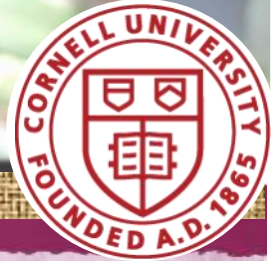


Berry News

VOLUME 6, ISSUE 7 - JULY 19, 2018



Berry "To Do" List

Sustained catch of Spotted Wing *Drosophila* in eastern NY. All berry growers should be aware that SWD is here and, given the warm day and night temps and high humidity, we will see this pest explode in numbers if plots are not picked clean and weeds are controlled. Weekly sprays will result in much better results and save a good deal of your crop.

Remember:

- Monitor fruit for larvae as the crop ripens
- Pick the fruit clean and remove culls from field.
- Store harvested fruit at 32 degrees asap.
- Keep weed growth under control.
- Begin weekly insecticide program when fruit begins to color.

All crops are under DROUGHT Stress! Keep watering as much as possible. I've seen many plantings where there is a 4" band of moisture near the trickle hose, but everything beyond that band is dust. This is not doing much to help your plants or the crop you are trying to sell. Irrigation info for blueberries is in this issue.

NOW is the time to gather **Foliar Nutrient Samples** (tissue testing). You have until mid-August. All the protocols are listed on the [Agro-One Plant Tissue Testing web page](#).

-Blueberries-

- **Cranberry fruit worm** is a huge concern for many growers. More information in article in this issue
- Flagging caused by **stem canker and blight** has been showing up. Winter injured tissue allows this inoculum entry, then when the plant is stressed shoots flag. Early season control is imperative. Information in this issue.

-Strawberries-

- Malwina still producing in some locations! Such a late

continued on next page

Table of Contents

Berry "To Do"	1
Cranberry Fruitworm in Blueberries.....	2
Irrigating Blueberries.....	3
Sudan Cover Crops.....	5
Twig Blights and Winter Damage.....	6
FYI.....	7
Upcoming Events.....	8

CLICK HERE to sign up for ENCYP Text Alerts!
See page 3 for more details!



berry but the plants look great and the fruit is very nice.

- **Renovate berries now.** If the heat doesn't abate, and you cannot guarantee water – then consider not mowing the plants. You should still narrow the rows and throw some soil up on the crown – just ½ " is perfect.

-Raspberries-

- **Sap beetles** abound! Use Assail or Brigade – apply with lots of water (100-300 gallons) to insure good spray coverage. These insects have

become a very big problem in many eastern NY fields.

- Keep monitoring fruit for **SWD**.
- Be on the lookout for **Fireblight** in brambles. Given that there is so much inoculum in the environment, and this disease tends to like warm temperatures with the occasional light rain – we might actually see this pest. The cane tips become brownish black and curve downward in the characteristic shepherd's crook. Cane lesions can produce a lot of bacterial ooze.
- Scout for **spider mites** and **cane borers**.

Cranberry Fruitworm in Blueberries

Hannah Burrack, North Carolina State University



in late January or February. There is usually only one generation per year, although a few individuals may continue to develop and produce a second generation on deerberry (*Vaccinium stamineum* L.) in July (Neunzig 1972).

Significance and damage

Females lay their eggs on green berries that are just beginning to develop; the oviposition site is usually

located near the edge of the calyx cup. First instar larvae hatch in four to five days, burrow into the berry, and feed on the pulp. As larvae grow, they move from berry to berry within a cluster leaving behind a trail of frass (excrement) and silk.

