Cornell University Cooperative Extension

Eastern NY Commercial Horticulture Program

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Berry News

Spring Berry "To Do" List

All Crops

- Understand the situations that place your berry crops at high risk for Spotted Wing Drosophila infestations:

⇒ Large, unpruned bushes that have lots of shade
⇒ Spray intervals that exceed 7 days
⇒ Hedgerows close to the field that are loaded with elderberries, blackberries and other wild hosts
⇒ Ripe fruit that is not being picked
⇒ Warm days with high humidity
⇒ No cooler for immediate post-harvest treatment

These parameters will lead to SWD infestation levels that aren't manageable. Make sure to understand the risks.

Blueberries

- Scout for flagging from canker infections. The fungus overwinters on the plant so an application of lime sulfur at 5 gal/acre in the fall after 2/3 of the leaves have dropped, or in the spring before bud break, will help to reduce the overwintering population.
- Still time to take foliar sample – see past issues for instructions.

Raspberries and Blackberries

- On summer raspberries, remove the spent floricanes – those canes that fruited this past year. Thin new primocanes to 6 canes per linear foot of row – choose the thinnest and weakest canes to remove.

Strawberries

- Plan to apply 20-30 lbs of actual nitrogen per acre by the middle of September on the June bearing plants. If the foliar test done after renovation calls for other inputs that is a good time to add them as well.
- Control grasses that have emerged with Poast or Select Max. Use the highest labeled rate of these herbicides for quackgrass control. Include 1 percent crop oil concentrate in the mix. If composite or legume weeds become a problem in late summer or fall, apply Stinger in a separate spray.
- Day Neutral strawberries should be monitored for tarnished plant bug and mites. Continue to remove runners into September.
- Look for curling leaves with yellow distorted edges that signify potato leafhopper damage. These pests can do a lot of damage to overall vigor.

Sunburn on strawberries can be a problem for fruit grown on plastic at this time of year. Note the sunken flesh that leaves the seeds protruding and the tan "finish" of the berry. Photo: L. McDermott

In this issue of Berry News:

Comments on Some Newer Strawberry Varieties

Elizabeth Harlow, USEL student, Ontario Ministry of Agriculture, Food and Rural Affairs

Source: Ontario Berry Grower, Vol. 5, Issue Sept. 2015

A strawberry variety trial was planted in 2014 at the Simcoe Research Station in southern Ontario. The following information was based on observations from this trial in 2015, conversations with growers, and trial results from other berry producing regions in northeastern America.

A severe frost on May 22 impacted the early yields of our trial.

Donna
This late-season strawberry originated from New Zealand in 1993, but it is new to Ontario. The fruit is medium-large, full red straight through, and heart-shaped with a small calyx. The flavour is tart and juicy, and not very sweet. Some of the berries might have an irregular shape. Its flesh and skin are both soft and bruise easily. Donna is sensitive to foliar diseases, and it produces relatively low yields. It is recommended for trial planting only.

Figure 1 - Donna Strawberries
Photo Credit: Elizabeth Harlow

Laurel
This mid-season strawberry originated from a cross between Allstar and Cavendish made in Kentville, Nova Scotia in 2012. Laurel is an improvement on Cavendish; it is firmer, more uniform, and more resistant to diseases. The berry is medium-large, bright red and very high quality. The flavour is good, and it is an attractive, aromatic berry that ships well. Laurel is tolerant of leaf diseases and red stele, but susceptible to botrytis. It might not be fully winter hardy for northern Ontario, and it produces average yields. It is a good variety for fresh markets and pick-your-own.

Figure 2 - Laurel strawberries
Photo credit: Pam Fisher

Lila
This mid-season strawberry originated from a cross between Queen Elisa and Wendy made in Kentville, Nova Scotia in 2012. It produces medium-small, shiny, orange-red, round conic berries with a slightly uneven surface and a grainy texture. The flavour is sweet and juicy, but somewhat tart. The plant is semi-upright with an open growth habit that makes it easy to pick. It is winter hardy. Recommended for fresh markets or pick-your-own.

Figure 3 - Lila strawberries. Berries from the 4th pick. Earlier fruit had better size and shape.
Photo credit: Elizabeth Harlow.

Rubicon
This mid-season strawberry originated from New Haven, Connecticut. The berries are moderately firm, with excellent flavour and aroma. It has dark green foliage with a bluish tinge. Rubicon is resistant to red stele and black root rot, but plants are susceptible to anthracnose.
It tolerates frost well, and produces good yields. It is interesting for trial planting.

