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## Berry News

### ENYCH Program Educators:

#### Vegetables

**Chuck Bornt**

Cell: 518-859-6213

Email: [cdb13@cornell.edu](mailto:cdb13@cornell.edu)

**Amy Ivy**

Phone: 518-561-7450

Email: [adi2@cornell.edu](mailto:adi2@cornell.edu)

**Teresa Rusinek**

Phone: 845-691-7117

Email: [tr28@cornell.edu](mailto:tr28@cornell.edu)

**Crystal Stewart**

Cell: 518-775-0018

Email: [cls263@cornell.edu](mailto:cls263@cornell.edu)

**Maire Ullrich**

Phone: 845-344-1234

Email: [mru2@cornell.edu](mailto:mru2@cornell.edu)

#### Fruit

**Laura McDermott**

Cell: 518-791-5038

Email: [lgm4@cornell.edu](mailto:lgm4@cornell.edu)

Berries

**James O'Connell**

Phone: 845-691-7117

Email: [jmo98@cornell.edu](mailto:jmo98@cornell.edu)

Berries & Grapes

**Dan Donahue**

Phone: 845-691-7117

Email: [djd13@cornell.edu](mailto:djd13@cornell.edu)

Tree Fruit

**Steve Hoying**

Phone: 845-691-6787

Email: [sah19@cornell.edu](mailto:sah19@cornell.edu)

Tree Fruit

#### Business and Marketing

**Bob Weybright**

Phone: 845-797-8878

Email: [rw74@cornell.edu](mailto:rw74@cornell.edu)

Layout:

Carrie Anne Doyle

Content Editor:

Laura McDermott

### Regional Update

Crops moved VERY rapidly during the last 2 weeks. Most blueberry plantings in the lower Hudson Valley, apart from the latest varieties, are in full bloom. Junebearing strawberries likewise. Raspberries are finally growing better, blackberries remain severely affected by winter damage. Tarnished plant bug (TPB) reported by a few growers, but levels seem low.

In the southern part of the Capital District Ribes are just in green fruit now. Frost damage likely to hardy kiwi. Most strawberry growers had to turn on the water for a few nights this past weekend, but some locations were able to just use row cover because blossom development wasn't that far along. Many locations of June bearing strawberries in full bloom; day neutral strawberries have just started to grow and look good - some stressed out DN plants have had wimpy blooms for some time now, many of which have been nipped by frost. Like the southern part of the region, we have only a few sightings of TPB so far. Early blueberries are in bloom, raspberry canes in tunnels reported to be up to 30" tall and field raspberries are finally moving well as soil warms.

The northern part of the region is moving ahead as well, although I have not heard of strawberry bloom yet, but it cannot be far away. Blueberries have some winter damage in cold areas, but it shouldn't severely affect overall crop.

In general, things are looking quite good despite the extremely slow start. Growing degree days have made great gains, the weather has been relatively calm and we've gotten some great sunshine without weirdly warm weather.

Please feel free to call or email Laura (518-791-5038, [lgm4@cornell.edu](mailto:lgm4@cornell.edu)) or Jim (845-691-7117, [jmo98@cornell.edu](mailto:jmo98@cornell.edu)) to let us know how things are looking on your farm. We are trying to get out to as many places as we can, but it's a big region!



### Berry 'To Do' List

#### All crops

- The opportunity to control grass weeds when small has passed, but weed control through June is essential and has more impact on crop yield and growth than mid-season efforts.
- Plan for SWD control – early summer field meetings will be coming to you!



#### Blueberries

- Plan to make 2<sup>nd</sup> fertilizer application to blueberries by the end of the month.
- Water blueberries (1-2" each week) in early season to encourage shoot elongation.
- Apply bloom applications to prevent fruit molds.
- Treat for Mummyberry as needed.
- Scout for scale insects, weevil notching, blueberry gall midge, crown gall, witches broom etc. These pests have not traditionally been big problems for NY growers, but they do exist and are much easier to control when at the first stages of infestation.

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*Berry 'To Do' List, continued from previous page*

#### **Blackberries**

- Most blackberries took a hit from winter injury this season. When you determine the extent of injury, prune out the dead.

