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Berry News

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Regional Updates:

North Country—Clinton, Essex, northern Warren and Washington counties

Berry phenology: First blossoms on strawberry under row cover berries. Early blueberry varieties just beginning bloom. Bud break on brambles.

Pest focus—Scout for Tarnished plant bug, Botrytis sprays will be necessary if rain comes.

Capital District—Albany, Fulton, Montgomery, Rensselaer, Saratoga, Schenectady, Schoharie, southern Warren and Washington counties

Weather conditions: Cool and dry at night with temps ranging from 32-34 °F. Daytime temperatures have gotten into low 80's resulting in rapid bud development.

Berry phenology: Row covers off strawberry, seeing first blossom open on early varieties, later varieties flowers emerged nothing open. Raspberries in tunnel primocanes are 6-8" tall, blackberries are the same. Blueberries went from bud swell to tight cluster in 2 days. Blueberry bloom varies according to location and variety. Some winter injury to florican raspberry and blackberry. On light soil irrigation would be appropriate. No tarnished plant bug seen yet.

Pest focus—Scout for Tarnished plant bug, Botrytis sprays will be necessary if rain comes.

Mid-Hudson Valley—Columbia, Dutchess, Greene, Orange, Sullivan and Ulster counties

Weather: Conditions have been dry, rain expected possibly through the rest of the week.

Berry phenology: Blueberries are between pre-bloom and bloom, florican raspberries are just initializing floral buds, primocane raspberries and blackberries are leafing out. Less than 10% bloom in strawberries. Strawberries in high tunnel at green fruit.

Pest focus—Scout for Tarnished plant bug, Botrytis sprays will be necessary if rain comes.

Editors Note: The Weather Table from the Vegetable Newsletter will be replacing the GDD report from now on. I think it gives a better overview as rainfall is included. It's also really fascinating to compare historical data. It will only report GDD in terms of base 50° F.

Berry Sprayer Optimization and Calibration Workshops

Proper sprayer calibration and optimization will be a major part of an effective SWD management program. Learn more about sprayers large and small and how you can improve spray distribution, monitor output and improve efficacy, which will be imperative this year.

Learn how to calibrate air blast, boom and small hand-held or backpack sprayers. We'll demonstrate the utility of water sensitive paper and discuss alternate row spraying and nozzle selection. There will be time for questions and discussion.

2 DEC Pesticide Re-certification credits available.

Mead's Orchard, 15 Scism Rd, Tivoli, NY 12583 Wed 5/22/13 2-4pm

Winney's Farm, 113 Winney Rd., Schuylerville, NY 12871 Tues 5/28/13 2-4pm

Valley View Farm, 228 Route 9N, Ticonderoga, NY 12883 Thurs 5/30/13 10am-12pm

Please let us know you're coming! Call Jim O'Connell 845-943-9814 or Laura McDermott 518-791-5038 with name, phone number and # attending.

Managing Spotted Wing Drosophila on Your Farm

In the last edition of Berry News I discussed some of the cultural procedures that farmers can do to reduce the impact of SWD in their berry plantings. These included:

- Excellent sanitation – harvest frequently, remove unmarketable fruit from the field.
- Manage the crop Canopy - prune to maintain an open canopy.
- Manage irrigation water – eliminate leaky irrigation.
- Cool berries immediately - chilling berries immediately after harvest to 32° -33° F will slow or the development of larvae and eggs in the fruit.

The bulk of the SWD management program will involve insecticide applications. Sprays should begin when scouting reports in the region alert growers to the first fly finding OR when your fruit begin to color. Treatments should be applied at least every seven days and repeated in the event of rain. Choose the most effective insecticides with pre harvest intervals that work for your picking schedule. Rotate insecticides according to their modes of action. Growers should be careful to avoid exceeding maximum applications per season which may be difficult for organic growers. Work on this schedule now, so that

you have the materials you need when the season begins.

The most recent materials available for NY growers are listed in the chart on the next page. This chart includes brand new 2(ee) materials. The 2(ee) classification is a special use permit sought by Cornell University entomologist Dr. Greg Loeb. It is mandatory that you have a copy of the 2(ee) permit on your person when you spray. If you need a copy of these permits, please contact Laura or Jim and we can email them to you.

In addition to designing your spray program, please take the time now to calibrate your sprayer and make sure your spray pattern is actually penetrating the crop canopy. We are having several workshops in just a few weeks that will address these challenges—see note on front page.

