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

In This Issue

Photo: *Dr. John R. Clark, recipient of the 2017 NAPB Impact Award, inspecting blackberry breeding plots in Arkansas.*

Clark Recognized by National Association of Plant Breeders

At its 2017 annual meeting, the National Association of Plant Breeders presented the Plant Breeding Impact award to Dr. John R. Clark, Distinguished Professor of Horticulture at the University of Arkansas, at its annual meeting hosted by the University of California in Davis CA from 7-10 Aug.

This award recognizes an individual in the public or private sector who has made significant advancements in the field of plant breeding, specifically in the area of applied variety and/or technology development. As pointed out in his nomination package, Clark "projects the best of plant breeding through not only his outstanding new fruit cultivars but also leadership as a breeder who is a renowned horticulturist, plant biologist and academic."

Working since 1980 at the University of Arkansas, Clark has led research on blackberries, table grapes, wine/muscadine grapes, blueberries, and peaches/nectarines. He has also taught in the areas of plant breeding and fruit production and advises graduate and undergraduate students.

Clark has developed more than 50 cultivars of various fruits and has engaged colleagues in cooperative breeding activities throughout the United States and internationally as well. Along the way, as a colleague commented: “He has greatly internationalized the reach of the University of Arkansas fruit breeding program by establishing relationships with other public and private sector
entities in Europe, North America, South America and Australia.”

Clark’s innovative program in blackberry has led to cultivars with enhanced postharvest storage potential, primocane (fall) fruiting, and dwarf architecture. Similarly impactful on the global scale is the introduction unique flavor profiles in table grape, exemplified in the recent release, ‘Cotton Candy’, based on his work in the Arkansas program and cooperative breeding in California.

Intellectual property (IP) rights has been a major emphasis in his career. His releases have played a key role in program funding through royalties and agreements in testing and breeding with various entities. In fact, as indicated in his package, “Clark is recognized as a pioneer and innovator in this area of intellectual property management ipublic sector breeding programs. In addition to developing and implementing novel IP management practices in his program, he developed this as a personal transdisciplinary area of scholarly pursuit with collaborators in the fields of law and business, and led an active IP working group in the American Society for Horticultural Science (ASHS).

In addition to such academic achievements, Clark has an outstanding service record, actively serving on committees in the department, college, university, and professional societies. He served as President of the ASHS and President of the Southern Region of the Society for Horticultural Science. As a colleague remarked: “In both of these societies, he has been a change agent, improving both with his service.”

Clark has received a range of awards, including Fellow of the ASHS, Wilder Medal of the American Pomological Society, distinguished alumnus of Mississippi State University, Spitze Land Grant University Faculty Award for Excellence (University of Arkansas), and Distinguished Service Award, North American Raspberry and Blackberry Association.

Summarizing Clark’s qualifications for the Plant Breeding Impact Award, a colleague declared, “He has earned respect throughout his career for his cultivar releases, willingness to serve, intelligence and personality that allows him to work with anyone anywhere. His charisma, extreme dedication and incredible success as a plant breeder are unmatched.

Did you know that gray mold is caused by several different species of Botrytis?

Guido Schnabel and Madeline Dowling
Clemson University

Relationships can be… complicated. Isn’t that the theme of nearly every movie, TV show, song, and novel? But the key to every good relationship is understanding. On a business level, a manager should understand his employees to manage them appropriately and maintain good relationships with them. Each person must be handled differently since, like we learned in elementary school, we are all special snowflakes. In the same way, it is important for growers to understand the fungus they are confronted with so they can effectively manage resulting diseases.

Nearly every small fruit grower knows that gray mold is caused by ‘*Botrytis’* but few know that there are different versions of *Botrytis*

(species). Several species may cause gray mold on strawberries, grapes, blueberries, and other small fruits. On blueberries and grapes, the species *Botrytis pseudocinerea* is often found in Germany, though it has only been detected in California so far in the United States. Fortunately, understanding this species is easy. It is sensitive to nearly every fungicide except for fenhexamid (Elevate). Apply other fungicides and it is easily managed in the field. Since most growers already do that, this species is not of general concern.

