

Small Fruit News

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Clemson University • Louisiana State University • North Carolina State University
The University of Arkansas • The University of Georgia • The University of Tennessee
Virginia Polytechnic Institute and State University

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cleared for use in grape, strawberry and blueberry for several years.

The caneberry use is a supplemental label which can be viewed at www.cdms.net and the user must have a copy on hand to legally use the product in caneberries. One thing apparent when reading the label is the restrictive rate for caneberry relative to uses in other perennial crops. No more than 6 oz/A of Chateau can be applied in a single application or within a 12 month period in caneberry plantings. Chateau may be used on caneberries established one year or longer. The PHI for caneberries is a very favorable 7 days. Potential PRE herbicide tank mix partners may include Solida (rimsulfuron) or oryzalin.

A nice attribute of Chateau is the ability to provide broad spectrum residual weed control as well as postemergence activity on certain broadleaf weeds. Broadleaf and grass weeds susceptible to PRE control from Chateau include the following species:

Chateau Herbicide Cleared for Use in Caneberry

Wayne Mitchem, NCSU, Clemson Univ., UGA, Cooperatively

Katie Jennings, NCSU

Department of Horticultural Science

Caneberry growers have an additional weapon to combat weeds with the expansion of the Chateau label allowing its use in blackberry and raspberry plantings. Chateau contains the active ingredient flumioxazin and has been

Chickweeds	Eveningprimrose, Cutleaf	Florida Pusley	Henbit
Horseweed	Morningglory species	Nightshade species	Mustard species
Pigweed species	Purslane, Common	Ragweed, Common	Spotted Spurge
Tropic Croton	Waterhemp species		
Barnyardgrass	Bluegrass, Annual	Crabgrass, Large	Crabgrass, Smooth
Foxtail species	Goosegrass	Panicum species	Ryegrass, Annual
Signalgrass, Broadleaf			

Improved postemergence control of cutleaf eveningprimrose, henbit, purple deadnettle, prickly lettuce, and common mallow will be observed when Chateau is tank mixed with paraquat and a non-ionic surfactant.

As with many of the other recent herbicide registrations for caneberry, this label was achieved through the efforts of the IR-4 Project.

New Resource for Grape Growers in The Southeast: UGA Extension Viticulture Blog

The UGA Extension Viticulture Blog was created, and is administrated, by Dr. Cain Hickey, Viticulture Extension Specialist in the Horticulture Department.

Blog activity is maintained by **The UGA Extension Viticulture Team**, a team of individuals with extension appointments within the UGA College of Agricultural and Environmental Sciences. Names, titles, and blog roles of all team members can be found under the “Extension Personnel” tab. Specialists Mr. Wayne Mitchem, Dr. Phil Brannen, and Dr. Brett Blaauw are all active team members with blog roles.

The UGA Extension Viticulture Team’s mission: To educate, inform, and conduct applied research that will support and positively impact the fast-growing grape/wine industry in the state of Georgia, but also neighboring southeastern US regions. The UGA Extension Viticulture Team partially fulfills this mission through this blog, which will permit registrants to access timely viticultural and pest management information. Adoption of these management strategies will result in: (1) improved grape and wine quality (2) improved vineyard health and sustainability, and (3) success of both new and established vineyard and winery enterprises.

To sign up: visit the blog site (<http://blog.extension.uga.edu/viticulture/>) and fill in your name and email at the right sidebar. You will be sent a confirmation email which must be opened and clicked to confirm subscription and receive future blog posts. Please check all email folders for confirmation and update emails, as subscribers have found emails in “non-Inbox” folders.

Note: while called a “blog”, it is not a blog as commonly understood. It is simply a tool that permits timely posting and delivery of information to vineyard and wine industry stakeholders that subscribe. It is also a repository for this information.

Did You Know About Polyoxin D?

Madeline Dowling and Guido Schnabel
Clemson University

Ever heard of Tom Brady? Love him or hate him, he has more Super Bowl MVP awards than any other football player in history. However, you probably did not know about him in 2000 when he was drafted in the 6th round as a fourth-string quarterback. But it did not take him long to maximize his strengths, minimize his weaknesses, and successfully integrate into the team. By 2002, he led the Patriots to the first of 5 Super Bowl victories. Like a football team, fungicide players must be properly integrated into the team of products in a spray program for successful disease control to occur. Polyoxin D is a fairly new product with potential to contribute to effective resistance management, but understanding its strengths and weaknesses is important to effectively “draft” it into a spray program.