To gauge the effectiveness of the insecticides you are applying, sample your fruit regularly. Pick at least 100 fruit per block and place the fruit in a ziploc bag that contains a salt solution of 1-2 teaspoons salt to 1 cup water. Crush berries lightly and leave for an hour then assess for larvae. Hopefully as the season progresses you will see fewer – not more—larvae in this fruit sample.

-LGM

Maintaining Low Soil pH in Blueberries with Alkaline Water

Growers know that soil pH plays an important role in their berry crops, with essential nutrients being more or less available at certain pH ranges. This is especially true with blueberries, which require a low soil pH for optimum growth. Most growers are aware of the problems caused by high soil pH and correct it with sulfur applications. However, what they may not realize is that their irrigation water is contributing to their high soil pH problem. The organic blueberry production guide (http://www.nysipm.cornell.edu/organic_guide/blueberry.pdf) recommends acidifying irrigation water if the pH is over 5.5.

The easiest way to acidify the water is to inject the acid directly into the irrigation line through a proportioner. Before acidifying the water, it should be tested for pH and alkalinity (either by a lab or a home test kit). These values along with the type of acid used (battery acid or 35% sulfuric acid is recommended) will determine amount of acid to inject. UNH Cooperative Extension (http://extension.unh.edu/Agric/AGGHFL/alk_calc.cfm) has a free online calculator that is easy to use and will provide growers with a report indicating how much acid is needed to lower pH levels in the water. Growers simply need to plug in the required values (pH, alkalinity, and type of acid) and the calculator will generate a report with the amounts of acid to use (per gallon and per injector ratio).

With the report in hand, growers can then make up the necessary solution and begin injecting into their water. Remember to **always add acid to water**. Growers may want to rinse the injector with plain water once they are done. A screenshot of a sample report is pasted at the right. -JMO

Alkalinity Calculator

Input Variables

Company Name:	Cornell Cooperative Extension	Your Name:	Jim
Sample pH:	7.6	Sample alkalinity:	100 ppm CaCO ₃
Target alkalinity or pH:	4.5 pH	Acid:	Sulfuric Acid (35%)

Calculated Information

Alkalinity before acid addition:	Alkalinity after acid addition:
meq/L: 2.00	meq/L: 0.03
or ppm of HCO ₃ : 121.9	ppm of HCO ₃ : 1.8
or ppm of CaCO ₃ : 100.0	ppm of CaCO ₃ : 1.4
	Final pH: 4.50

Alternative Acids to Add to Irrigation Water

Amounts	Sulfuric Acid (35%)
For Small Volumes	
ml per liter	0.220
fl. oz. per gallon	0.028
ml per gallon	0.831
For a 1:100 Injector	
fl. oz. per gallon (conc.)	2.81
ml per gallon (conc.)	83.13
For a 1:128 Injector	
fl. oz. per gallon (conc.)	3.60
ml per gallon (conc.)	106.40
For a 1:200 Injector	
fl. oz. per gallon (conc.)	5.62
ml per gallon (conc.)	166.25

Nutrients Added by Each Type of Acid

Nutrients Added: Sulfur
Amount Added (ppm): 31.8

Use the information above for modifying your fertility program.
Note: Optimal phosphorus levels are less than 25 ppm for the most crops, based on a constant liquid fertilization.

Notes

- To return to the main page please use the "Return" button below.
- To get a copy of the report suitable for printing please use the "Print Report", or for a PDF "Print PDF", button below. The report will open a new window or tab.

Print Report Print PDF

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Insecticides to Control Spotted Wing Drosophila for Blueberries, Caneberries and Strawberries—New York