Management

Adult moths of the cranberry fruitworm can be monitored using pheromone baited traps. This technique will not provide adequate control by itself, but it helps determine if insecticide applications are necessary and optimize timing. Larval infestations can be detected by looking for the pin-sized entry hole near the stem of small, shrunken berries that have turned blue. The distinctive frass and webbing produced by this species does not usually appear until the larvae are several weeks old and begin moving between berries.

continued on next page

Biology

The **cranberry fruitworm** (*Acrobasis vaccinii* Riley) is common throughout the eastern United States and Canada. It may be found on a variety of small fruits including cranberry, blueberry, and huckleberry. The adults are small, brownish gray moths with a 16-18 mm wingspan (5/8 to 3/4 inch); they are seldom seen because they are active only at night. Larvae are smooth, elongate caterpillars with three pairs of thoracic legs near the head and five pairs of fleshy prolegs along the abdomen. They are usually pale yellow-green in color, but may turn a light pink on the dorsal surface as they mature. Fully grown larvae reach about 15 mm in length (5/8 inch).

Adult moths emerge and mate very early in the spring, about the time blueberry buds start to open. Fully grown larvae drop to the ground and spin silken chambers under blueberry plants. They pass the summer, fall, and most of the winter as larvae inside these hibernacula, then pupate

Biological control

Both egg and larval parasites have been associated with the cranberry fruitworm (Maxwell and Morgan 1951, Neunzig 1972). *Phanerotoma franklini* is the most common of these species, but it has never been found in densities high enough to provide effective control.

Chemical control

See the 2018 Cornell Pest Management for Berry Crops Guidelines for specific management information. Petal fall sprays are needed to protect against young larvae before they move into fruit. Spraying materials during or immediately before harvest will not aid control.

Irrigating Blueberries

Mark Longstroth, Michigan State University Extension

Irrigation is vital for maintaining high yields in commercial blueberries. Blueberries grow best in moist soil. Good soil moisture levels optimize both vegetative and fruit growth. Blueberries perform best when less than half of the available water has been depleted. Blueberries are shallow-rooted and sensitive to drought stress, and most Michigan plantings are on sandy soils that hold very little water. Drought prior to harvest reduces berry size and yield. For established plants, the goal is optimizing fruit production for current and subsequent seasons.

Soil Moisture

Soil water reserves depend on soil texture and plant rooting depth (Table 1). You can assume the rooting depth of a blueberry is 12 inches for young plants and 18 inches for older plants. Sandy soils may hold less than 1 inch of available water in the root zone, and half of this can be lost in two warm summer days.

Loamy sands and sandy loams are also common Michigan blueberry soils and can hold from 1.3 to 2.3 inches in the top 18 inches of the soil. Many blueberry fields have

slightly elevated areas that dry out more quickly than other areas. Hardpan or a shallow water table may limit rooting in other areas of fields. This can be seen in older fields where the plants on sandy high spots and wetter low spots are smaller than the rest of the field. These variables complicate irrigation scheduling. As a rule, you should irrigate to maintain the drought-prone areas of your field.

Evapo-transpiration (ET) is the evaporation from the field, plus the water lost by the plant (transpiration). Under the hot conditions we will see in June and July, blueberry fields in can lose 0.18 to 0.24 inches



Drought damage impacts all leaves on the plant. This is different than stem blight which usually causes flagging on individual shoots.

Photo from [Cornell Berry Diagnostic Tool](#)

Table 1. Available water in a blueberry root zone as affected by soil texture and rooting depth.

Soil texture	Available water (inches)	
	Per inch of depth	In Root Zone (12-18" depth)
Sands	.03	.4 - .6
Loamy sand	.07	.8 - 1.3
Sandy loam	.13	1.6 – 2.3
Loam	.17	2.0 – 3.1

Table 2. Blueberry Water Use in Southern Michigan

Month	Monthly Use	Weekly Use	Daily Use
May	0.48	0.12	0.02
June	2.87	0.72	0.10
July	5.09	1.26	0.17
August	2.13	0.53	0.07

continued on next page

per day. Daily Potential ET values are available on the Enviroweather website. They are located at the bottom of the individual station home pages under irrigation tools. Maximum water use during the preharvest fruit growth stage is probably 0.20 to 0.25 inches per day.

Allowable soil moisture depletion in blueberries is considered to be 50%, so irrigate when half of the available water is used. This means that irrigation should be applied before 0.2 to 0.6 inches water is lost (3 days of 0.20 inches ET) from sands and loamy sands, or 0.8 to 1.5 inches (4 to 7 days) are lost on sandy loam or loam soils.