On strawberries, another major species besides *Botrytis cinerea* was found only very recently. It makes up a whopping 30% of the population of *Botrytis* isolates on strawberry blossoms based on our research that included approximately two hundred fungal isolates from Georgia, South Carolina, North Carolina, Virginia, and Maryland. This species, called *Botrytis fragariae*, is also found in Europe, and has different fungicide resistance tendencies than *B. cinerea*. In fact, *B. fragariae* tends to be more tolerant to fludioxonil (Switch). Fortunately, management of this species may not be very difficult. All *B. fragariae* isolates screened so far are sensitive to FRAC 7 fungicides, including boscalid (Pristine, Endura, Emerald) and the pre-mixtures Luna Sensation, Pristine and Merivon. This means that if resistance to Switch becomes a problem due to the presence of *B. fragariae*, application of any FRAC 7 fungicide will help to remove these isolates from the field.

Now you have the inside scoop on gray mold of strawberries. Dr. Guido Schnabel and the team at Clemson University are working to better understand these species causing gray mold so that we can continually improve management recommendations. And hopefully now that you are armed with understanding of the species causing gray mold, you will be able to make even better management decisions for the next growing season.

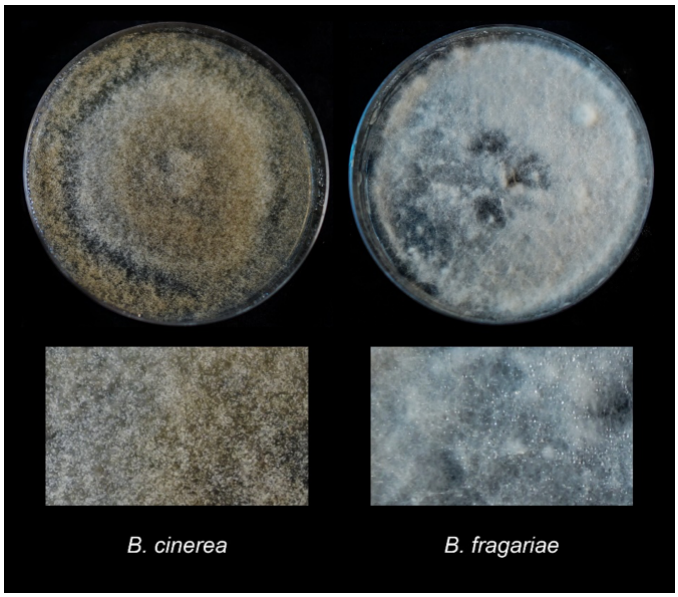

Figure 1: *Shows both species side by side. The white colony on the right indicates a lack of spores on the artificial medium.*

Grape Chores

Cain Hickey
University of Georgia

While the mid- and late-season was often challenging due to frequent bouts of rainfall throughout the region, the post-Hurricane Irma period has been warm and dry. Thus, if grapes were of high integrity before Irma, many experienced, and are currently experiencing, nice ripening weather. Many in the southern region are long-finished, recently-finished, or close-to-finishing harvest of bunch grapes. There are likely still some spots in North Carolina and Virginia that have yet to harvest a couple of late-ripening red varieties (i.e. Cabernet Sauvignon and Petit Verdot), but also varieties commonly used for dessert-style wines (i.e. Petit manseng). Most are finished with the harvest of processing muscadines (Carlos and Noble). While the fresh market muscadine season is basically at its end here in Georgia, North Carolina still has fresh market muscadines hanging. Leaf fall will likely start at the end of the month in northern Georgia, and continue thereafter through the northern states encompassed by the small fruits consortium. These grape chores will last through January/February, when the next

installment will be released through the Southern Region Small Fruit Consortium website (www.smallfruits.org).

1. **Update and double check that you have recorded the crop yield and chemistry from all blocks and varieties.**

2. **Ordering vines for a large (i.e. ≥ 0.5-1.0 acre) 2018 planting.** It actually may be a bit too late to guarantee that a certain variety will be available for spring 2018 planting. Nursery orders are usually best-placed about 18 months before planting date to increase the chances of getting the desired varieties/quantities. Especially niche varieties like Petit Manseng or maybe even Albariño. However, it is better to try now than when the turkey is being carved.

