



Cornell University
Cooperative Extension

Eastern NY Commercial Horticulture Program

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Berry News

Spring Berry "To Do" List

All crops

- Deer, rodent and bird damage likely cause more loss in profit than do disease or insects. Double down on whatever deer control you are using. Walk fence perimeters, make sure solar charging units are really working and that ground faults are in place. If you can't afford bird netting for the entire block, why not experiment with a row – and prove to yourself that birds are eating a substantial amount of fruit. Anecdotally growers report a 30% increase in production 1 year after installing bird netting.
- The window for spring herbicides is closing. Spot treatments of glyphosate can be made with extreme care – this is most appropriate for noxious perennial weeds like goldenrod or other woody

weeds.

- See last week's edition of Berry News for the summary of fertilizer recommendations for all berry crops. First dose of split applications of nutrients should be applied now.
- GDD update: Despite the recent week of chilly weather, GDD's are accumulating, and thanks to the heat in late April we are pulling ahead of last year's accumulation in all tracked locations. As of Tuesday, May 9th Base 50 GDD accumulation since January 1 are listed alphabetically below. Visit the [NEWA, http://newa.cornell.edu/](http://newa.cornell.edu/) web site for more weather data.

Blueberries

- To improve pollination wait to introduce bees until bloom is at least 5% but before 25%. Blueberry flowers are less attractive to honeybees

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Base 50 GDD Accumulation – Jan 1- May 9		
Site	2017	2016
Accord	166.6	50.7
Albany	204.1	122.5
Amsterdam	138.4	na
Crown Point	142.5	51.8
Glens Falls	143.1	79.0
Hudson	215.8	138.7
Modena	211.9	143.4
New Paltz	198.2	158.4
Plattsburgh	85.5	na

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Serving the educational and research needs of the commercial small fruit, vegetable and tree fruit industries in

BERRY NEWS Albany, Clinton, Columbia, Dutchess, Essex, Fulton, Greene, Montgomery, Orange, Putnam, Rensselaer, Saratoga, Schoharie, Schenectady, Ulster, Warren and Washington Counties

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and unless there are LOTS of flowers open, the bees will find alternate nectar sources. Hive stocking density should be 0.5 – 2.5 hives per acre depending on variety. Bluecrop is suggested at 1.5 hive/acre; Elliot at 2 hives/acre; Earliblue at 2.5 hives/acre.

- Plan for bloom fungicide applications to prevent fruit molds. Botrytis blossom and twig blight can be controlled at pink. Many of the same fungicides labelled for mummyberry will control botrytis. Anthracnose fruit rot is best controlled by a fungicide application right at bloom.
- This cool, moist weather is perfect for Mummyberry. Research shows that mummyberry infection temperatures hover between 45° and 60° F. See mummyberry article in this newsletter.

Strawberries:

- Strawberries are blooming in the Hudson Valley and just starting bloom in the Capital District. That means it's frost protection time. Fully open blossoms are susceptible to cold temperatures below 32° F. Have row cover and/or overhead sprinklers available and ready for frost protection.
- At least 2 well timed fungicide sprays to protect against Botrytis makes a huge difference to berry quality. For organic growers there is some evidence that Regalia can help control Botrytis and Fruit Anthracnose – but mostly in grapes or in combination with conventional materials. Still – it's something. Spray recs in this newsletter.

Brambles:

- Floricane brambles are in bud stage in the south, just barely seeing buds further north. Primocanes are pushing, but the cool weather has stalled emergence somewhat.
- *Complete the necessary pruning:* You can still thin floricane raspberries to the appropriate density – 4-6 canes per square foot of row. Rows

should be no wider than 18" preferably 12" wide. Remove small canes (less than the diameter of a Sharpie) that will not contribute to productivity.

- *Early season weed control:* Light mulch after pruning will help, but weed control in brambles is a challenge. Herbicide options are limited the longer you wait, but Surflan can be used at this point and grass herbicides will be helpful if applied when the grass is small. Glyphosate could be applied to the edges of grass strip using a wick or roller applicator.