#### **Raspberries**

- Make sure that you have thinned plantings adequately. Pest control in brambles depends on good air flow so a well pruned planting with excellent weed control is important.

#### **Strawberries**

- Apply fungicides starting at 10% bloom to prevent botrytis gray mold.
- Scout for weevil grubs by digging in a one foot square area in the root zone. Grubs are small but easily visible now.
- Apply slug bait – especially important if you didn't do this last fall.
- Scout for two-spotted spider mites and cyclamen mites.
- If you see high populations of aphids, be vigilant about looking for virus. Aphids are vectors of some new and troubling viruses.
- Scout for tarnished plant bug.

## **Welcome New Tree Fruit Educator!**

We are pleased to announce that Dan Donahue has started as a Cornell Cooperative Extension Regional Fruit Specialist in the Hudson Valley. Dan has been hired by Cornell Cooperative Extension of Ulster County as part of the Eastern New York Commercial Horticulture program. He will be based out of the Hudson Valley Lab in Highland, NY and will be filling the vacancy left by Mike Fargione.

Dan is a near-native of the Hudson Valley, having moved to the area with his family at the age of 5. He completed a Bachelor of Science degree in agronomy at Cornell University, then went on to receive a Master of Science degree in entomology from Virginia Tech. Dan's graduate research produced three journal articles on reproductive and dispersal responses of the Two-Spotted Spider Mite (TSSM) *Tetranychus urticae* to certain pyrethroid insecticides.

Dan's career experience encompasses almost the entire scope of the commercial fruit industry in New York State, including: Agrochemical research; commercial fruit production & farm management; fruit purchasing and packing; cider production & retail produce operations; government & university relations; fruit industry

education, as well as organizational administration, information technology, sales, and marketing.

Dan has been a resident of the Hudson Valley for the last 14 years, predominantly working for a local agricultural and commercial power equipment vendor. His commercial affiliations have included Red Jacket Orchards, Inc., DeeJay Orchards, the New York State Horticultural Society, and Keil Equipment Company, Inc. Over the years he has collaborated closely with Cornell Cooperative Extension educators at grower events such as CCE Regional Fruit Schools, the annual NYS Horticultural Society Meeting & Trade Show, and Apple Industry Leadership Forums. Dan has written for newsletters and the New York Fruit Quarterly, generally on the topics of industry economic development and government relations issues such as farm labor, disaster relief programs for specialty crop producers, and pesticide regulation.



The first record of Spotted Wing Drosophila (SWD) in South America was reported in a **Journal of Pest Science** article on May 14, 2014 and posted through the on-line newsletter 'Small Fruit Update' published by Peerbolt Crop Management. <http://www.berriesnw.com/SFU/2014/sfudocs14/First-South-American-SWD-Catches.pdf>.

This newsletter focuses on the Pacific Northwest berry industry, but is packed with great information for the professional berry grower. Visit their website to subscribe: <http://www.peerbolt.com/>.



Fig. 1 South American continent showing the southern Brazilian localities where *D. rapali* individuals were collected (data)

## Crown Gall in Blueberries Requires Early Detection and Management

Crown gall has popped up periodically the last few years in area blueberry plantings. It's not a huge concern, but because management of the disease is basically removal of infected plants the disease is something to keep your eye on. Keeping soil pH low will help control the pathogen (*Rhizobium radiobacter*, formerly *Agrobacterium tumefaciens*) as it doesn't like acid soils. According to Dr. Peter Oudemans, Rutgers University, there is a fair amount of crown gall in NJ and it often appears on 'Duke'. Affected plants are often limited to certain farms and it is not widespread, however there are a few plantings where many plants are infected. The symptoms tend to be pretty severe on individual plants. Usually by the time symptoms express, the plant is on its way out. So removal of plants is the 1<sup>st</sup> priority. Generally the fields with symptomatic plants are on the >5.0 pH and the fields were often planted to another crop such as sweet potatoes or another vegetable before blueberries. So reducing pH and being aware of field history are other priority areas.

The Cornell Guidelines also mentions the use of *Agrobacterium radiobacter* strain K84 that could possibly be used as a preventative root dip to plants before planting in infested soils.