3. **Identify systemically-infected vines and flag / rogue out *before* leaf fall**. Foliar symptoms of vines infected by bacteria, viruses, and phytoplasmas can only be visualized before leaf fall. Thus, if it hasn't been done already, walk your vineyard and identify and flag symptomatic vines. Vines can be tested, but testing can be expensive. There are currently limited remedial treatment options for vines infected by bacteria, viruses, and phytoplasmas except to monitor and control potential vectors, and to rogue out infected vines to limit local inoculum source. We have seen many cases of Pierce's Disease (PD) here in Georgia this year, and this is likely due in no small part to the mild "winters" we have recently experienced. Our current recommendations for Pierce's Disease is to immediately rogue out the symptomatic (see picture, below, displaying classic sings of PD - "islanding" symptom on the cane and "matchstick" symptom of leaf blade, but not petiole, abscission) vines. See a recent blog post by UGA Fruit Pathologist, Dr. Phil Brannen, regarding PD vineyard management: http://blog.extension.uga.edu/viticulture/2017/09/pierces-disease-action-items/

4. **Post-harvest disease management.** Post-harvest disease management aims to maintain carbon assimilation before the pre-leaf fall period, when the canopy begins transporting mineral nutrients and carbon to the permanent vine structures. The primary culprits of diseased canopies are downy and powdery mildew. How do you know if you need to spray post-harvest fungicides? My two cents are that if you are clean going to into harvest, then it may not be necessary to spray fungicides after harvest. However, if your disease pressure is high, then spraying appropriate fungicides (i.e. sulfur, stylet oil, phosphorous acid products) may help maintain foliar health to maintain photosynthesis.

5. **Post-harvest nutrient management.** Potassium and nitrogen are taken out of the vineyard in the harvested crop. Those who harvested high-tonnage crops and/or experience perennial mineral nutrient deficiency problems may wish to fertilize immediately after harvest. Root mass has been shown to

greatly increase during the five-to-six weeks following harvest. Consequently, nitrogen and phosphorous and, to lesser extents, potassium, magnesium, and calcium are taken up by the vine during this period. If the soil is dry, watering the fertilizer in will aid in nutrient uptake. To this end, maintaining a healthy canopy indirectly aids in nutrient uptake. Stomatal (small pores on leaves) conductance is necessary for the exchange of carbon dioxide (from the air, to the plant) and water (from the plant, to the air) - a process called photosynthesis. The transpirational flow of water from the roots through the stomata results in the uptake of dissolved mineral nutrients from the soil into the vine.

6. **"Winterize" equipment.** Take down bird netting and store so that it can be easily deployed next season when the bird pressure is on. "Winterize" (clean, grease, etc.) tractors and other mechanical and manual vineyard and winery equipment (picking bins, hedgers, mulchers, mowers, sprayers, picking shears, appropriate winery equipment).

7. **Evaluate trellis integrity and repair.** The trellis has taken a beating and has supported a lot of weight throughout the season. Check for broken posts and trellis wires and repair or replace them before next spring.

8. **Evaluate missing vine number and order replants.** You may have already pulled vines out due to infection or physical damage, or general undiagnosed poor/weak growth. Walk the vineyard and count missing vines and order replants where necessary.

9. **Reflect on the season and talk to your regional colleagues – both industry members and extension personnel.** What went right? What went wrong? Be prepared for next season by developing a plan to fix the "wrongs" and re-implementing the management strategies that worked well. It helps to talk to neighbors and ask them their take on their season – they may offer advice and answer questions that will put you in a better position for success next year, and vice-versa.

10. **Dormant cane pruning.** Vines become dormant after the end of leaf fall. However, many may not start pruning until after Thanksgiving. For those who practice spur pruning, "rough pruning" is a way to get a head start on final pruning. If rough pruning is practiced and brush is pulled from the trellis wires, the final prune will be a breeze as the short spurs will simply fall out of the trellis onto the vineyard floor. Rough pruning to 4-5 node-spurs allows the grower to delay the final prune to late winter / early spring to assess bud damage and the risk of spring frost. Some "delay prune" by waiting until late winter / early spring before even starting to prune. This is an attempt to force bud break on the apical bud positions of the dormant cane before those on the basal positions, hence potentially reducing the risk of spring frost damage to the basal buds (i.e. those that will be retained. We have seen mixed reviews with delayed pruning as it puts growers "behind the eight ball" to finish pruning while several other seasonal tasks are getting underway – it always comes on too fast! If cane pruning, there is not much logic in delayed pruning, and *certainly* not much logic in "rough pruning" (i.e. don't prune the canes you intend to lay out!).

That's about it. By the next "grape chores" list in January/February, many will have made it through number 9., but only thought about 10. So, we'll likely pick up with pruning next time. If you have not already done so, please subscribe to our extension viticulture blog for updates on management, events, regional weather, etc.
http://blog.extension.uga.edu/viticulture/
While the blog will continue to post some management considerations and preliminary research trial findings from 2017, it will mostly consist of event updates about regional workshops and conferences from now until late winter. Go out and attend these to network and learn!