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Malwina
This strawberry originated from Germany. They are a very late-season variety, maturing after Valley Sunset. The berries are large and of good quality. They maintain their size through their season. It has good flavour. It is very vigorous; nitrogen needs to be managed to avoid excessive vegetative growth. Malwina is tolerant of verticillium and red stele, but susceptible to leaf blight. Recommended for trial planting.

Mayflower
This mid-late season strawberry originated from East Malling, United Kingdom. The berries are small, but high-quality, and have good flavour. Mayflower tolerates wet weather well, and is high-yielding**.** This variety was not outstanding in our trial.

Figure 4 - Malwina strawberries - Malwina berries still unripe on July 8th, while Valley Sunset is being harvested.
Photo credit: Pam Fisher.

Raspberry Herbicide Options Throughout the Season

Source: Ontario Berry Grower, Vol. 5, Issue Sept. 2015

Below is a table that provides herbicide options for new and established raspberry plantings. Each row in the table provides rotation options for your management program.

Crop Age	Fall	Late Fall / Winter	Spring	Summer
Newly Planted	Glyphosate (Preplant)		Devrinol (once soil settles after transplanting) Gramoxone, Poast (37 DTH) Shallow cultivation may be used as well.	Poast (37 DTH*)
	Glyphosate (Preplant)		Gramoxone, Poast (37 DTH) Shallow cultivation may be used as well.	Poast (37 DTH)
Established 1 or More Years	Princep + Gramoxone		Sinbar (70 DTH); Gramoxone	Poast (37 DTH)
		Princep + Gramoxone	Gramoxone	Poast (37 DTH
	Princep + Gramoxone		Princep + Gramoxone	Poast (37 DTH)
		Casoron	Gramoxone	Poast (37 DTH)

*DTH = days to harvest

Note: only apply herbicides when needed. This table is an example of timing the various herbicides registered in raspberries depending if you have summer or everbearing varieties.

Note: Herbicide Group Numbers in brackets below which are important for rotation purposes to prevent resistance development.

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Why Use One Herbicide Over Another:

Preemergence Herbicides

- **Casoron (Group 20)** - long residual good on winter annuals and some perennials. Can be applied very late in the fall / winter, as long as the ground is not frozen.
- **Devrinol (Group 15)** - expensive at labeled rates, good to moderate control of annual grasses and broadleaves; moderate control of groundsel. Spray only once per season in the fall or spring before weeds emerge.
- **Princep (Group 5)** - great on annual grasses and broadleaves.
- **Sinbar (Group 5)** - will also burn off small seedlings. Controls a large number of weeds including harder to control annuals and winter annuals: annual sowthistle, common chickweed, purslane, dandelion, henbit and yellow wood sorrel. However, may cause phytotoxicity. To avoid injury use low rates, lowest on sandy soil.

Postemergence Herbicides.

- **Gramoxone (Group 22)** - direct spray at the base of canes in the spring before new shoots emerge or in the fall when canes are mature. Gramoxone is a non-selective herbicide that will control all green plants.
- **Poast (Group 1)** - for grass control. Ensure application is made at the appropriate leave stage for the various grass weeds. Do not substitute other surfactants.

Moving Beyond Methyl Bromide with Biofungicides

Richard Jones

Source: Growing Produce, February 5th, 2016

Editor's note: This summer we had a Cornell student intern, Anita Minnifield, that did a comprehensive inventory of strawberry soil related pests. The diagnostic work was supported by Dr. Elson Shields NY Farm Viability sponsored project. You will be hearing more about the results, but it has become apparent that soil borne diseases are a major concern in our area.

These strawberries were planted in November and are shown here in mid-December. The bed on the right had Actinovate applied to the transplants at planting followed by another application a few weeks later. The bed on the left did not have this treatment – the difference in plant size was statistically significant. Photo courtesy of Mark Bolda

There's nothing currently available to growers that provides the same all-around preplant fumigation results methyl bromide did, and perhaps there never will be. But that doesn't mean there aren't effective programs you can implement in your crops, and biofungicides are an interesting new tool in that mix, says Mark Bolda, Farm Advisor in Strawberries and Caneberries with University of California Cooperative Extension.

"Biological fungicides have been part of the picture for some time, but not that many have been tested in university trials. And certainly not in strawberries," he says. "As we transition from methyl bromide, we cannot be leaving any stone unturned. We have to look at everything."

PrePlant Fumigation Programs

The loss of methyl bromide left growers looking for alternatives to battle tough soil diseases like Verticillium, Macrophomina, and Fusarium. But Bolda says those diseases aren't really the target of his research with biofungicdes. His goal in trialing the technology is not to completely eliminate soil pathogens, but to keep them in check enough to help the plants perform better.