Irrigation scheduling allows you to replenish the soil water while reducing the amount of water used and loss of nutrients. You need to know how much water the soil can hold. If you know how much water the plants are using, you should irrigate when the plants have used half the available water.

For example, a root zone of 18 inches on a loamy sand soil (0.07 inches water per inch of depth) holds 1.3 inches of available water:

$$(18 \text{ inches}) \times (0.07 \text{ inches water/inch}) = 1.3 \text{ inches water}$$

If the root zone were depleted by 50%, you would need to apply 0.65 inches:

$$(0.5 \text{ depletion}) \times (1.3 \text{ inches}) = 0.65 \text{ inches to apply}$$

If the ET for the last several days was 0.25 inches you would need to irrigate every 2 days; for 0.2 inches every 3 days. The evapotranspiration rate varies during the year depending on the amount of leaves on the plant and the heat and relative humidity. Temperature is the most important factor; heat increases ET much more than humidity decreases ET.

Sprinkler Systems

The amount of water applied by sprinkler systems is determined by the sprinkler spacing, the size of the nozzle and the water pressure at the nozzle. For example a 9/64-inch nozzle at 45 psi will deliver about 0.15 inches an hour. A system that delivers 0.15 inches water per hour, delivers 0.6 inches in 4 hours. However, about 20 to 30 % of water from overhead sprinklers may be lost to evaporation, so increase the operating time accordingly. Also, irrigation systems are not completely uniform; they apply more water in some areas than others. The uniformity of sprinkler systems can be measured, but they usually have only 70% uniformity. This means to recharge all areas of the field, 30% more water than calculated needs to be applied. In our example, operating time should be increased 20% for evaporation losses, plus 30% due to

non-uniformity. So, increase the operating time of 4 hours by 50% to 6 hours to ensure that all areas receive 0.6 inches. With the importance of GAP inspections and certification this year, sprinkler systems are of increased concern. Because the irrigation water comes in contact with the fruit GAP certifiers require tests of the irrigation water. Irrigation water from open ponds or other surface water sources can easily be contaminated with bacteria and if water tests indicate that the bacteria levels are higher than the levels in the growers GAP plan then irrigation should be delayed until after harvest or the problem is remedied

Trickle Irrigation

Trickle irrigation systems can be run daily, or on the same schedule as sprinkler irrigation systems. The area wet by a trickle system is much smaller than the entire field wet by sprinkler systems.

The application rate for lower volume trickle systems (48" spacing, 0.42 gph emitters) is about 0.17 inches/hr. The more common moderate flow systems (24" spacing, 0.42 gph emitters) deliver about 0.3 inches/hr. Since evaporation and uniformity are not significant in trickle systems we do not need to increase the application time. We would need to run the lower volume system twice as long to apply the same amount of water. These systems can be run at one to two hours every day to replace plant water use.

There are several rules of thumb for trickle irrigation systems.

- For young plants apply 20 gallons/day per 100 feet of row.
- Mature plantings apply 35 gallons/day per 100 feet of row.

Ontario Canada estimates that peak daily demand of highbush blueberry is about 4.5 G/day (18 liters/day)

Drought injury

Drought in early summer causes wilting of young shoots and reduced growth of shoots and berries. When drought occurs later in the season, berries may shrivel, and the margins of leaves turn brown and die starting toward the tip of the leaf. Drought in the autumn reduces flower bud initiation and yields for the following year.

July is the Time to Plant Sudangrass Cover Crops

Thomas Björkman, Cornell

If you have removed strawberries and are looking at some bare ground without a crop plan, now is your opportunity to plant a cover crop that will improve the soil and suppress weeds. This time of year, the soil is warm enough to establish sudangrass and sorghum-sudangrass and to take advantage of their prodigious growth in the heat, and take advantage of the abundant light and heat units.