Blackberry and Raspberry Seasonal Checklist Fall 2017

Gina Fernandez, Small Fruit Specialist, North Carolina State University

Check out the new look to the Southern Region Small Fruit Consortium website at:
http://www.smallfruits.org/

FALL

Plant growth and development

- ✓ Primocanes continue to grow but growth rate is slower
- ✓ Flower buds start to form in leaf axils on summer-fruiting types
- ✓ Carbohydrates and nutrients in canes begin to move into the roots
- ✓ Primocane fruiting types begin to flower in late summer/early fall and fruit matures until frost in fall
- ✓ Primocane leaves senesce late fall

Harvest

- ✓ Primocane-fruiting raspberry harvest continues
- ✓ Primocane-fruiting blackberry harvest continues

Pruning, trellising and tunnels

- ✓ Spent floricanes should be removed as soon as possible
- ✓ Optimal time to prune is after the coldest part of the season is over. However pruning can start in late fall if plantings are large (late winter for smaller plantings).
- ✓ Start trellis repairs after plants have defoliated
- ✓ Remove covers on three-season tunnels

Weed management

- ✓ Many summer weed problems can be best managed in the fall and winter using preemergent herbicides. Determine what weeds have been or could be a problem in your area. Check with your states agricultural chemical manual and local extension agent for the best-labeled chemicals to control these weeds

Insect and disease scouting

- ✓ Continue scouting for insects and diseases
- ✓ Remove damaged canes as soon as possible to lessen the impact of the pest
- ✓ Check the Southern Regional Bramble integrated Management Guide for recommendations http://www.smallfruits.org

Planting

- ✓ Growers in warmer areas (e.g. extreme southeastern NC) can plant into early December. Preparations for winter planting should have already been made. If you have questions about winter planting please contact your local county extension agent
- ✓ Prepare a list of cultivars for next spring's new plantings. Find commercial caneberry nursery lists at
  - https://www.uaex.edu/farm-ranch/crops-commercial-horticulture/horticulture/docs/UofA-Fruit-Patent-Licensed-Propagators.pdf
  - http://www.fruit.cornell.edu/berry/nurseries/

Fertilizer

- ✓ Take soil tests to determine fertility needs for spring plantings.
- ✓ Non-nitrogenous fertilizers are best applied in the fall to established plantings.

- ✓ If soil is bare, plant an overwintering cover crop (e.g. rye) to build organic matter and slow soil erosion.

Marketing and miscellaneous

- ✓ Order containers for next season
- ✓ Make contacts for selling fruit next season

Make plans to attend Grower meetings! Blackberries and raspberries are part or all of these programs.

- **North American Raspberry and Blackberry Association**
  - **February 21-24, 2018: North American Raspberry & Blackberry Conference,** Ventura, California. A not-to-be-missed meeting, in a great location! Mark your calendar, and watch for more information. Opening reception Feb. 21, tour on Feb. 22, and educational sessions and tradeshow on Feb 23-24. The conference will be at the Ventura Beach Marriott. You can already make online hotel reservations under our group rate.

- **Southeast Regional Conference and Tradeshow, Savannah, GA January 11-12, 2018**
  - Sessions on blackberry and strawberry, blueberry, muscadines and more!
  - **Caneberry Sessions** Organized by NARBA. Program coming soon; contact NARBA for details. The conference includes tracks for peaches, blueberries, strawberries, organics, vegetables, and more. For more conference info, registration, and hotel reservations, visit www.seregionalconference.com

Key Resources:

Southern Region Integrated Bramble Management Guide:
http://www.smallfruits.org/assets/documents/ipm-guides/2017/2017BrambleSprayGuide-50717.pdf

Southeast Regional Bramble (Caneberry) Production Guide:
http://www.smallfruits.org/ipm-guides.html

Blackberry and Raspberry Grower Information

- Portal at NCSU: http://rubus.ces.ncsu.edu
- University of Arkansas https://www.uaex.edu/farm-ranch/crops-commercial-horticulture/horticulture/commercial-fruit-production/blackberries-production.aspx

Social Media links:
Twitter: @NCTeamRubus
Facebook : Team Rubus
Blogs: http://teamrubus.blogspot.com/

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