Oregon State University Diagnostic Lab can do a PCR screening for an affordable fee of \$60: <http://plant-clinic.bpp.oregonstate.edu/>. For more information, visit <http://pnwhandbooks.org/plantdisease/blueberry-vaccinium-corymbosum-crown-gall>. -LGM



At right: Crown gall on shoot of 3 year old plant. Galls on all of the plants infected appeared above the crown—which is different than most of the literature suggests. Photo by LGM

## Frost Protection in Blueberries?

Be aware of frost sensitive stages in blueberries. Most growers are not set up to do much in the way of frost protection for blueberries, although on a quiet night irrigation would be a good idea if temperatures were critical. The flower set looks really promising in most plantings, so let's hope we get through bloom with no major issues. When green fruit begin to swell, they are less vulnerable than the blossoms.

Bud Stage	Tight Cluster	Early Pink Bud	Late Pink bud - Pre-Bloom	Bloom	Green
Damage					
Slight	23° F	25° F	28° F	29° F	31° F
Severe	20° F	23° F	24° F	27° F	28° F

Source: Michigan State University

### Have questions? Need something in the field or greenhouse checked out?

The Eastern NY Horticulture team has a number of expert educators throughout the region in the areas of vegetable, tree fruit, and small fruit production; business development and food safety/GAPS. Give one of us a call and we will get you in touch with someone who can help.

## Frost Protection in Strawberries

The last few weeks have brought us a few light frosts. Many growers were able to successfully prevent frost damage with row covers, but that wasn't enough for some areas. Overhead irrigation remains an important tool, and knowing when to irrigate is tricky, but some rules of thumb may help growers determine the best time to actually turn the water on.

**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



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. Leaf tips and edges can also be injured.

A rate of 0.1 inch/hour 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

**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	-	-

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 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/yd<sup>2</sup>) 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 one 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](http://www.omafra.gov.on.ca/english/crops/facts/frosprot_straw.htm#crit). –LGM

**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

## Managing Botrytis Gray Mold

Botrytis gray mold (*Botrytis cinerea*) is a ubiquitous fruit rot of strawberry and the primary disease concern of most growers. Fungal infection begins at the blossom end or when berries touch each other. The infected portion is initially firm and brown but it expands and softens as the fruit ripens to a powdery gray mass of spores enveloping the entire berry. It is especially problematic when the weather is damp or air circulation is poor.

There are no known scouting thresholds and treatment is totally based on crop phenology – 10% bloom triggers first spray. There are no known resistant cultivars although some cultivars like ‘Earliglow’, ‘Jewel’ and ‘Clancy’ are less severely impacted. ‘Allstar’ and ‘Sable’ seem very susceptible.

- Excellent weed control, raised beds, excellent field drainage, appropriate plant density – all of these cultural techniques aid in promoting good air circulation and faster drying which helps reduce infection. **Spring applications of nitrogen can dramatically increase the potential for infection.**

Protection of blossoms is critical in gray mold management. Research has shown that excellent gray mold control in June bearing strawberries can be obtained with just two fungicide sprays applied at early bloom and 10 days later. Continued protection of fruit prior to harvest may be necessary during prolonged periods of wet, foggy, or humid weather. The fungicides registered for gray mold control are listed below. It is important to rotate these sprays – if you are planning on only making two bloom sprays, then choose Captan and one other material to help avoid resistance.

Fungicide resistance is a problem in some southern and mid-Atlantic states. If you feel that your fungicide is not working, or if you are interested in getting your farm screened for resistance, there is a lab at Clemson that is offering this service and will provide information on 11 fungicides. This may be very helpful especially if you are frustrated with your control. Ruling out resistance may be worthwhile. Contact Laura if you would like more information.

### Conventional Products:

- Elevate (1.5 lb/A). Elevate has been the most effective bloom spray, but there has been evidence of resistance in the southeastern US. Never apply more than two consecutive sprays of Elevate and it's best to rotate each spray.
- CaptEstate 68WDG (3.5-5.25 lb/A). Do not apply more than 21 lb/A CaptEstate per season. When plastic mulch is used, do not apply CaptEstate within 15 feet of natural vegetation or aquatic areas.
- Captan 50WP (3-6 lb/A) or Captan 80WDG (1 7/8-3.3/4



First infection on green berries.



