when you might scout more intensively. For example, when cucurbit downy mildew is likely coming to your area, scout more frequently.

6. When scouting, if you are not sure on the problem, send samples to a laboratory for a proper diagnosis. Some resources in CT are UConn Plant Diagnostic Lab https://plant.lab.uconn.edu/, The Connecticut Agricultural Experiment Station: Plant Disease Information Office New Haven https://portal.ct.gov/CAES/PDIO/PDIO-Home/PDIO-Home, Insect Information Office, New Haven and Inquiry Office, Windsor https://portal.ct.gov/CAES/Insect-Office/Insect-Office/Insect-Information-Office-New-Haven-and-Inquiry-Office-Windsor
7. Weather has a huge impact on weeds, diseases and pests. It is critical to observe the weather patterns.
8. If pest threshold numbers are met, use the correct treatment practices.
9. Take diligent notes so you can compare the results of your scouting efforts from year to year.

Produce Safety Update

Things to consider as you gear up for the season…

Know if you must comply with the Produce Safety Rule (PSR) of the Food Safety Modernization Act (FSMA) this year. Anyone who sold an average of over $250,000 in the last three years should confirm this. If you have questions, contact Diane Wright Hirsch at 203-407-3163 or diane.hirsch@uconn.edu.

Consider signing up for an On Farm Readiness Review prior to the implementation of PSR inspections. Resha Jacquier and I conduct these reviews (OFRR which are educational in nature and intent. An OFRR will give you personalized information regarding what you need to do to comply with the Rule (or if you intend to participate in the DoAg CGAP program for market access). Contact Resha Jacquier at: 860-713-2522 to get on the schedule. OFRRs are best conducted when you are beginning to harvest crops.

For more information visit: http://foodsafety.uconn.edu/

WANT TO MEET THE FAST GROWING DEMAND FOR LOCAL PRODUCT IN SCHOOLS?

Get your farm listed on our Farm Directory and Farm to School Marketplace Listserv, where schools go to find local.

With over **60** *school districts making the 'Tray' pledge to serve local, school food service directors need to know what's out there!*

From seasonal meals, taste tests, summer meals programs and more, **schools procure locally all year long with orders of all sizes. Don't miss out on the 2019-2020 school year!**

Go to:

s.uconn.edu/ctfarmdirectory

to complete your listing!

SAVE THE DATE!

The 3rd Annual Solid Ground Ag Equipment Field Day

Saturday, April 27th, 2019 ~ 10:00am-2:00pm

(*Rain Date May 4th, 2019*)

Location:

Fort Hill Farm

18 Fort Hill Rd

New Milford, CT

Questions?

Contact: Charlotte Ross

charlotte.ross@uconn.edu

Check out field demos of innovative tools & implements for your farm!

Including:

- ***Flame Weeders***
- ***Sutton Ag Seeder***
- ***Greenhouse Tech***
- ***BCS & Attachments***
- ***Imant Spader***
- ***Hak Cultivator***
- ***Hand tools***

And more!

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EXTENSION

Event sponsored by the USDA-NIFA Beginning Farmer and Rancher Development Program Award 2016-70017- 25416

CHECK OUT THE UCONN IPM WEBSITE!

WWW.IPM.UCONN.EDU

- ⇒ ***New Webinars*** *(FSMA, Climate Change, Pruning, etc.)*
- ⇒ ***Upcoming Events***
- ⇒ ***Annual IPM Report***
- ⇒ ***Pest Identification***
- ⇒ ***Fact Sheets***

CT IPM

It is time to go green!

Our goal is for the Crop Talk Newsletter to be completely online or sent out via email only by 2020!

Help us out by opting out of the hard copy!

Send an email today to MacKenzie White mackenzie.white@uconn.edu to opt out of the hard copy and be placed on the email list if you're not already on it!

THANK YOU!

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