



Berry News

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What a difference 2 weeks makes. Unfortunately the worst case scenario has happened. After the warmest March on record we also had record lows recorded throughout the region early Tuesday morning April 5th. Temperatures were in single digits in certain areas for many hours from Columbia County north. The hope is that the snow cover along with straw mulch have kept strawberries protected but blueberries with buds in swell stage and tight cluster were exceptionally vulnerable. There is an article in this newsletter that explains critical temperatures and how to assess for bud death. I am also available to speak with anyone about these concerns. Those that are concerned about loss should contact their crop insurance agent as soon as possible, ideally within 72 hours of the event. If you don't have crop insurance you should call your local FSA office to inquire about additional support that may be available.

-Laura

Spring Berry "To Do" List

Blueberries:

Finish pruning mature bushes – Blueberries should be pruned before bud break, so most locations have a little more time. See article on Pruning in the last newsletter. As you're pruning do the following:

Scout for mummyberry disease – Mummyberries look like little tiny black pumpkins. They can be on the ground or still hanging on the plant. If you saw mummyberry strikes last year, then you should plan to spray for this disease as buds break, but physically disrupting the soil will help as will a dormant spray of lime sulfur. Ground sprays of urea have been shown to burn the developing apothecia as well. For more information on scouting for mummyberry:

http://msue.anr.msu.edu/news/scouting_and_management_of_mummy_berry_in_blueberries

Remove dead canes and *look for canker*. Canker diseases can also be controlled with lime-sulfur sprays before bud- break.

Look for scale insects. Dormant oil will help control them as will Brigade, Triple Crown or Esteem when used as crawlers appear in early spring.

Inspect for Insect Stem Gall – not a huge problem, but in specific instances has become a challenge especially in young plantings. Look for large bulbous galls form on the stems, often near the terminals. These are caused by the larvae of a tiny flightless wasp. The adults overwinter in the galls, emerge in early June, and crawl or hop to other stems to deposit eggs. Prune out the galls to control.

Apply sulfur if soil pH is higher than 5.2 – 200#/A is the maintenance rate that should be applied 1-2 times annually to prevent soil pH from creeping up. Remember that the target pH is 4.5.

Review foliar nutrient recommendations and make sure your fertility plan is in line. Foliar sampling should be done in early August. Contact Jim or Laura if you've never done this and need some help.

Strawberries:

As cool weather continues, leave straw in place. Continue to monitor weather and remove straw when it looks like seasonable warmth has returned.

Brambles:

Complete the necessary Pruning: After you finish blueberry pruning you can begin with brambles. Look for disease or insect issues as you prune.

How to assess the impact of a freeze on early fruit development

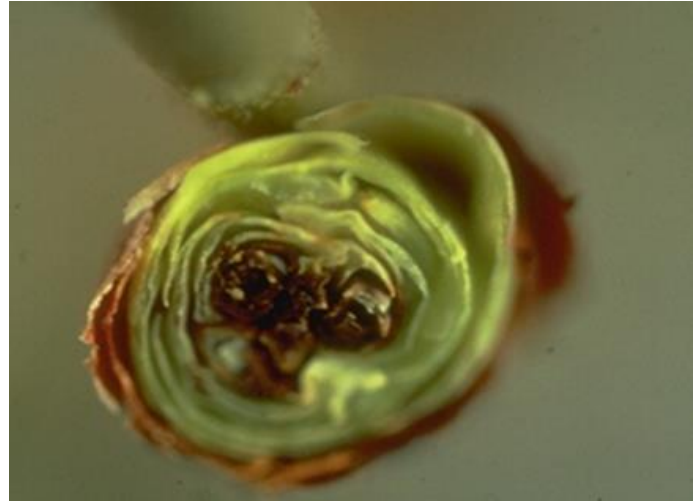
Adapted from an article by Mark Longstroth, Michigan State University Extension

Editors' note: This article is a follow up to the newsletter article 2 weeks ago. That one dealt with long term winter cold injury – which is often as much a response to desiccation as to minimum temperatures. That is what happened during the winter of 2015. The damage done early this week is technically frost – because the buds were actively growing when the damage occurred. Unfortunately – unlike frost – the cold stayed around for so many hours that damage will likely be quite wide-spread throughout a variety. There is work ongoing to try and separate differences in response to cold hardiness and tolerance to frost between cultivars in an effort to breed out susceptibility.