Photo by Keith Allison via Flickr

Polyoxin D is a fungicide made by the bacteria *Streptomyces cacaoi*. It was first registered in 2009 and is available as OSO 5%SC (formerly Tavano) and Ph-D WDG. Its low toxicity earned it an EPA exemption from tolerance, which means that the Environmental Protection Agency does not test for polyoxin D residue on produce because any amount is considered safe. Polyoxin D also has low pre-harvest (0 hours) and re-entry (4 hours) intervals. The fungicide is registered for controlling diseases, particularly powdery mildew and gray mold (*Botrytis*), on several crops, including strawberries, raspberries, almonds, and grapes. In South Carolina and California field trials, it was as effective as captan against *Botrytis* on strawberry, though field trials in Florida showed inconsistent results. In University of Kentucky field trials, polyoxin D showed good efficacy against grape powdery mildew and *Botrytis* as well. Although the labels list other diseases as well, for strawberries it should strictly be considered a 'Botryticide'.

Polyoxin D's most exciting feature is its unique mode of action. It is a chitin synthase inhibitor and thus placed into FRAC group 19. New modes of action are critical for effective resistance management and disease control, particularly for *Botrytis* which develops resistance quickly. To return to the football analogy, fungicide programs must adapt or they don't stand a chance against the rival fungus team. Restrictions on the number of applications, rotation of FRAC codes, mixtures, and introduction of new chemistries are all well-established tools to make fungicide programs sustainable and "competitive." Rotating in **polyoxin D allows the other chemistries to take a break** by reducing their use.

So, what is the best way to add polyoxin D into next season's spray program? First, be sure to use the right rate. Ph-D's rate is fixed at 6.2 fl oz, but use OSO at the highest label rate (13 fl oz) for equivalent control. Second, we recommend that you use polyoxin D only when disease pressure is low (dry weather). Lastly, avoid spraying this product multiple times in a

row or more than two to three times per season (although the label is a bit more generous), since our research shows that the fungus team can adapt quickly to polyoxin D. The populations we tested contained highly sensitive and reduced sensitive individuals (fungus isolates), which means the reduced sensitive ones can be selected for quickly. Now that you know its major strengths and weaknesses and how to integrate it into your team, consider "drafting" polyoxin D into your spray program for gray mold disease and resistance management. It might just be a champion like Tom Brady.

Dr. Jonathan Oliver joins UGA Plant Pathology as a new fruit pathologist in Tifton

Dr. Jonathan Oliver has joined the Department of Plant Pathology as a new fruit pathologist on the Tifton Campus, focusing his research (75%) and extension (25%) activities on pathogen biology and disease management in fruit crops grown primarily in the southern part of Georgia, including blueberries, blackberries, and other emerging fruit crops. Dr. Oliver obtained a BS degree in Plant Pathology and Microbiology & Cell Science with a minor in Chemistry and Plant Molecular & Cellular Biology from the University of Florida, and a PhD in Plant Microbe Biology and a minor specialization in Genomics and Plant Molecular Biology from Cornell University, New York State Agricultural Experiment Station in Geneva, NY. At Cornell, he conducted his doctoral work under the direction of Marc Fuchs, analyzing sequence variability within *Prunus* necrotic ringspot virus and Grapevine fanleaf virus isolates. He subsequently conducted postdoctoral research at Auburn University (working on *Xylella fastidiosa*) and at Kansas State University (working on Tomato spotted wilt virus and its thrips vectors). Dr. Oliver's office and lab will be located in the Natural Products Lab in Tifton, GA.

Basics of Blackberry Production Online County Extension Agent Training Coming this Fall

Online Webinar Series

Dates: October 26th, Nov 2nd, Nov 9th, and Nov 16th.

Time: 9am Central (10am EST) to 11am central (12 EST).

Pre-registration:

<https://survey.uaex.edu/registrations/hort/blackberry-online-classes.asp>

****County agents should register using their University Extension Email.**

County Extension Agents interested in learning or brushing up on their skills with regard to blackberry production are invited to attend a FREE online recorded webinar series to be hosted this fall by the University of Arkansas.