"I'm working on plant performance. I am not necessarily focused on these materials as being toxic to fungi — but they do seem to be enhancing plant performance to some extent."

At this point, research has been combining alternative chemical fumigants with other materials, including biofungicides. In the 2013 production season, Bolda tested 14 different biofungicide materials in a series of strawberry trials. He saw clear plant response with a few of the products, including *Bacillus amyloliquefaciens* (Double Nickle,

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Certis), *Trichoderma virens* (SoilGard, Certis), Bacillus subtilis (Serenade, Bayer), and *Streptomyces lydicus* (Actinovate, Monsanto).

He followed that up in 2014 by testing this smaller list of products in soil that had been treated with anaerobic soil disinfestation, which is flooding with the addition of a carbon source. In 2015, Bolda narrowed testing down to one product which had shown the best results in his '14 trials, an application of *Streptomyces lydicus* (Actinovate), following an application of a chemical fumigant called allyl isothiocyanate (Dominus, Isagro USA).

"We saw good results. It did help us close the gap between what we would achieve with Dominus alone and what we normally see with methyl bromide," Bolda says.

Improve Plant Performance

As an illustration, he says to look at the crop yield you would have expected using methyl bromide.

"With something like Dominus in trials, I was looking at an 80% yield in comparison to what we may have gotten using methyl bromide. As a grower I'm looking to do whatever I can do to close that 20% gap in plant performance — better fertility practices, or managing the plant a little bit better at planting. I can also use some of these biological fungicides which may give me between a 5% and 10% boost in yield. That's what I'm looking for," he says.

What growers need to start doing, Bolda says, is ask, "How do I close the gap between what I used to get with methyl bromide and where I am now?"

"If you use these things to try and prevent fungal infection of the plant, that's not the way I would be thinking. I think that's a mistake. If you have a material you can put on the plant and continue to put through the drip tape once a month, and it's going to give you a 5% or 10% gain in plant performance, that's good."

The cost for real gains is a reasonable investment, Bolda says.. "Adding some of these biofungicides is not that expensive. In our trial, an application is about $20 an acre. You do that once or twice a month. With something like strawberries which is a very high-value crop per acre, it's really affordable and if it gets you that 5% or 10% increase in yield, the gain is significant."

Bolda's work with strawberries is continuing. He also has a trial in blackberries this year and expects to see similar results. The key, Bolda emphasizes, is that growers not expect too much. There's simply not a single solution to replacing what methyl bromide did. But that may not be a bad thing.

"When you use these fumigation alternatives, you're leave behind a different soil ecology than you did fumigating with methyl bromide. Biological fungicides are, by and large, fungi and/or bacteria. I'm using living organisms. It may perform better in a soil that's been treated with an alternative than it would in a soil that's been treated with methyl bromide," Bolda says. "Biofungicides are additive in a strong program of plant culture."

EPA Report Tracks Climate Change

Source: Ag Pro, August 4th, 2016

The U.S. Environmental Protection Agency (EPA) has released a report that shows compelling and clear evidence of long-term changes to our climate, and highlights impacts on human health and the environment in the United States and around the world. The report, Climate Change Indicators in the United States, features observed trend data on 37 climate indicators, including U.S and global temperatures, ocean acidity, sea level, river flooding, droughts and wildfires.

"With each new year of data, the signs of climate change are stronger and more compelling," said Janet McCabe, acting assistant administrator for EPA's Office of Air and Radiation. "This report reiterates that climate change is a present threat and underscores the need to reduce greenhouse gas pollution and prepare for the changes underway, to protect Americans' health and safeguard our children's future."

The report shows:

- **Carbon Dioxide Levels** – Average annual carbon dioxide in the atmosphere has exceeded 400 parts per million for the first time in at least 800,000 years;
- **Temperatures** – Average surface air temperatures have risen across the U.S. since 1901. Eight of the top 10 warmest years on record have occurred since 1998, and 2012 and 2015 were the two warmest years on record;
- **Sea level** – Sea level (relative to the land) rose along much of the U.S. coastline between 1960 and 2015, particularly the Mid-Atlantic coast and parts of the Gulf coast;
- **Coastal Flooding** – Nearly every city with a long-term measurement site has experienced an increase in tidal flooding since the 1950s;
- **Arctic Sea Ice** – March sea ice reached the lowest extent on record in 2015-2016;
- **Marine Species Distribution** – As ocean waters have warmed, marine fish and invertebrate species along U.S.

coasts, such as lobster, black sea bass, and red hake are shifting northward and moving deeper in the ocean; and

Ragweed Pollen Season – Warmer temperatures and later fall frosts are increasing the length of ragweed pollen season, which has increased at 10 out of 11 locations studied in the central United States and Canada since 1995.