As woody plants begin growth in the spring the buds begin to swell and lose the ability to withstand cold temperatures. As the buds develop, warmer and warmer temperatures (still below freezing) can damage them. The killing temperature is often called the critical temperature and is defined as the temperature that buds can withstand for a half-hour.




In general, there is a range of temperatures over which damage occurs with more and more buds and flowers damaged at lower and lower temperatures until all the fruit buds are killed. Often the freeze will only damage some of the flowers such as the most developed ones or flowers in the bottom of the bush.

After a freeze, people often want to know how bad the






Wait 4 hours to 2 days before cutting buds. Cut horizontally and use magnification if necessary. Examine several plants from each variety and look at buds from all heights in the plant.

damage was. It takes several hours for the symptoms to develop. As frozen tissues thaw, they will turn brown or black if they were damaged or killed by the cold, revealing the extent of the damage. Experienced fruit growers can quickly assess the damage in the days following a freeze. This article contains pictures of frost damaged flowers for growers who wish to determine frost damage after a freeze.

1 – Dormant or tight bud	2 – Bud swell	3 – Tight cluster
		
<p>Plant part: Flower bud. Description: No visible swelling of the fruit buds. Bud scales tightly closed. No visible signs of growth.</p>	<p>Plant part: Flower bud. Description: First sign of growth as plant growth begins in the spring. Visible swelling of the flower buds; outer bud scales begin to separate at the tip revealing paler interior bud scales. This bud stage can usually tolerate cold temperatures of 10 to 15°F (-12 to -9°C).</p>	<p>Plant part: Flower. Description: Individual flowers are distinguishable in the flower cluster. This bud stage can tolerate 20 to 23°F (-7 to -5°C).</p>

Impact of a Freeze, continued from previous page

4 – Early pink bud	5 – Late pink bud	6 – Full bloom
		
<p>Plant part: Flower. Description: Expanding flowers are readily visible and have separated. The pink corolla tubes (petals) are short and closed. This bud stage can tolerate 23 to 25°F (-5 to -4°C).</p>	<p>Plant part: Flower. Description: Individual flowers fully developed. Expanded corollas are now white but still closed. This bud stage can tolerate 24 to 27°F (-4.4 to -2.8°C).</p>	<p>Plant part: Flower. Description: Most of the flowers on the bush have opened. The bloom stages can tolerate 28°F (-2.2°C).</p>

At or near the bloom stage, the critical temperature is the same for almost all fruits and flowers. Freezing temperatures of 28 degrees Fahrenheit will result in about a 10 percent loss and 24 F in a 90 percent loss. In a radiation freeze with clear, calm conditions, fruit on higher sites or in the tops of bushes will be less damaged than those at lower sites. The percent of flowers killed in a frost may or may not relate directly to lost yield later in the season. With large-fruited fruits such as apples, peaches, plums and pears, the loss of 50 percent of the flower is not devastating since we may only want a small percentage of the flowers to become fruit. For small-fruited fruits such as cherries, blueberries and grapes, many small fruit are needed for good yields and a full crop.

Cold winter temperatures usually injure flower buds before damaging older wood and canes. When buds are injured early in winter, they may appear brown and dead before spring growth resumes. Late winter injury may not be apparent until after growth begins. Severely injured buds may begin swelling, then die, whereas partially injured buds may develop only a few normal flowers. Injury can be assessed by dissecting buds: dead flower primordia are dark brown; live primordia are light green. Injury to older canes and wood is not apparent until spring growth begins. Branches and whole canes may fail to leaf out or break bud normally, then cease growth and die when warm weather occurs.