The series will be broadcast over four dates in late October and early November 2017 and is open to all county cooperative extension agents in the Southeastern United States. The webinar series will be split up into four classes each focusing on one of the seasons of the year and what is going on in the blackberry crop during that season. The basics of blackberry production and pest management will be covered through presentations, demonstration videos and live Q&A answer sessions with the speakers during the 2 hour long webinars. Participants who attend all four classes and complete all pre- and post- tests will be awarded a certificate.

The webinar series will be hosted by the University of Arkansas Cooperative Extension Horticulture Extension Specialists Drs. Jackie Lee and Amanda McWhirt. The series is sponsored by the Small Fruit Consortium. Invited speakers include: Dr. John Clark, Dr. Donn Johnson, Dr. Elena Garcia, and Dr. Renee Threlfall among others.

At the end of the series the webinar, videos and support materials will be posted on the Southern Region Small Fruit Consortium Website for future use by agents and the public. Pre-registration is open now through August 31st.

Summer Caneberry (Raspberry and Blackberry) Chores 2017

Summer 2016

Caneberry Chores

This list was developed by Dr. Gina Fernandez, Small Fruit Specialist at NC State University. Chores and timing may be somewhat different in your area or for your cropping system.

Plant growth and development

- Fruit development for floricanes fruiting types
- Rapid primocane growth
- Flower bud development for primocane fruiting types later in summer
- Floricanes senesce

Pruning and trellising

RASPBERRIES

Floricanes-fruiting raspberries:

- May need to adjust primocane numbers if canes are too thick (i.e. remove less vigorous primocanes at their base)
- Train primocanes to the trellis
- Pinch black raspberry primocanes at 2 to 3 ft. to promote lateral growth

Primocane-fruiting raspberries:

- Train primocanes within a trellis to hold canes erect

BLACKBERRIES

Erect floricanes -fruiting blackberries

- Tip the new primocanes when they are about 6" to 12" below the top wire of the trellis to encourage lateral branching
- Continue tipping at monthly intervals to maintain desired branching and height of canopy (laterals should reach top wire)
- Prune out spent floricanes after they have produced fruit, do not thin out primocanes until mid-to late winter
- Train primocanes to trellis to minimize interference with harvest. Shift trellises or V trellises make this relatively easy

Trailing floricanes-fruiting blackberries

- Train new primocanes to middle of trellis, on the ground in a weed-free area, or temporarily to trellis outside of fruiting area (depends on trellis type)
- Cut back side shoots to 18" (after dormancy in cold climates)
- Remove spent floricanes after harvest

Primocane-fruiting blackberries

- Tip canes twice, soft tip once when they reach 1.5 ft and then soft tip the laterals at 1.5 ft.

Weed management

- Mow along side of row to maintain the width of the bed to 3 to 4 ft.
- Weed growth can be very vigorous at the same time as the crop peaks.
- Chemical weed control is best done earlier in the season before harvest commences.
- Mow middles regularly to allow pickers to move through rows easily.

Insect and disease scouting

Scout and treat for these pests:

Insects

- Spotted winged drosophila
- Raspberry crown and cane borers (canes girdled and wilt)
- Psyllid

- Two-spotted spider mite
- June beetle
- Japanese beetles
- Stink bugs
- Fire ants

Diseases

- Botrytis
- Rusts
- Orange felt (orange cane blotch) (blackberry)
- Sooty blotch (blackberry)
- Orange rust
- Powdery mildew
- Double blossom (blackberry)
- Cane blight (blackberry)
- Powdery mildew

Water management

- Raspberry and blackberry plants need about 1-2 inches of water/week; this amount is especially critical during harvest.
- Give plants a deep irrigation after harvest.

Nutrient management

- Take leaf samples after harvest and send to a clinic for nutrient analysis
- Blackberry growers typically use drip irrigation through the spring and early summer to supply about 50 lb/N acre. Growers should ease off N during harvest, but give plants additional nitrogen (about 10-30 lbs/acre) after harvest. Amounts needed will vary with plant health, crop load and soil conditions. Check with your local Extension agent for recommendations.

Harvest and marketing

- The busiest time of the year for a blackberry or raspberry grower is the harvest season. Each plant needs to be harvested every 2-3 days. For larger plantings, that means fruit is picked from some part of the field every day of the week.