This fourth edition of the report, which was last published in 2014, provides additional years of data for previously-published indicators and adds seven new indicators: heat-related illnesses; West Nile Virus; river flooding; coastal flooding; Antarctic sea ice; stream temperature; and marine species distribution. The report also features a special section that highlights the many connections between climate change and human health.

EPA partners with more than 40 data contributors from various government agencies, academic institutions, and other organizations to develop the climate change indicators. Each indicator and the report in its entirety were peer-reviewed by independent experts.

Information about the Climate Change Indicators report: www.epa.gov/climate-indicators

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A lecture series on the regional farm and food system

GLOBAL ISSUES, LOCAL SOLUTIONS

LECTURES

Registration 6:30pm/ Program 7:00pm

October 27, 2016, Gardenworks Farm
1055 County Route 30, Salem

December 1, 2016, Hubbard Hall– Love Joy Building
5 Washington Street, Cambride

January 26, 2017, SUNY Adirondack– Main Campus
640 Bay Road, Queensbury

March 14, 2017, Brown's Brewing Company– Waloomsac Tap Room
50 Factory Hills Road, Hoosick Falls (snow date March 21)

Register online at www.sunyacc.edu/continuinged or by calling 518-743-2238

SUNY ADIRONDACK

Cornell University Cooperative Extension

ASA
Agricultural Stewardship Association

Cornell Cooperative Extension
Capital Area Agriculture & Horticulture Program

Greenhouse Biocontrol Demonstration Series

Four Workshops
September 15 & 27, October 4 & 11, 2016

Each meeting 2:00 PM - 4:00 PM
Schenectady County Horticulture Education Center
PTL Arthur Chaires Lane, Schenectady, NY

Register online!
Each session must be registered for individually -
click links below:

Sept 15: Start Early. Getting Started with Biocontrol for Growers

Sept 27 : Biocontrol for the Public Eye

Oct 4: "Mid-Season" Biocontrol Workshop for Growers

Oct 11: Biocontrol for Growers, Educators, and Consumers

Each workshop is $5.00 per person.

Questions? Tove Ford (**tff24@cornell.edu**) , Lily Calderwood (**lbc75@cornell.edu**)

FREE Greenhouse Scout App for the first 40 greenhouse growers who sign up!

Current Average Farmers Market Prices

Product (NC = nonconventional)	Unit	Mid-Hudson	Capital	Saratoga - Lake George
Blueberries	pint	$4.00	$4.50	$4.50
Blueberries NC	pint	$4.50	$5.00	$4.33
Raspberries	1/2 pint		$3.00	$4.00
Raspberries NC	1/2 pint	$4.00	$4.00	$4.00
Strawberries	pint	$4.00	$3.00	$5.00
Strawberries NC	pint		$3.58	

Site	2016 Weekly Total 8/17-8/22	2016 Season Total 3/1-8/22	2015 Season Total 3/1-8/22	2016 Weekly Rainfall (inches) 8/17-8/22	2016 Total Rainfall (inches) 3/1-8/22	2015 Total Rainfall (inches) 3/1-8/22
Albany	141	2266.4	2312.0	0.41	17.15	18.38
Castleton	132.9	2187.3	2807.8	0.98	18.69	17.96
Glens Falls	121.6	2032.8	1988.5	0.58	22.51	16.90
Griffiss	120.1	1911.1	1854.0	1.14	27.27	25.74
Guilderland	128	2051.0	2081.5	0.04	18.06	22.99
Highland	149.2	2386.8	NA	0.90	19.24	0.00
Hudson	140.6	2352.3	2308.2	1.16	25.82	21.21
Marlboro	145.5	2281.4	2228.4	0.83	18.60	16.26
Montgomery	158.7	2309.9	2280.0	0.51	17.63	17.23
Peru	121.3	1890.0	1879.6	0.73	11.10	19.38
Red Hook	136.1	2245.3	2202.2	1.13	16.42	17.66
Willsboro	119.3	1868.9	1834.6	0.41	15.13	23.26
N. Adams, MA	111.5	1835.1	1801.0	0.69	20.12	20.12

Other Upcoming Events

November 2, 2016 - Managing Phosphorus in Organic Residuals Applied to Soils 8:45-4pm. Holiday Inn, 265 Lakeside Ave. Marlborough, MA 01752. Approval has been requested for the following professional certifications: CGCS, CSFM, MCH, MCLP, and AOLCP. For more information contact: Kelly Kraemer, 413-545-5221, kkraemer@umass.edu or visit: https://www.regonline.com/phosphorus.

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