Spotted Wing Drosophila Update

Prior to this recent cold weather, there was heightened concern regarding the potential early onset of Spotted Wing Drosophila (SWD) in the northeast for the 2016 growing season. We have little hard data to support the thought that spring freeze or frosts will deter this insect, but rather more evidence that winter temperatures may play a greater role in the ability for the fly to overwinter. That being said, it would be smart for growers to pay attention to SWD blogs even in the early part of the season.

In anticipation of a potentially early SWD season, ENYCHP educators and staff will be deploying SWD traps across the region in mid-May this year. We report the findings of this effort to NYS IPM and then the statewide results are distributed through a SWD blog and through this newsletter. If you are not a member of that blog, please visit



<http://blogs.cornell.edu/swd1/> where you can subscribe using your email to this free service. At that same page you can participate in a SWD Stakeholder Survey (more information about that below).

Additionally, a brand new NE SARE (Northeast Sustainable Agriculture and Research) report has been listed on their website. This is a detailed report which includes data tables and project photos of the Exclusion netting project

done in our region by farmer Dale Ila Riggs. This is the link to that report: http://mysare.sare.org/sare_project/fne14-813/?page=final.

Tek-Knit is manufacturing the netting now and this netting will be available for purchase within two weeks. For more information about that SWD protection, please contact berry protection@fairpoint.net.

Spotted Wing Drosophila Winter Biology

Anna Wallingford and Greg Loeb, Dept. of Entomology, Cornell University

Spotted wing drosophila (SWD) is a serious pest of small fruits. This invasive fruit fly lays her eggs under the skin of growing and ripening fruits of cultivated and wild host plants. The species was first confirmed in the northeastern US in 2011 and has caused serious crop losses in New York state every year since its arrival. Populations tend to stay very low through the spring which makes June-bearing strawberry and earlier ripening varieties of blueberry and summer raspberry crops less vulnerable to infestation. However, fly numbers increase very rapidly through the summer and later ripening varieties of blueberry and raspberry are affected. Fall-bearing raspberries begin to ripen at a point in the growing season when SWD populations are so high, frequent insecticide applications are necessary to control this pest for the life of the crop. Good chemical control often requires weekly foliar applications and good resistance management calls for alternating use of several modes of action. Aside from being very costly, many growers are suffering under “spray fatigue” when attempting schedules that provide good control SWD in fall-bearing raspberry.

Reproductive diapause in SWD could provide some respite to spray fatigue as the shortening daylengths and cooler temperatures experienced by flies in the fall will trigger a pause in normal reproductive development until environmental conditions improve. Diapausing flies experience changes to their metabolism that improve overwinter survival, like a halt in egg production in exchange for improvements to starvation and cold tolerance. This suspension in egg production

However, temperatures that do not kill larvae act to make them stronger as the slowed development at moderately cool temperatures (50-60°F) results in larger, darker adults (Fig. 3). These winter forms, or “wintermorphs,” are better at tolerating cold, starvation, and desiccation which contributes to their chance of overwinter survival. Like the lab flies reared at 50-60°F, flies captured from the wild in October and November are also larger and darker and are far more cold tolerant than the summer forms.