Ribes:

- Currants and gooseberries are blooming in the Capital District and Mohawk valley and are at fruit set in the lower Hudson Valley.
- Powdery mildew sprays (many organic options including oil, Kailgreen, sulfur and Actinovate, but also Rally, Cabrio and Rampart) should begin now if this disease has been a problem in the past.



New raspberry planting at Hand Melon Farm, Greenwich, NY

Spray Guidelines to Manage Gray Mold AND Fungicide Resistance

Written by Dr. Cassandra Swett, Grape and Small Fruit Pathologist, University of Maryland

Editor's Note: Although we don't have any evidence that Botrytis resistance is present in NYS, it is a growing threat in other eastern states. If you think there is a possibility of resistance development, please call Laura or Jim.

Here's a strawberry spray guide that manages fungicide resistance, when your main objective is gray mold (Botrytis) protection:

Pre-bloom (crown rot protection)

Spray: Every 7-10 days

Rotating: Captan 50 WG or 80 WDG (group M)

With: Rovral 50 WG (Group 2) --this compound can only be applied once, and only pre-bloom

Early Bloom (10%) to fruit set

Spray: Every 7-10 days

Rotating: Elevate 50 WDG (group 17), CaptEstate (group M + 17), Switch 62.5 WG (group 9 + 12), Scala (group 12) and Pristine WG (group 7 + 11)

With: Captan or Thiram Granuflo (both group M)

An example: Captan, then Switch, then Captan, then Pristine, then Thiram, then Elevate, then Captan

After fruit set:

Spray: Every 7-10 days

Rotating: Captan and Thiram (both group M)

With: CaptEstate (group M + 17), Elevate (group 17) - each applied only once during this interval.

Rates

For every compound, there is a range in the rate you can apply. For fungicides at risk of resistance (Switch, Pristine, Rovral, Scala), the lower rate is always recommended. For fungicides that are not at a high chance of resistance (Elevate, Captan, Thiram+), the amount you apply should be adjusted, in part, based on how high disease pressure is. If it rained at least once since your last spray, and temperatures are between 65 and 75° F, you will want to use the higher concentration. If, in contrast, it's been cooler than 65, warmer than 75 and / or dry, use the lower rate.

Timing

The same goes for how often you spray. We get a lot of rain this time of year, and every time it rains the fungus has a chance to infect plants. So long as it's raining about every week, plan to spray every 7-10 days.

Switch and Pristine are both highly effective, but are at high risk of resistance if they are used too often. Because of this, it is recommended that they are only used ONCE each year.

What about non-synthetic chemicals?

There is some interest in using non-synthetic chemicals for fruit rot control, as a rotation with synthetic chemicals, especially in post bloom control, and for organic management. One such compound is **Regalia**, a plant extract labeled for use on gray mold and anthracnose fruit rot in strawberry. Trials are lacking for

strawberries, but in grape Regalia can be as effective as Pristine against *Colletotrichum*, and is moderately effective against *Botrytis*. In trials in California, disease control with Regalia is best when rotated with conventional compounds.

Source: Penn State Extension, Small Fruit Blog <http://extension.psu.edu/plants/tree-fruit/news/2015/time-for-strawberry-fruit-rot-protection>.

Botrytis cinerea, the causal agent of gray mold on strawberry, on infected fruit. Note dusty covering of gray spores on infected fruit. Courtesy of APS image database.



Small Sprayers for Small Farms

Andrew Landers, Pesticide Application Technology Specialist, Cornell University

There are many important points to consider before purchasing a sprayer, not least of which is the area to spray, the proximity of the local supplier, standard of manufacture etc. A fact sheet on Machinery selection – crop sprayers for orchards and vineyards is available from the author. There are many growers with small vineyards who don't require airblast sprayers and have a need for spraying equipment ranging from backpack sprayers to small truck or ATV mounted machines.