Trade name	Active Ingredient	IRAC code	Blueberry			Caneberry			Strawberry			Probable Efficacy	Length of Residual Activity
			PHI	REI	Rate per Acre	PHI	REI	Rate per Acre	PHI	REI	Rate per Acre		
Assail 3SG 2(ee)	Acetamiprid	4A	1	12 hr	4.5-5.3 oz	1	12 hr	4.5-5.3 oz	1	12 hr	4.0-6.9 oz	Good with sugar feeding stimulant (2lb/100gal)	7 days min. interval
Brigade WSB 2(ee)	Bifenthrin	3A	1	12 hr	5.3-16 oz	3	12 hr	8-16 oz	0	12 hr	6.4-32 oz	Excellent	7 days
Triple Crown	Bifenthrin, Imidacloprid & Zeta-cypermethrin	3A, 4A	3	12 hr	6.4 – 10.3 fl oz	3	12 hr	6.4 – 10.3 fl oz	Not labeled			Good/Excellent-several modes of action makes rotation difficult	7 days
Mustang Max 2(ee)	Zeta-cypermethrin	3	1	12 hr	4 oz	1	12 hr	4 oz	Not labeled			Excellent	7 days
Danitol 2.4EC	Fenpropathrin	3A	3	24 hr	16 oz	3	24 hr	16 oz	2	24 hr	10.6-21.3fl oz	Excellent	7 days
Delegate 2(ee)	Spinetoram	5	3	4 hr	3-6 oz	1	4 hr	3-6oz	Not labeled			Excellent – maybe better with feeding stimulant	5-7 days
Radiant 2(ee)	Spinetoram	5	Not labeled			Not labeled			1	4 hr	6-10 oz	Excellent – maybe better with feeding stimulant	5-7 days
Entrust SC* 2(ee)	Spinosad	5	3	4 hr	4-6 fl oz	1	4 hr	4-6 fl oz	1	4 hr	4-6 fl oz	Good/Excellent with sugar feeding stimulant	3-5 days
Entrust Naturallyte* 2(ee)	Spinosad	5	3	4 hr	1.25-5 oz	1	4 hr	1.25-2 oz	1	4 hr	1.25-2 oz	Good/Excellent with sugar feeding stimulant	3-5 days
Imidan	Phosmet	1B	3	24 hr	1.3 lb	Not labeled			Not labeled			Excellent	7 days
Malathion 8 Aquamul 2(ee)	Malathion	1B	1	12 hr	2.5 pt	1	12 hr	2 pt	3	12 hr	2 pt	Good	5-7 days
Drexel Malathion 5EC 2(ee)	Malathion	1B	1	12 hr	2 pt	1	12 hr	3 pt	3	12 hr	3.2 pt	Good	5-7 days depending on crop
Malathion 5EC 2(ee)	Malathion	1B	1	12 hr	2 pt.	1	12 hr	3 pt	3	12 hr	3 pt	Good	5-7 days depending on crop
Malathion 57%	Malathion	1B	1	12 hr	2 pt	1	12 hr	3 pt	3	12 hr	3.2 pt	Good	5-7 days depending on crop
Pyganic EC 1.4 II*	Pyrethrin	3A	0	12 hr	1 pt – 2 qt	0	12 hr	1 pt – 2 qt	0	12 hr	1 pt – 2 qt	Fair to Poor	0-2 days
Pyganic EC 5.0 II*	Pyrethrin	3A	0	12 hr	4.5 – 17 oz	0	12 hr	4.5 – 17 oz	0	12 hr	4.5 – 17 oz	Fair to Poor	0-2 days

*OMRI listed; PHI = pre-harvest interval; time between last application and harvest; REI = re-entry interval; time between application and when workers may re-enter the field; Probable efficacy ratings based on lab and field assays in western USA, Michigan, Connecticut. Additional materials labeled for SWD control with a probable efficacy of poor are not listed. **This is a guide. ALWAYS check the label!** Updated 05/09/2013 Cathy Heidenreich, Laura McDermott, Greg Loeb, Cornell University. *Mention of commercial products and trade names is for educational and informational purposes only. Manufacturers' instructions change. Read the manufacturers' instructions on the pesticide label carefully before use. Inclusion of information is not intended as an endorsement by Cornell Cooperative Extension or Cornell University, nor is discrimination of excluded information implied. Cornell University is an equal opportunity, affirmative action educator and employer.*



Cornell University
Cooperative Extension and
Department of Horticulture

Frost Protection in Strawberries

We are entering a very dicey time for strawberry growers. The month of May is often equated with sleepless nights as growers devote themselves to monitoring temperatures and irrigation systems. Frost occurs when the temperature around the plant drops below 32°F when pure water turns into ice. Plant sap has a lower freezing point than water due to the soluble solids in it.

When the critical temperature (Table 1) is reached, ice forms which damages cell membranes.

Frost can kill flowers or cause damaged, misshapen berries and cause injury to leaf tips and margins.