Whether or not SWD successfully overwinters in the northeastern U.S. remains a point of speculation. Even with acclimation, SWD is susceptible to low temperatures and can be killed by short exposures to temperatures below 23°F. Winter temperatures in New York regularly drop below this lethal threshold, however temperatures at the soil surface are maintained just below freezing, especially with snow cover. Acclimated

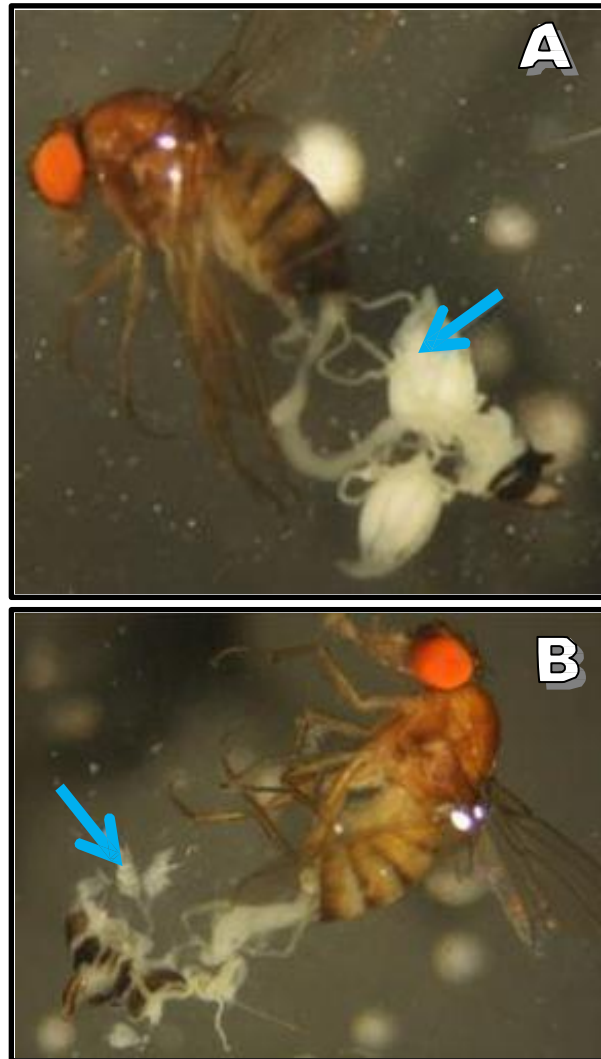


Figure 1: Dissected ovaries containing several mature eggs (A) and completely undeveloped ovaries (B).

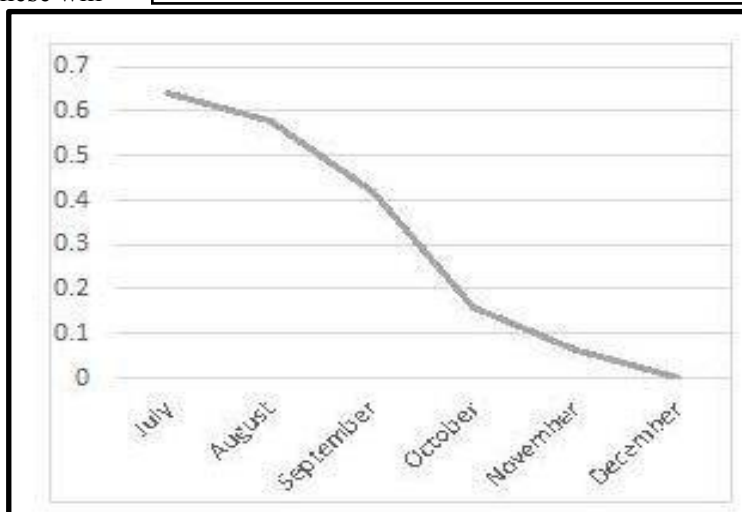


Figure 2: Proportion of field-captured females carrying mature eggs through the fall of 2014.

continued on next page

SWD Winter Biology continued from previous page

flies selecting a protected overwintering location may rarely experience acutely lethal temperatures. Although overwintering site selection behavior is still unclear, searches in Oregon have found individual flies under tree bark, inside tree collars, under leaf litter, in dropped apple fruit, and one lucky fly under a board in a greenhouse (Dreves). Flies that find themselves under tree bark are likely to experience ambient temperatures and therefore lethal temperatures during New York winters.