Canopy sprayers

1. Backpack sprayers

Small capacity (4-5 gallon) sprayers will produce up to 150 psi pressure. Weight is an important consideration and growers should select a sprayer with good, wide, padded straps to ease the load. Correct nozzle selection according to the target is very important to ensure even coverage. A good size filling hole at the top is also important. **\$95-150 approx.**

Maintaining a constant flow is crucial for good application. The use of a spray management valve such as a CF valve will ensure a constant output irrespective of hand pump action. **\$12 approx.**

An alternative to the hand pump backpack is the electric backpack, which utilizes a small rechargeable battery. Max. pressure is quite low. **\$265 approx.**

2. Portable gas sprayers

If weight is a problem, and ground conditions are relatively smooth, a sprayer with a small 1/4hp gas engine, 12 gallon tank and 16" wheels is available from Dramm. **\$930**

Larger capacity tanks (14—100 gallons) are often trailed and can be pulled by a lawn tractor, ATV or small tractor. Often fitted with a small electric, battery powered pump or a 4-10hp gas engine. **\$289-3000**

3. Portable Mist and air blower backpacks

Knapsack mistblowers are also available and comprise a small fan driven by a petrol engine and a tank and nozzle assembly. The airflow from the fan is emitted via a tube and a nozzle provides the droplets, the resulting spray is blown into the canopy and gives better penetration and deposition than a traditional knapsack sprayer.

Where motorized sprayers are used, good maintenance must be practiced as they often use two stroke

engines which are notorious for poor starting qualities. Besides creating fine drift-prone droplets, they are noisy and you are walking into a mist. **\$800- 900**

4. Small mounted sprayers

Ideal for mounting onto the carrier rack of an ATV, 15-25 gallons, they use a small electric pump to provide up to 70 psi. **\$230-350**

5. Large skid mounted sprayers

Ideal for fitting into the back of a pick-up truck these sprayers have a tank capacity of 35- 200 gallons, and electric or gas engine power. **\$400-2700**

6. Small trailed airblast sprayers

Very small airblast sprayers, such as the interestingly named Lil' Squirt from PMB sprayers with a tank up to 110 gallons, a 5.5hp gas engine and which can be towed by an ATV are available. Larger tank capacity up to 300 gallons is also available. Remember the larger the gas engine, the more important it is to buy an electric start option. **\$5000**

7. Small mounted airblast sprayers

Three-point hitch, PTO driven models with a 22 or 24" fan, for fitting onto 25hp tractors are available. Beware of drift, consider models which direct the air via deflectors. **\$3700+**

Herbicide application

1. All the sprayers, 1-5 above, (except the airblast) can be used for herbicide application BUT be very careful that there is no carry-over from herbicide residues in the sprayer, therefore wash out very thoroughly.

2. The use of Controlled Droplet Applicators (CDA) will considerably reduce the need to carry vast amounts of water. A spinning disc (battery powered) will produce 95% of the same-size droplets, thus reducing chemical rates by 50% and water rates. Herbi and Mantis (trade names) are hand-held sprayers. **\$200-400**

ATV or tractor mounted shielded CDA sprayers such as the Environmist from BDi also reduce spray rates. **\$2100**

3. Wick wipers

Where occasional weeds are a problem, the use of a hand-held wick wiper is an easy-to use, effective option. **\$35 -55**

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Equipment Sources:**BDi Machinery Sales**, Macungie, PA

1-800-808-0454

Bdi@fast.net**CF Valve by G.A.T.E.**, Deerfield Beach, FL

1-800-303-2099

www.cfvalve.com**Demco**, Boyden, IA

1-800-543-3626

www.demco-products.com**Forestry Suppliers Inc.**, Jackson, MI

1-800-647-5368

www.forestry-suppliers.com**Gemplers**, Belleville, WI

1-800 332-6744

www.gemplers.com**Hardi Midwest**, Davenport IA

563-386-1730

www.hardi-us.com**John Bean Sprayers**, LaGrange, GA

1-800 241 2308

<http://www.johnbeansprayers.com>**Orchard Supply OESCO**, Conway, MA

1-800-634-5557

www.oescointc.com**PBM Sprayers**, Chico, CA

1-800-688-1334

www.pbmsprayers.com**Rittenhouse**, St Catharines, Ont. CA

1-800-461-1041

www.rittenhouse.ca**Superb Horticulture**, Plymouth, IN

1-800 567 8264

<http://www.inberry.com/>**Major sprayers**, Slimline Mfg., Penticton,

1-800-495-6145

*Please note: Where trade names, manufacturers or distributors names appear, no discrimination is intended and no endorsement by the author or Cornell University is implied.