- Pick blackberries when shiny black for shipping. Those that are dull black are fully ripe and suitable for PYO only.
 - Pick directly into clamshells with absorbent pads, or for PYO use clean cardboard flats, take-home baskets, or sanitized re-usable containers.
 - Keep harvested fruit in shade and move into coolers as soon as possible to lengthen the shelf life of the fruit.
 - Use forced-air precoolers for best removal of field heat.
 - Store at 32 to 34°F and 95% relative humidity.
 - Freeze excess fruit for jam, juice, or wine.
 - Keep good records of what cultivars are picked, what fields are picked and when they are picked. Good record keeping will help you predict harvest potential in the future.
1. Keep your direct market customers informed with social media.

8. Apply lime, based on soil test recommendations.

August

1. Attend a Pre-Plant meeting in your area.
2. Begin soil preparation.
3. Apply fertilizer according to soil test recommendations.
4. Form beds, fumigate and lay plastic.
5. Seed annual ryegrass in the row middles.
6. Install drip irrigation system.
7. In colder climates, planting may begin around August 15th.

September

1. In warmer regions, if you haven't done so already, begin soil preparation.
2. In warmer regions, if you haven't done so already, apply fertilizer according to soil test recommendations.
3. In warmer regions, if you haven't done so already; form beds, fumigate and lay plastic.
4. Seed annual ryegrass in the row middles.
5. Install drip irrigation system.
6. Plant. Planting throughout most of the consortium region occurs throughout September and into early October, depending on the local climate.

Strawberry Chores: July, August and September

R. Allen Straw
Virginia Cooperative Extension

July

1. If you haven't done so already, take a good soil sample and send to a reputable lab.
2. Reflect on last year's crop and make appropriate changes. Increase acreage, decrease acreage, change varieties, change marketing strategies, etc.
3. Order tips or plants.
4. Remove or reuse old strawberry plastic.
5. Check availability of fumigant. Due to the shortage of Telone, you may have to use a different fumigant like PIC 80 this season.
6. Conduct maintenance on bedding and plastic laying equipment.
7. Attend a Pre-Plant meeting in your area.

Bunch Grape Chores

Cain Hickey
University of Georgia

Many are likely observing veraison (berry softening, sugar accumulation, color change) in bunch grapes throughout the southeastern US – especially in warmer / southerly states of Arkansas, Tennessee, and Georgia, but also in warmer regions in North Carolina and South Carolina; Virginia is likely a week or two out from veraison. Of course, veraison is highly dependent on the meso-climate of each vineyard site, as well as the variety being grown (i.e. veraison usually comes on earlier in Merlot than Cabernet franc). Regardless of when veraison is experienced in your vineyard, here are some things to think about from now through harvest in bunch grape vineyards.

1. **Canopy management** is mostly left to remedial fruit-zone leaf removal and hedging at this point. It is never too late to do some selective leaf removal around the clusters to aid in drying and improve pesticide coverage on the fruit. However, leaf removal does little if the canopy is shading out the canopy and fruit-zone. Thus, hedging should continue in the vineyard until strong vegetative growth and canopy self-shading subsides, which is often not until several weeks after ripening has started.
2. **Crop load management** is commonly practiced before veraison. If you are going to thin your crop, focus your efforts on regions of the fruit-zone that are densely packed with clusters; touching clusters will often develop bunch rots due to the lack of pesticide coverage as well as reduced air movement between them. A recent blog post on the UGA Extension Viticulture Blog went in to a bit more depth on when and why one might thin crop in their vineyard

(<http://blog.extension.uga.edu/viticulture/2017/07/considerations-for-crop-thinning/>).

3. Veraison is the transitional period of grape development when grapes begin to soften, and sugars and secondary flavor, color, and aroma compounds begin to accumulate. Grapes are said to be “ripening” starting at veraison. **Evaluate veraison** (see picture of Merlot cluster changing color, taken last week northern GA; photo credit: Annika Kohler) in each variety and compare this with when veraison occurred in previous years (if you don’t have previous records, this year is a good time to start!). Knowing veraison can help you predict harvest date – especially if you have records. This year has been “early” thus far due to the very mild winter temperatures coupled with relatively warm spring / early summer temperatures. However, since post-veraison weather patterns can drastically change ripening rate, we must monitor maturity and not strictly rely on records (next).