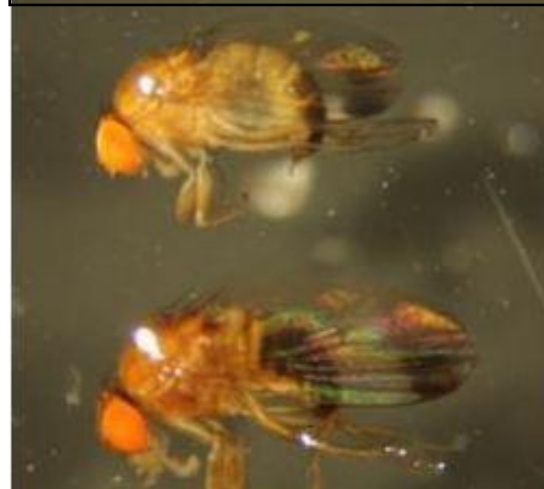
On the other hand, those flies that spend the winter at the soil surface under snow cover or even in man-made structures will stand a better chance and surviving the cold. Chronic cold tolerance laboratory studies found that wintermorph flies could survive several months of 33.8°F (Shearer et al.). These flies need only tolerate starvation and avoid desiccation. By shifting energy use from egg production to fat storage in the fall, a diapausing wintermorph fly is more capable of surviving for months at a time. A darker exoskeleton also means a thicker exoskeleton which aids in desiccation resistance. So overwintering is theoretically possible.

Entomologists and cold climate biologists are currently working to determine if there is a northern limit for SWD winter survival and whether or not summer infestations are from local overwintering populations or if they are migrating from milder, southern climates. This information could help with predicting the arrival or severity of yearly infestations.

For the full methods or further questions contact [Anna Wallingford](#) or [Greg Loeb](#). Source: *New York State Berry Growers News, Volume 15, No. 2*



Figure 3: Size and color comparison between summermorph (above) and wintermorph flies (below) in female and male SWD.



SWD Stakeholder Survey

The Sustainable Spotted Wing Drosophila (SWD) Management for US Fruit Crops project, funded by NIFA, needs your help. This five-year project is developing national research and extension approaches to minimize the impacts of SWD. They include:

- o **New management tactics and programs**
- o **Expanded pesticide registrations for SWD**
- o **Information and training on SWD for growers, extension agents, and others**

In order to achieve this and ensure that the research and extension efforts match the needs of growers, the project is collecting information on the impacts of SWD on berry and small fruit growers' farms, your current management practices and preferences, and your needs for better management of SWD.

Participation in the survey is voluntary. The survey doesn't collect personally identifying information and the data will only be analyzed and reported in aggregate form. Please help us help you by providing your perspectives on SWD in the survey.

Access the SWD survey at this link: <https://survey.ncsu.edu/swd/>



New York Labor Wages and Substitution

Jesse Strzok, ENYCHP

In talks and visits with producers from across our region the thought of a higher minimum wage (\$15/hour), and changes to exemptions for salaried employees, has many employers concerned. For those of you who have not kept up on the proposed changes, employers need to monitor the NYS Department of Labor (<http://www.labor.ny.gov/home/businesses.php>). In addition, all employers need to pay attention to the U.S. Department of Labor's Wage and Hour Division (www.dol.gov/whd/) for exemption changes. For our region the Albany District Office might be the easiest point of contact (for their contact information please see the end of this article). Their publications state the law and they can help you navigate the upcoming changes. They are here to help (seriously).

Albany District Office - U.S. Dept. of Labor

Leo W. O'Brien Federal Building
Room 822
11A Clinton Avenue
Albany, NY 12207
Phone: 518.431.6460, 866.487.9243

As savvy business people we are going substitute away from labor intensive production and into more capital intensive production when it makes sense, and vice versa. Now is a good time to forecast your production costs with more efficient equipment and to look to increase automation to rely less on labor to help minimize costs. For those of you who decide an investment in more automated equipment is a good idea – you have an interesting choice to make. Looking for good value in American made equipment as there may be some deals

hanging on from the previous economic downturn is smart. However, with the appreciation of the U.S. dollar against many currencies consider these questions when making a purchasing decision.

