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Berry News

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Winter 2015:

What has it meant to your berry crops?

In the March 17th Tree Fruit News, Dan Donahue quoted the following statement from the Northeast Regional Climate Center (NRCC) located in the Department of Earth and Atmospheric Sciences at Cornell University:

“February was an exceptionally cold month in the Northeast, with temperatures generally 9 degrees F to 15 degrees F below normal. Fifteen of the 35 airport climate sites had record-cold Februaries. In fact, 7 of those sites reported February as their all-time coldest month. All but two sites ranked this February among their top 10 all-time coldest months. With such a

cold February, it is not surprising that the winter season ended up colder than normal at all 35 sites.”

“February was also quite snowy, with totals ranging from near normal up to 4.5 feet above normal. Seventeen sites ranked the month among their top 10 snowiest Februaries. At 7 of those sites, February also ranked among their top 10 all-time snowiest months. Three sites had record-snowy Februaries, with 2 of those sites also having their all-time snowiest month. The winter season was snowier than normal for most of the region.”

The cold weather for berry growers the minimum temperatures reported in the NEWA weather summary table aren't the only consideration. Temperature swings, which fortunately have not been an issue this year, can often wreck more damage than consistent cold. Steady temperatures contribute to the retention of a temperate plants cold hardiness. However, there are limits to the degree of cold that berry crops can tolerate:

0° F: strawberries without mulch or snow cover – (see Table 1 in article on winter damage on page 3)

0° F to -10° F – thorny blackberries are more hardy than thornless varieties

-15°F to -20.°F: mortality of blueberry flower buds – % loss variety dependent

-25.0 to -30.°F: mortality of Raspberry flower buds – % loss variety dependent

-LGM

Winter 2015 NEWA Recorded Low Temperatures (F)			
Town	Jan	Feb	as of 03/23
Albany	-9	-11	1.9
Bennington, VT	-14	-15	-8
Castleton	-11.3	-10.3	1
Chazy	-16.6	-22.9	-11.9
Clifton Park	-11.9	-10.9	2.5
Crown Point	-15.9	-25.8	-12.9
Glens Falls	-18	-24	-13
Hudson	-7.5	-15.8	2.8
HVRL, Highland	-0.2	-6.2	5.8
Lake Placid	-30.4	-31.6	-31
Marlboro	-0.2	-7.6	4.5
Modena	-3.3	-16.1	-2.7
Peru	-14	-15.6	-5.1
Pittsfield, MA	-10	-12	-3
Red Hook	-7.8	-10.3	2.8
Ridgefield, CT	1.4	-8.2	6.6

Berry “To Do” List

All crops

- Late winter/early spring is the BEST time to conduct dormant pruning of berry crops. This year will be more challenging as snow cover is finally receding. Some concern about blueberry bud damage in most locations as low temps were at or below the critical minimum of -15° F. Because these temperatures were achieved after a slow steady descent – with no mid-winter thaw – there will hopefully be less damage than low temperatures indicate.

Blueberries

- Prune out winter injured dead wood to prevent canker.
- Check buds for winter injury which may inform your pruning.

Raspberries/Blackberries

- Minimum temperatures don’t bode well for blackberries in most locations. Aggressive pruning may be warranted.

Strawberries

- Strawberry winter damage should be minimal as snow cover was consistent throughout the winter.



It won't be long! Photo courtesy of Nourse Farms

Welcome Jesse Strzok

Jesse Strzok (pronounced struck) is the newest member of our Eastern New York Commercial Horticulture team and joins us as a production economics specialist. A native of Wisconsin, Jesse grew up on the southern shores of Lake Superior on Chequamegon Bay.

He received his Bachelor’s degree in economics and mathematics after studying at the University of Wisconsin – Superior and the University of Alaska Anchorage. His graduate work was at Iowa State University in economics with work on co-existence of GM and organic production and experimental non-market valuation of agricultural commodities.

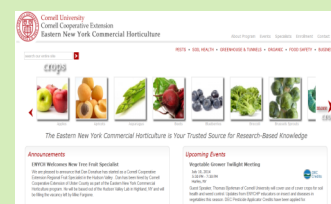
Jesse is working from the Washington County CCE office in Hudson Falls and is living in Queensbury, NY. You can reach Jesse by phone by calling 518-746-2560 or email at js3234@cornell.edu.



Eastern NY Commercial Horticulture Website

For event announcements and registrations, previous issues of our newsletters and more, please visit the Eastern NY Commercial Horticulture Team’s website at <http://enych.cce.cornell.edu/>. We hope you bookmark it on your computer and begin using it as your ‘go to’ website for production and marketing information.

Email or call any of the educators with questions or comments on the website – we want to make it work for YOU!



Winter Damage

"Winter damage" is a broad term that refers to damage to plants incurred in fall, winter, and early spring. Nearly all winter damage is desiccation damage--cold temperatures kill by drying plant tissues either directly by freezing cellular water or indirectly by freezing soil water, making it unavailable for uptake. Mechanical damage is simple breakage of material from the weight of snow or ice.

Cold temperatures kill plant tissue in one or more of the following ways:

1. *Denatures proteins* - Plant proteins, among them enzymes, are temperature sensitive and must remain intact and in the presence of liquid water to remain functional. Cold inactivates proteins by making liquid water unavailable for their function.

2. *Causes mechanical injury to the cell wall* - Ice crystals may form inside (intracellular) or outside (intercellular) cells. Their sharp edges can puncture the cell walls and cause cellular contents to leak away. Intercellular ice crystals form under normal circumstances, but if cooling is rapid intracellular crystals may form. This damage leads to occlusion of wood vessels with wound gum. If 50% or more of the vessels in a branch (or trunk) become occluded, the branch (or tree) dies.