Give them a fighting chance – plant strawberries at correct depth!

Improper depth at planting is a constant problem for strawberry growers. Mechanical planters are difficult to calibrate and as soil type and moisture changes, and the quality of the strawberry transplant also changes it's monumental when they are planted correctly. But poor planting will cost the transplants days and sometimes weeks to actually catch up to properly planted crowns.

Some tips worth considering:

- If the dormant crowns have roots that are longer than your transplant slit – cut the roots rather than folding the root into the slit or hole.
- Make sure to check the crown level of the transplant – especially when planting in plastic. The crown should be covered halfway – don't cover the growing point, but you shouldn't see any exposed roots.
- If the transplant is "flopping" that means it's too high. Berries will gradually recover, especially if they are irrigated and covered with straw, but they really don't like it and overall progress of planting will be impacted.



Yellow arrow shows where the soil level should be on the crown.

Photo by J. O'Connell

Mummy Berry Management in Blueberries During Bloom

Written by Annemiek Schilder, MSU Extension Posted on May 26, 2015

Mummy berry is caused by the fungus *Monilinia vacinia-corymbosi*. Susceptible blueberry cultivars such as Blueray, Jersey, Rubel, Bluegold and Rancocas that are grown in wetter sites typically have the most disease pressure.

The first stage of the disease cycle – the infection of young shoots by ascospores produced in apothecia on mummified fruit – has occurred and shoot strikes have been reported from various locations. Shoot strikes are characterized by blighted leaves with gray sporulation on the petiole and upper part of the main vein, and a distinct grayish-brown pattern along the main vein. Spores (conidia) produced on these tissues are attractive to bees and flies, which inadvertently carry them to blueberry flower stigmas. These spores then germinate on the stigma, grow down the style and subsequently invade the fruit carpels where the fungus grows undetected until fruit ripening. Doing a good job in controlling shoot strikes is 90 percent of the effort in preventing fruit infection.

Blueberry flowers are most susceptible to conidial infection on the day they open and susceptibility declines over about four days. In addition, conidia are most infectious on newly formed shoot strikes, but can remain viable for at least a week. Under cool, cloudy

conditions the conidia don't desiccate as fast and may remain viable longer. A prolonged bloom period and good pollinating conditions can extend the infection window and increase fruit infection risk.

To decide whether mummy berry fungicide sprays are needed, growers should monitor their fields for the presence of shoot strikes. If no shoot strikes are seen during scouting at bloom period, no control measures may need to be taken, although there is a potential risk of infection if fields with mummy berry are located within 0.5 to 1 mile (you will need to assess the likelihood of bees traveling from the infected field to your field, they will probably only do so if there are limited food resources near their hives). If you have anywhere from one to five shoot strikes per bush, fruit infection levels will likely be low to moderate, whereas higher numbers of shoot strikes can result in moderate to high levels of fruit infection.

As an example, in our past fungicide efficacy trials we have found that an average of 16 shoot strikes per bush led to about 18 mummified berries per bush (Berkeley, 1999), 30 to 45 mummies per bush (Jersey, 2011, 2006) or 172 mummies per bush (Rancocas, 2011). Part of the difference lies in the inherent susceptibility to fruit infection of the cultivar (Rancocas being particularly susceptible) and part of it lies in the conditions for infection, with late shoot strikes with fresh conidia in the midst of bloom, an extended bloom period and good pollinating conditions increasing fruit infection risk.

Another important decision is what fungicides to use in your mummy berry control program. Assuming you have done a good job in controlling shoot strikes and have a careful and thorough scouting program, you may be able to reduce the need for fungicides for mummy berry control during bloom. **If you decide you have to spray during bloom, it is advisable to spray at night to avoid direct bee exposure to fungicide spray residues.** Also, since the stigma is a very small target to protect and also well protected by the corolla, we have to get the fungicides inside of the flower parts to achieve good control of infection. Systemic fungicides, therefore, tend to be more effective at preventing fruit infection. Sterol inhibitors such as Indar (fenbuconazole), Quash (metconazole) and Proline (prothioconazole) are effective as well as Pristine (pyraclostrobin + boscalid).