Have you found something you can only find over the border or overseas? Some of the new and used equipment you have been eyeing outside of the U.S. is now a better price. You might see additional costs if you need to modify the equipment to meet U.S. requirements for emissions, safety, etc. If you've decided on such a piece of equipment let's look at an example currency conversion.

The U.S. dollar (USD) versus the Canadian dollar (CAD). For the past decade or so I've regularly used www.xe.com as my go-to of choice for currency conversion. At the moment, 1 USD is trading for 1.29967 CAD (which I'll round to 1.3 CAD). Pretty good for us as it was close to 1-to-1 just a few years ago! So how does this conversion work? Well, ignoring any potential import tariffs or restrictions to trade, a piece of equipment which costs 1,000 CAD will only cost us 770 USD! [The math: Part 1) creating the ratio, (1 USD)/(1.3 CAD) = 0.77 USD/CAD; Part 2) using that ratio, 1,000 CAD x 0.77 USD/CAD = 770 USD.] Go ahead and try this with a U.S. dollar to Euro conversion.

To recap – we need to pay attention to the proposed changes AND exemptions and it's time to look at all your records and forecast production with different capital. Please contact me if you have questions on forecasting these numbers (js3234@cornell.edu).

The Economic Implications of Using NYS Farm Products in School Lunches

Brad Rickard, Todd Schmit, and Pam Shapiro, Cornell University

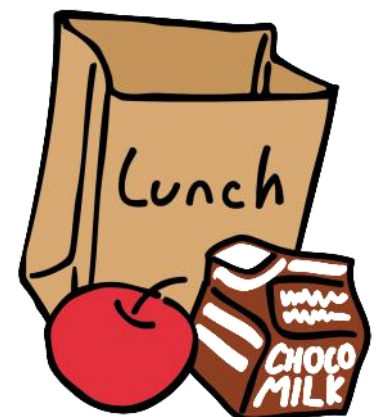
A significant amount of food is sourced for school lunches in New York State (NYS), which is procured at a cost of more than \$366 million for 281.6 million school lunches per year. Food service directors currently source food through collective bids and pooling purchases, where they are encouraged to purchase locally-produced foods, but they are not mandated or incentivized to do so. Recently, there has been interest in finding ways to increase the proportion of local food in school lunches, which is expected to increase revenues for local farmers and related businesses. Unfortunately, the directors of school lunch programs face very tight budgets, and many are not able to spend additional money to procure local foods.

One way to encourage food service directors to procure more local foods is to offer reimbursements to compensate for the added costs of purchasing local food ingredients. A group of Cornell University researchers has evaluated the benefits and costs of potential proposals that seek to

incentivize local food purchases in NYS school districts. **Findings from this research suggest that if NYS lawmakers provide an additional \$0.05-per-lunch subsidy incentive to food service directors that use local fruits or vegetables one day per week (e.g., "Thursday is Eat NY Day"), it would likely have an overall positive economic effect for farmers and local economies in NYS.**

Source: Research & Policy Brief / Issue 72 / April 2016

For the full article: [\(download PDF\)](#)



2016 Weather Table—The weather information contained in this chart is compiled using the data collected by Network for Environment and Weather Applications (NEWA) weather stations and is available for free for all to use. 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.