3. *Precipitates protoplasm* - Winter conditions can cause protoplasm to denature and its contents to settle out, halting cell function.

4. *Causes desiccation* - As ice forms, water is pulled out of the cell sap, lowering the freezing point. This is part of the plant's way of protecting itself from freezing to death. If too much water is pulled out, the tissues dry out. It has been estimated that a mature apple tree loses about 300 grams of water per day in winter. Sap flows during mild winter days and some water conduction has been measured in some pines even at 0° F. As the sap flows it can be lost through evaporation from the plant. If the water in vessels is frozen, no new water can flow into the smaller twigs and branches whose water has evaporated--the tissue dries out. If soil water is frozen, the tree cannot replace the moisture lost in evaporation and the same thing happens. Vessel occlusion by frozen water or wound gum causes another barrier to water reaching the upper parts of the tree. High evaporation rates, as occur under bright sun and dry winds, exacerbate the problem.

**Source Abiotic Winter Damage, Robert Gough, Montana State Univ. Extension Horticulturist and Ron Carlstrom, Agricultural Agent, Gallatin Co., Montana*



Photo source: Eenigenburg Berry Farm

*Table 1. Fluffy snow has great insulation value; compacted snow has little insulation value**

When the air temperature is -14° F, other important temperatures are:	
Location	Temperature (° F)
At snow surface	-1° F
Under 3 inches of snow	16° F
Under 6 inches of snow	22° F

Evaluating Cold Injury in Blueberries

Not all of the tissues of a blueberry plant attain the same degree of cold hardiness. In fully dormant plants, the wood is normally somewhat hardier than the buds, and the roots do not develop any great degree of cold hardiness. Mulching with bark or sawdust can help moderate root zone temperatures and minimize root freezing injuries.

The basal tissue that connects the flower bud to the shoot is the part of the bud that is most easily injured during the dormant period. Following a freeze, florets in a bud may show no injury even though the basal tissue is injured.

The amount of growth of a new shoot or flower cluster depends on the extent of injury at the base of the bud. If injury restricts the flow of nutrients and water, growth of the shoot or flower cluster is slow or stunted, or completely inhibited.

Injury to the basal tissue can be determined by slicing longitudinally through a bud from the tip through the bud base with a sharp razor blade. Freeze-injured tissues will have a brown, water-soaked appearance, while healthy

continued on next page

Evaluating Cold Injury in Blueberries, continued from previous page
 tissues will be green or white. For best results, wrap tissues to be tested in a plastic bag and hold at room temperature for several days before slicing and examining for browning.



Blueberry shoot (left) injured by winter desiccation. Blueberry bud (above) on left showing winter injury – healthy bud on the right.

Both photos by Carlos Garcia-Salazar, Michigan State

Winter injury to the vascular cambium (thin layer of tissue beneath the bark) of the cane or roots interferes with the movement of water and nutrients to the buds and, later, shoots. Depending on which tissues have been injured and the degree of injury, symptoms of “delayed winter injury” may not appear until late spring or early summer. Shoots may bloom, leaf out, and even begin setting fruit before suddenly collapsing and dying over a 1- or 2-day period.

Sudden collapse is usually related to the onset of hot weather, which increases the demand for water by the developing shoots and fruit. Injured vascular tissues are unable to supply the needed water and nutrients and the shoot collapses. Often, injury to vascular tissue can be determined by scraping away the bark a healthy vascular cambium is bright green, whereas one injured by cold is brown.

Source: Winter Acclimation and Cold Hardiness of Blueberry, Northwest Berry and Grape Information Network, <http://berrygrape.org/winter-acclimation-and-cold-hardiness-of-blueberry/>

2015 Spring Berry Workshops

Locations	Dates	Times
Gade Farms , 2479 Western Ave., Guilderland, NY 12009 <i>Questions? Contact Laura McDermott: 518-791-5038</i>	Thursday, April 9	10 am - 12 pm
Kelder Farms , 5755 Route 209, Kerhonkson, NY 12446 <i>Questions? Contact Jim O’Connell: 845-943-9814</i>	Monday, April 13	1 pm - 3 pm
Greiner’s Farm , 102 Lattintown Rd., Newburgh, NY 12550 <i>Questions? Contact Jim O’Connell: 845-943-9814</i>	Tuesday, April 14	1 pm - 3 pm
Gunnison’s Lakeshore Orchard , Rte. 9N & 22, Crown Point, NY 12928 <i>Questions? Contact Laura McDermott: 518-791-5038</i>	Thursday, April 16	10 am - 12 pm
Anthony Weaver’s Farm , 385 Spring Street, Fort Plain, NY 13339 <i>Questions? Contact Laura McDermott: 518-791-5038</i>	Tuesday, April 21	1 pm - 3 pm

These workshops are directed at the commercial berry grower. Monitoring for pests, designing an effective pest control program, Understanding pruning strategy for bramble crops and blueberries (depending upon site) and general troubleshooting will all be part of this workshop. There will be plenty of time for questions and discussion.

Please pre-register with Marcie Vohnoutka at 518-272-4210 or mmp74@cornell.edu to let us know you are coming. This helps us plan – and also allows us to cancel the class in the event of supremely foul weather. Otherwise it will be held rain or shine!

Call the person listed under the location and date you are interested in attending if you have questions about directions to the farm or if you have a specific topic that you want to address at the class. **When leaving a message include your name and phone number.**