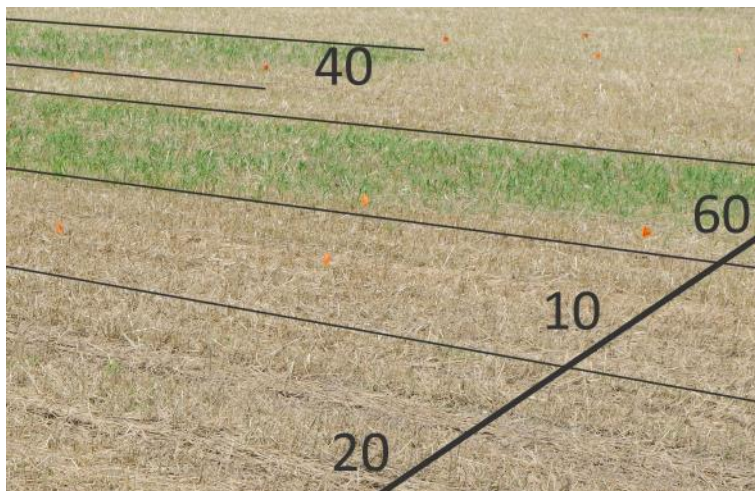
Sudangrass is relatively inexpensive to use, and is a great source of organic matter. That organic matter can be produced above or below ground, depending on how one manages it.

Sudangrass is one of the best cover crops for supplying active carbon to the soil, the component of organic matter that contributes most to feeding beneficial soil microbes. To produce a lot of biomass above ground, plant as early in July as possible, because the plants will only grow well until sometime in early September.

Sudangrass adds a lot of active carbon both because it makes a lot of dry matter and because it makes the right kind. Much of it is in fibrous roots and partially lignified stems. The lignification makes the organic matter degrade at a rate that provides active carbon for several seasons. Most varieties are developed for forage, where a more tender biomass is preferred so that it is easy to digest. For cover crops, don't select BMR varieties that have been developed to be low in undigestible fiber, and let the crop mature beyond the forage stage in the fall.

Deciding how much fertilizer to invest in a cover crop is challenging. Sudangrass needs a significant amount of nitrogen to produce the biomass that is the reason for using it. It is clearly worthwhile to provide enough to avoid stunting, but the economics don't justify using the amounts needed for a profitable grain or forage crop (100 to 200 lb N/ac). Nitrogen fertility in crops that are harvested immature, like green vegetables, is usually managed so that it is abundant until harvest. Between the residual soil nitrogen, and nitrogen in the crop residue, there can be enough for a sudangrass cover crop without additional fertilizer. However, if the field has been fallow over winter, or sudangrass is following a crop that is harvested as mature plants, then there will not be enough nitrogen to support the needed growth.

If there is little carryover nitrogen, we have found 60 lb/ac



If the field is depleted in N, such as after wheat harvest, then additional nitrogen is needed to get adequate sudangrass growth. 60 pounds of N per acre produced nearly twice the biomass of 40 lb/ac.



About two and a half feet, is at or just past the time when a mowing can be used to encourage tillering. After about August 10, there will not be very much regrowth after mowing.

after winter cereal harvest supports about 4 tons per acre of sudangrass biomass. On upland soil, Vermont extension specialist Vern Grubinger recommends about 50 lb/ac. On sandy soils, another 25 to 50 lb/ac after the first mowing improves tillering and growth.

To suppress weeds, the cover crop needs to get off to a fast start, and produce a stand that has no gaps for weeds to grow. With sudangrass, that is achieved with a high seeding rate so that gaps close quickly. Using about 50%

continued on next page



A weed-suppressing stand requires having no gaps for the weeds to establish. Sudangrass, with its vertical leaves, leaves gaps between the rows for about three weeks.

more seed than when planting for biomass is appropriate. A small amount of nitrogen supports rapid initial growth to compete with the weeds, but not as much as needed for high biomass production. Placing the seeds just shallow enough to cover well and get moisture will result in the fastest emergence.