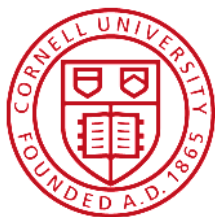
2016 Weekly and Seasonal Weather Information						
	Growing Degree Information Base 50⁰ F			Rainfall Accumulations		
Site	2016 Weekly To- tal 3/29-4/5	2016 Season To- tal 3/1-4/5	2015 Season Total 3/1-4/5	2016 Weekly Rainfall (inches) 3/1-4/5	2016 Total Rainfall (inches) 3/1 - 4/5	2015 Total Rain- fall (inches) 3/1-4/5
Albany	18.5	47.5	8.5	0.55	1.73	1.8
Castleton	20.3	46.0	9.1	0.78	2.56	1.32
Clifton Park	14.0	37.2	5.6	0.56	1.92	0.5
Fishkill	22.5	60.3	10.0	0.25	1.27	0.6
Glens Falls	14.5	20.5	2.5	0.28	2.56	0.57
Griffiss	12.0	23.0	0.00	0.97	3.85	2.26
Guilderland	13.0	31.0	5.5	0.55	6.16	1.73
Highland	22.3	68.8	7.6	0.37	1.68	3.12
Hudson	22.0	56.6	9.5	0.57	2.16	2.18
Marlboro	20.6	58.8	8.4	0.53	1.68	2.89
Montgomery	21.0	58.0	9.5	0.69	1.72	3.27
Monticello	11.5	29.0	0	0.03	0.32	0.01
Peru	12.4	16.4	5.3	0.1	1.97	1.13
Red Hook	21.8	55.5	9.0	0.3	1.27	1.74
Willsboro	13.6	19.2	6.4	0.9	1.84	0.22
South Hero, VT	7.9	10.8	4.3	0.16	2.03	1.63
N. Adams, MA	16.5	35.0	0.57	0.52	2.81	1.22
Danbury, CT	19.0	50.5	7.5	0.99	2.08	2.69

Na¹: Precipitation data for this site did not start until April, 2015

Every effort has been made to provide correct, complete and up-to-date pesticide recommendations. Nevertheless, changes in pesticide regulations occur constantly, and human errors are possible. These recommendations are not a substitute for pesticide labelling. Please read the label before applying any pesticide. This material is based upon work supported by Smith Lever funds from the Cooperative State Research, Education, and Extension. Diversity and Inclusion are a part of Cornell

University's heritage. We are a recognized employer and educator valuing AA/EEO, Protected Veterans, and Individuals with Disabilities.

Cornell Berry Guide



The Cornell Berry Nursery Guide contains an alphabetized listing of businesses throughout the United States and Canada that have requested inclusion in our listing. This two-part nursery guide for berry growers cross references scores of cultivars with the nurseries that sell them. This is a great resource for new growers or for those folks that are trying to add new varieties or crops.

If you are a nursery that sells berry crops, see below to find out how to be included on this list.

No endorsement is intended for those nurseries included in the list, nor discrimination for those not listed. The buyer must evaluate nursery quality and reputation through independent means.

Contact [Marvin Pritts](#), [Craig Cramer](#), or [Nicole Mattoon](#) and provide the following:

- Nursery Name
- Website Address
- Email Address
- Mail Address
- Fax
- Phone
- Cultivars you currently sell
- Cultivars you are not selling this year but sold last year

In addition, we would be glad to receive your catalog each year. Mail or email the information with an attention or subject line "Berry Nursery Guide".

To visit the Cornell Berry Nursery Guide, <http://fruit.cornell.edu/berry/nurseries/nurseries.html>

Upcoming Events

Save
the
Date

Tuesday, June 28th

Bus Tour to Quebec Vegetable growers and Tool manufacturer. More information to follow.

Saturday, August 13– Wednesday, August 17

8th International Strawberry Symposium. Quebec, Canada.

Visit <http://www.iss2016-quebec.org/> for more details.

Wednesday, August 17– Thursday, August 18

NASGA Summer Tour, Quebec, Canada. Visit <http://www.nasga.org/> for more details.

Please Note: The ENYCHP Enrollment Period is drawing to a close. If you have not done so already, please complete your enrollment paperwork to ensure that you continue to receive this and other ENYCHP Newsletters.

Please contact Abby Henderson with any questions. 518-746-2445

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