Early sporulation of infected berry.

Photos from  
Cornell Berry  
Diagnostic Tool

[http://  
www.fruit.cornell.edu/  
berrytool/strawberry/  
STRparts.htm](http://www.fruit.cornell.edu/berrytool/strawberry/STRparts.htm)

lb/A) or Captan 4L (1.5-3.0 qt/100 gal water) or Captan 4L (3 qt/A) (Be careful when using Captan with any other material that has an oil adjuvant. The result can be foliar burn)

- Topsin-M 70WP (1 lb/A). If using Topsin-M and leaf spot protection is needed, tank mix with captan or thiram.
- Iprodione 4L (1.5-2.0 pt/A). Do not apply more than one spray of iprodione per season.
- Switch (11-14 oz/A) G. paraffinic oil- JMS Stylet Oil (3 qt/100 gal). Spray at no less than 400 PSI using ceramic spray nozzles (ALBUZ®ATR, lilac color or their equivalent).
- Scala (18 fl oz/A; 9 fl oz/A in tank mix). Apply at 7 to 14 -day intervals depending on disease pressure. Do not apply more than 54 fl oz/A Scala per season.
- Pristine WG (18.5-23.0 oz/A). Do not make more than two sequential applications of Pristine before alternating with another product with a different mode of action. Apply no more than five applications of Pristine per season.

### Organic products

- Oxidate (40-128 fl oz/100 gal).
- Organic JMS Stylet Oil (3 qt/100 gal). Spray at no less than 400 PSI using ceramic spray nozzles (ALBUZ®ATR, lilac color or their equivalent).
- Actinovate AG (3-12 oz/A). for best results apply with a spreader/sticker prior to onset of disease. Re-apply at 7 to 14-day intervals. -LGM

## Farmer’s Market Looking for Vendors

Held on Thursdays from 2pm to 7pm.

June 19th thru October 2nd.

Located on 1 Municipal Square in the Village of Walden (Orange County).

Contact: Kerri-Ann Lynch, phone 845-476-6241

email [waldenfarmersmarket@yahoo.com](mailto:waldenfarmersmarket@yahoo.com)



**2014 Weather Table**—This chart is compiled using the data collected by Northeast Weather Association (NEWA) weather stations. For more information about NEWA and a list of sites, please visit <http://newa.cornell.edu/>. This site has information not only on weather, but insect and disease forecasting tools that are free to use.

<b>2014 Weekly and Seasonal Weather Information</b>						
Site	Growing Degree Information Base 50 <sup>0</sup> F			Rainfall Accumulations		
	2014 Weekly Total 5/12 - 5/18	2014 Season Total 3/1 - 5/18	2013 Total 3/1 - 5/18	2014 Weekly Rainfall 5/12-5/18 (inches)	2014 Season Rainfall 3/1 - 5/18 (inches)	2013 Total Rainfall 3/1 - 5/18 (inches)
Albany	84.6	218.8	207.5	1.44	7.08	5.93
Castleton	81.9	214.1	209.3	1.84	7.82	1.32
Clifton Park	79.0	191.8	195.2	1.45	7.73	6.29
Clintondale	83.1	250.8	230.2	0.23	9.71	5.33
Glens Falls	96.5	230.0	175.0	1.23	7.63	6.29
Guilderland	79.5	194.5	169.5	0.50	1.00	0.69
Highland	85.3	257.1	245.1	0.31	9.77	3.21
Hudson	87.3	244.0	234.2	1.89	8.20	4.29
Marlboro	75.8	214.6	211.1	2.08	10.08	4.53
Montgomery	80.6	224.8	189.0	1.43	10.93	5.99
Monticello	54.9	134.6	132.0	0.03	5.43	0.08
North Easton	80.6	192.9	226.5	N/A	N/A	1.88
Peru	83.7	171.7	199.4	1.56	6.65	1.82
Shoreham, VT	85.0	179.2	215.3	0.79	6.25	4.86
Wilsboro	79.6	162.1	193.7	0.23	3.87	2.53

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