Some weeds will get a start with the sudangrass, and can get enough light to grow well at first because the

sudangrass has vertical leaves that don't shade as well as the other summer cover, horizontal-leaved buckwheat. That is where step two comes in. Once the sudangrass is a foot and a half or two feet tall, cut it down to about half a foot to make a mulch layer that suppresses small weeds and cuts the leaves and growing point off broadleaf weeds. The mowing needs to produce a uniform mulch layer, which typically requires a flail chopper. Rotary mowers (aka BushHog) tend to windrow the mulch too much. Using a tractor with narrow tires, or using a front- or side-mounted mower reduces the amount of cover crop that is laid down rather than mowed.

The seeding rate depends both on the desired plant population and on the seed size. Both vary considerably. Since the crop will tiller after the first mowing, the actual population matters most for suppressing weeds before mowing. Narrow rows (7 inches) allow a lower seeding rate than wide rows because there is more shade and more allelopathic suppression of weeds. In that situation, plant about 500,000 seeds per acre. Piper sudangrass has very small seeds (about 40,000 per pound), which makes it less expensive to use. Sorghum-sudangrass hybrids may run as large as 16,000 per pound. Check the seed size on the bag and adjust your planter accordingly.

Sudangrass and sorghum-sudangrass are a handy tool for the summer soil health toolbox. They take attention to get right, but the benefits are worth the attention.

Twig Blights and Winter Damage

Laura McDermott, CCE ENYCHP

There are many fungal and bacterial diseases that can cause twig death. Many of them invade stem tissue through damage caused by winter injury. Often, the damage isn't seen until the plant is under some stress. Sometimes it's just the stress of producing fruit, but this year it may be drought stress that is causing flagging to happen seemingly overnight and all at once. Often, the planting has had low levels of inoculum for many years, and then all of a sudden the problem gets out of hand.

The following is a list of canker diseases from the University of Massachusetts that may be causing trouble in your planting this season.

Fusicoccum Canker or Godronia Canker (*Godronia cassandrae*): Fusicoccum canker is caused by a fungus that infects blueberry stems causing dieback and plant decline. Losses from this disease can be serious. The fungus overwinters as mycelium in cankers on living plants. In Massachusetts, spores are released from March



to mid-July, and new infections can occur throughout the growing season. Spores are disseminated by rainwater. New infections occur following rains when tender new tissue is present and temperatures are 50-72°F. Cold

stress may play a part in increasing disease damage. Leaves turn reddish-chocolate colored when dry and often hang on late into the fall.

Symptoms of Fusicoccum canker are similar to Phomopsis canker on blueberry. The most unique symptom is a red-maroon-brown lesion centered around a leaf scar. A bullseye pattern often results. As the lesion enlarges, the margin remains red and the center turns gray and dies. On young (1-2 year old) stems, extensive stem infections quickly lead to flagging and dieback of the entire stem. On warm, dry days shoots will suddenly wilt and die due to the stem girdling.

Management: Sanitation is essential. A fungicide program should be used where incidence of the disease is high. Apply at 2-week intervals from late dormancy to petal fall. Varieties differ in their resistance to this disease. See pest management schedule for recommended materials and timing.

Phomopsis Twig Blight (*Phomopsis vaccinii*): This disease may be the most prevalent of the canker diseases at the present time. The fungus, Phomopsis, causes stem damage similar to that caused by Fusicoccum.

Spores from old cankers are released in spring and, to a limited extent, in summer. Most spores are released from bud swell to petal fall, and none are released after September 1. Rain is necessary for spore release, and temperatures from 70-80°F encourage infections. The disease is most severe after winters in which mild spells

are interspersed with cold weather. Periods of hot, dry weather during the growing season probably also predispose the plants to a certain degree. The fungus overwinters in infected plant parts.

Symptoms first appear on smaller twigs and spreads into larger branches and may affect the crown. It is possible for Phomopsis to spread downward in injured canes to the crown and then progress upward on new canes. This rarely occurs, usually only where the crown itself has been injured after a particularly severe winter, or in highly susceptible varieties. Younger tissue may show no symptoms at first, and then exhibit rapid wilting and dieback. Stem lesions are similar to those caused by Fusicoccum but generally lack the bullseye pattern. The disease also causes premature ripening of the berries. Leaf spots have been observed where disease is particularly severe, and the fungus may also cause fruit rot, although this is rarely observed in New England. Most commercial cultivars are susceptible to Phomopsis canker.