4. Petioles and leaves are often sampled at bloom, but **vine tissue sampling** is often conducted again at veraison. While petioles and leaf blades are sampled

from opposite the clusters at bloom, these tissues are sampled from the youngest fully expanded primary shoot leaves – often near the end of the now-hedged shoot. Please see a recent blog post by Dr. Jay Lessl, Program Coordinator at the University of Georgia Agricultural and Environmental Services Laboratory (<http://blog.extension.uga.edu/viticulture/2017/07/soil-and-plant-tissue-sampling-in-vineyards/>). Sampling tissues at veraison allows one to target “nutritional problem areas” of the vineyard that were otherwise not evident at bloom, when the soils were at field capacity and nutritional symptoms were not evident in unstressed vines.

5. **Monitoring grape maturity** is important to determine when to pick. I am not going to go into the subjective details of what defines maturity, but most industry practitioners use a combination of chemical and sensory evaluations to determine when to pick. *The chemical and sensory benchmarks that define maturity will vary based on variety and winemaking goals.* For example, if I wanted to make a sparkling rosé out of my Merlot, I would aim for lower sugars and higher acids; the opposite would be true if I wanted to make a full bodied red wine. Soluble solids (Brix) is perhaps the most widely used chemical maturity index; this is perhaps due to its historical value and the relative low cost/ease of measurement. Barring special winemaking goals of sparkling wines and rosés, most will look to harvest somewhere between 21-25 °Brix, and the accompanying acidity and pH will greatly vary by variety. Bear in mind that high pHs (i.e. > 3.8) often put the wine at higher microbial spoilage risk unless post-harvest amendments are made in

the winery. As far as sensory evaluation of maturity goes, many will use the color of the seed, the flavor/aroma of white grapes, or the taste and “mouthfeel” of red grapes to aid in maturity evaluation. It is important to monitor maturity separately for each variety. It is also important to sample grapes in an unbiased fashion by sampling from all parts of the cluster, and across a section of vineyard that represents a separate vinification. For example, samples from blocks A and B should be kept separate if they will be harvested and vinified separately – even if they are the same variety. However, care should be taken to sample across each block to best characterize the average maturity. This may best be done by creating a randomized sampling scheme for each block.

6. **Scouting for fungal diseases and insects.** Downy mildew (left; photo credit: Phil Brannen) and botrytis (right) are two common fungal diseases that make an often and unwelcomed appearance from now until harvest. However, it is important to protect your vines from downy mildew, powdery mildew, botrytis, and ripe and bitter rot by using appropriate pesticides – especially when weather patterns are conducive to disease development. Japanese beetles and spotted wing drosophila are two insects that are of primary management concern in the vineyard, and I would encourage everyone to scout for and manage these insects accordingly throughout the post-veraison period. The photo, below, shows a canopy that may have compromised fruit ripening potential as a function of reduced leaf area due to the interveinal feeding of Japanese beetles. Please see the most current version of the bunch grape integrated pest management guide.

(<http://www.smallfruits.org/SmallFruitsRegGuide/Guides/2016/BunchGrapeSprayGuide2016.pdf>) for appropriate pesticide sprays to control fungal disease and insect pests. Also - see the several recent posts by UGA's resident Fruit Pathology and Entomology Specialists, Drs. Phil Brannen and Brett Blauw, respectively (<http://blog.extension.uga.edu/viticulture/>).



7. **Take inventory of, and deploy, wildlife deterrence equipment.** You know your vineyard best and are the best judge of historical wildlife pressures. I have personally seen both birds and raccoons take more than their share of crop from vineyards – please do not underestimate the amount of crop yield that be lost to wildlife. Bird netting and other scare devices should be going up in vineyards all over the southeastern US over the next month or so. Further, traps and other vertebrate control measures should be deployed.

8. **Take inventory of harvest shears, lugs / bins, and other harvest supplies.** Harvest will be here before we know it and you must be prepared to pick your *entire* crop when you or your customer wants. Don't be caught short handed with supplies when you need them most.
9. For updated and timely information about vineyard management, and information on workshops and conferences, please subscribe to the UGA Extension Viticulture Blog (<http://blog.extension.uga.edu/viticulture/>).

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