Sporulation on blueberry shoot strike. Photo credit: Annemiek Schilder, MSU

FYI

For Your Information:

Resources for identifying ticks:

TickReport (<https://www.tickreport.com/>) - Very responsive, but at \$50-200 a tick, it can be out of some folks reach.

- **Cornell College of Veterinary Medicine** (<https://ahdc.vet.cornell.edu/programs/tick/>) Charge to general public is \$100 (for up to six ticks) for tick identification and certified testing of black-legged ticks for Lyme and Anaplasmosis. They will also test for other diseases in black-leggeds and other tick species, but these tests are not yet certified.

- **New Bulletin Available - PROTECTED CULTURE FOR STRAWBERRIES USING LOW TUNNELS** written by Dr. Marvin Pritts can be found on the Cornell Berry website (just google it!). This guide helps summarize current research in low tunnel berry production for north-east growers.



- **The Cornell Berry Web site** is getting a new face! Gradually over the next several months you may start to notice that the already fabulous Cornell Berry website will have a new look. The first upgrade has been to the **Berry Nursery tool**: <https://blogs.cornell.edu/berrynurseries/>. The tool makes it easy to look for varieties and compare prices. Links are all updated. Check it out!
- Fruit Grower News recently posted an **excellent 3 minute video about Insect Exclusion Netting** featuring local grower and netting supplier, Dale Ila Riggs. View the video by clicking [here](#) or Google You Tube Exclusion netting.

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For organic management of mummy berry, the fungicide Regalia (giant knotweed extract) is recommended in a tank-mix with Double Nickel 55 (*Bacillus amyloliquefaciens*) or Serenade (*B. subtilis*). The active ingredient in Regalia stimulates natural plant defenses to infection, while the bacteria in Serenade and Double Nickel can stop spores of the mummy berry fungus from germinating.

Late mummy berry symptoms on blueberry shoot strike. Photo credit: P. Wharton



CALENDAR OF EVENTS

Bramble Pruning Workshops

The Focus will be on pruning to increase production and help control Spotted Wing Drosophila. General pest management and culture will also be discussed. There is no charge for these workshops, but we would like folks to register so that we know how to contact you.

Please go on-line and register at: <https://enych.cce.cornell.edu/>
or call Marcie at 518-272-4210.

May 11th

3:00 pm – 5:00 pm

Bowman's Orchard

141 Sugar Hill Rd., Rexford, New York 12148

May 16

3:00 pm – 5:00 pm

Story Farms

4640 NY-32, Catskill, NY 12414

Ag Business Tuesdays this Summer – free farm business technical assistance

The Cornell Cooperative Extension Eastern NY Commercial Hort Team, in collaboration with CCE County offices, is offering free farm business technical assistance appointments this summer on Tuesdays at various locations in our service region.

Topics for consultations can include: labor regulations and management, risk management (insurance and best practices), land use regulations and zoning, other food regulations (labels, processing), personal finance and farm transition planning, tax and other grant and incentive programs, bookkeeping and recordkeeping, pricing products and market channel assessment, contract terms and negotiation, and loan programs and financing decisions. At your appointment we can either help to answer your questions or help direct you to the right resources.

Planned locations: May, June, and July 2017

- May 16 CCE Dutchess County, Millbrook NY
- May 30 CCE Schoharie County, Cobleskill NY
- June 20 CCE Orange County, Middletown NY
- June 27 CCE Essex County, Westport NY
- July 11 CCE Clinton County, Plattsburg NY
- July 25 CCE Warren County, Warrensburg NY

Appointments are in 1.5-hour increments starting at 9:00 am. In some cases, early morning or early evening appointments may be available. Pre-registration in advance is required - we cannot accommodate walk-ins. If you can't physically come to the office, we can also schedule an appointment by phone or a video conference.

To register go to: <http://bit.ly/2oyaGpM> or call (518) 949-3722 and leave your name, preferred date and preferred time and the best way to reach you. Liz will also be doing farm visits in the counties on the following Wednesday. If you would like a farm visit, contact her directly at emh56@cornell.edu.

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