A rate of 0.1 inch/hour of water is considered adequate to protect to 24°F with no wind. The water frozen on the plant should be clear ice. If the ice is cloudy or milky white, the water application rate is not fast enough to protect the flower. In this case you can increase the water application rate by reducing the sprinkler spacing or changing to higher flow rate nozzles. At high wind speeds or temperatures below 20°F overhead irrigation can cause rapid freezing resulting in more damage than if there was no frost protection – see Table 2.

When to turn on the water? Growers need to understand dew point in order to get a good idea of how to make this decision. The dew point is the temperature at which humidity in the air condenses to form dew. When the air is humid the dew point occurs at a higher temperature than when the air is dry. Growers can use dew points to estimate how quickly the temperature might drop. Once dew begins to form, the air temperature drops more slowly because heat is released. Frequently, the nighttime temperature drops to the dew point, but not much below it. If the air is dry, then the dew point will be low. If the dew

Table 1. Critical temperatures of strawberries based on stage of development (Perry and Poling, 1985)

Stage of Development	Approximate Critical Temp. (°F)
Tight bud	22
"Popcorn"	26.5
Open blossom	30
Fruit	28



point is below 32°F, frost forms instead of dew. Don't wait for frost to form before starting the irrigation system. See Table 3.

Row covers reduce evaporative cooling. Heavy weight covers (1.5-2 oz/yd²) can protect 4-6 degrees, but there is a lot of variability depending upon manufacturer, age of the cover etc. There is no denying that they can buy some time on a cold night.

You will need to know plant temperature under the cover. Start irrigating right over the covers temperatures under the cover drop to 33-34°F. Irrigate right over the cover. Digital thermometers attached to thermocouples, inserted in the flower buds before the frost event, are necessary for successful protection with covers. Two layers of 1 oz cover provide more protection than 1 layer of 2 oz material.

Research is ongoing on low impact sprinklers and waterless frost protection agents.

For a very comprehensive fact sheet on frost protection in strawberries, visit: http://www.omafra.gov.on.ca/english/crops/facts/frosprot_straw.htm#crit. -LGM

Table 2. Inches of Water/Acre/Hour to Apply for Protection at Specific Air Temperatures and Wind Speeds (Martsoff and Gerber, Penn State University)

Wind speed at crop height (km/hr)	27°F air temperature at canopy	24°F air temperature at canopy	20°F air temperature at canopy	18°F air temperature at canopy
0 - 2	0.10	0.10	0.16	0.20
3 - 6	0.10	0.16	0.30	0.40
7 - 14	0.10	0.30	0.60	0.70
15 - 19	0.10	0.40	0.80	1.00
20 - 35	0.20	0.80	-	-

Table 3: Suggested starting temperatures for irrigation, based on dew point

Dew Point	Suggested starting air temperature
30 °F	32°F
29°F	33°F
27°F	34°F
25°F	35°F
24°F	37°F
22°F	38°F
20°F	39°F
17°F	40°F

Blueberry Mealybugs

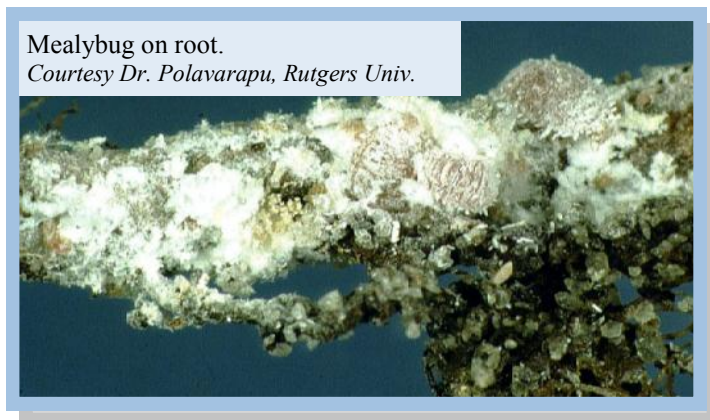
Recently, a report came in that young 'Duke' blueberry plants were not doing well. A colony of ants were noticed around the base of the plants, leading to an investigation of the root zone. There, a decent population of mealy bugs were found. This pest, along with another problem that I'll spend time on in the next newsletter, was the reason the plants weren't thriving.



Mealybug

Courtesy of MSU web fact sheet.