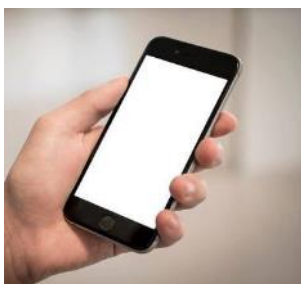
Management: Since mechanical damage and cold stress seem to be necessary for Phomopsis infection, avoid unnecessary cultivating, and do not fertilize late in the summer. Pruning the weakest canes to the ground is best for long-term fruit production. Avoid drought stress by keeping the plants well-watered through prolonged periods of dry weather in summer. The cultivars Bluetta, Elliot, and Rancocas have been reported to have partial resistance to Phomopsis. Fungicide applications may also be beneficial. See the pest management schedule in this chapter for recommended materials and timing.

—For Your Information—

15 minute Youtube presentation on [Pesticide Resistance Management](#) – this will help you understand why Resistance Management is so important – and why when applying organic or conventional pesticides for SWD we all need to be thinking about this. <https://www.youtube.com/watch?v=8IYld52JNvs>



[Blackberries in Charts](#): Easy to understand visual tool that helps put international berry business in perspective – fascinating!



This season, CCE ENYCHP will be offering text updates straight to your phone! Our texts will get you the information you need in the fastest and most concise way possible! Only the most important crop alerts will be sent ("Late Blight found in N.Columbia County", for example), and you can choose to receive updates on whichever commodities you wish- Vegetables, Berries, Grapes, or Ag. Business.

[CLICK HERE TO SIGN UP FOR OUR CCE ENYCHP TEXT ALERTS!](#)

Or text your name and cell phone carrier (Verizon, AT&T, etc.) to 518-450-3156

Calendar of Events



July 31, 2018 – Reduced Tillage in Organic Systems Field Day, 9:00am-3:00pm, 48 Sayward Lane, Willsboro, NY 12996

August 6, 2018 – Northern Berry Field Meeting, 5-7pm, Rulf's Orchard. We'll discuss tissue testing, SWD and other pest issues, and general berry culture. Lots of different berries including hascaps, tunnel raspberries etc.

August 14 - 15, 2018 - NASGA Summer Tour Watsonville, California
www.nasga.org Summer tour will take place in northern California. We plan to visit progressive growers and marketers in the Watsonville area as well touring low elevation nurseries near Manteca and Turlock. Along the way we will take in other agriculture ventures. In California the options are endless.

August 22, 2018 – Berry Field Meeting – Hummingbirds as SWD control, 5-7pm, Gardenworks, Salem, NY. Blueberries and Brambles are grown at Gardenworks. We'll discuss SWD, cultural challenges and more, **plus** visit a wonderful value added farm store.

November 6-9, 2018 - NASGA European Tour Amsterdam, Netherlands
www.nasga.org

December 4-6, 2018 - Great Lakes Expo, Grand Rapids, MI

January 9-11, 2019 - NARBA Annual Conference, Savannah, GA

January 28-31, 2019 - Mid Atlantic Fruit and Vegetable Convention: (Berry Tunnel workshop Jan. 28th)



Berry Specialist

Laura McDermott

Phone: 518-791-5038

Email: lgm4@cornell.edu

Business Specialist

Liz Higgins

Cell: 518-949-3722

Email: emh56@cornell.edu

ENYCHP Office

Abby Henderson

Phone: 518-746-2553

Email: aef225@cornell.edu

Open: Mon, Wed, Fri

8:00am-4:00pm

Editor: Laura McDermott

www.enych.cce.cornell.edu



Find us on
Facebook



Previous 20 Minute Ag. Manager sessions area now available on our ENYCHP YouTube—Learn the highlights in just 5 minutes!