Adult mealybugs (*Dysmicoccus vaccinii*) are 3 to 4 mm long and white to light pink with a waxy covering. Mealybugs have an unusual life history since most instars can be found in the field throughout the year, including January and February. They are found on the roots of highbush blueberries, usually in association with ant colonies. The ants move the mealybugs around and feed on nutrients from honeydew. Besides stunting the plant they may be a vector of red ringspot virus, which has become an important viral disease of blueberries in New



Mealybug on root.

Courtesy Dr. Polavarapu, Rutgers Univ.

Jersey. Adult female mealybugs lay light brown, oval eggs in a white, fluffy material near the roots.

High populations can lead to poor plant growth and decline. Plants must be unearthed to find infestations. Disrupting the ant-mealybug relationship will be critical for control. Growers sometimes evaluate plants for possible mealybug infestation after harvest. Growers have often noted that sporadic weak and/or off color plants may be associated with the presence of mealy bugs on the roots.

The presence of mealybugs, however, does not mean that they are responsible for all root damage present. According to Dr. Gary Pavlis, Rutgers, mealybugs and oriental beetle grubs are often present on the same root system. Where OB grubs were controlled and no longer present, remaining root damage may still exist if a mealybug population remains. Growers can control the ants in an effort to slow the spread of mealybugs by using Esteem Ant Bait applied to the soil at the rate of 1.5 - 2 lb/acre. Ants will carry this bait back to the nest where other ants will feed on it. Applications should be made when there is no rain in the 3-4 day forecast since this product is less potent when wet. -LGM

The **Recycling Agricultural Plastics Project (RAPP)** can assist with recycling many of the plastics discarded after use in agriculture. RAPP has markets and guidelines for recycling maple tubing and irrigation drip tape, as well as dairy films, boat wrap, nursery pots, agricultural chemical containers, and more.

Check out RAPP's new facebook page to learn just about anything you might want to know about agricultural plastics, recycling, and the New York State Recycling Agricultural Plastics Project (RAPP).

Simply search on facebook for <Recycling Agricultural Plastics Project> or enter the url <<https://www.facebook.com/pages/Recycling-Agricultural-Plastics-Project-RAPP/439750762770779>>

Weekly and Seasonal Weather Information

Site	Growing Degree Information Base 50° F			Rainfall Accumulations		
	2013 Weekly Total 4/29—5/07	2013 Season Total 3/1 - 5/07	2012 Total 3/1—5/07	2013 Weekly Rainfall 4/29—5/07 (inches)	2013 Season Rainfall 3/1—5/07 (inches)	2012 Total Rainfall 3/1—5/07 (inches)
Albany	91.5	128.8	220.0	0.00	4.76	6.87
Castleton	84.8	128.4	225.2	0.00	0.90	6.89
Chazy	107.9	133.6	175.3	0.00	2.95	5.64
Clifton Park	93.8	118.3	200.5	0.00	4.71	7.69
Clintondale	72.8	140.6	186.0	0.00	4.37	4.88
Glens Falls	86.1	110.1	130.5	0.00	5.61	5.35
Granville	NA	NA	157.0	0.00	5.39	8.19
Guilderland	71.5	97.0	190.0	0.00	0.53	4.97
Highland	79.4	153.2	266.5	0.00	2.16	5.23
Lake Placid	24.5	27.5	NA	0.00	3.59	NA
Montgomery	53.0	112.0	232.0	0.00	4.08	4.05
Monticello	38.0	74.5	180.5	0.00	0.06	0.71
Redhook	68.0	116.4	237.5	0.00	3.16	4.86

Increasing Cooler Space for Small and Limited Income Farms

If you are in need of cooler space—be it additional space, cooled transportation or field cooling—consider this program. It is a competitive application process, but there are two Cornell Cooperative Extension educators in the eastern region that can help you with the technical questions. There are funds available to help 60 farms in the state—it’s a 50/50 match program with maximum compensation at \$3000.

The deadline is June 14, 2013.

For Growers in ENY/Capital District:
Sandy Buxton
518-746-2560
sab22@cornell.edu

For growers in the Hudson Valley:
Maire Ullrich
845-344-1234
mru2@cornell.edu

All applications need to be returned to: Cooling Project, CCE Wayne, 1581 Rte 88N, Newark, NY 14513 or emailed to wayne@cornell.edu. Overall questions about the project can be directed to Beth Claypoole, Executive Director CCE Wayne County, 315-331-8415.



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