

Small Fruit News

Volume 13, No. 4 October 2013



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

SPECIAL REPORTS:

County Extension Agent Training on Management of Viruses in Caneberries July 29-30, 2013

Co-Sponsored by SRSFC and SCRI Grant
“Management of Viruses in Rubus”
Asheville, NC

Christine Bradish, PhD Student,
Horticultural Department, NC State University

A training event updating agents within the SRSFC on viruses in caneberries was held in western North Carolina from July 29-30, 2013. The event was graciously organized by Elena Garcia and Ioannis Tzanetakis of the University of Arkansas and Tom Monaco, SRSFC coordinator. A total of 23 agents from the six member states along with a number of industry representatives, growers, and researchers attended the 2 day event. The training consisted of several units of classroom instruction, farm tours, and hands-on instruction, providing participants with the most up-to-date information about how to prevent, diagnose and manage virus issues in blackberries and raspberries.

Day one of the training was held at the Mountain Horticultural Crops Research Station

in Mills River, where participants were welcomed by center director Jeff Chandler and SRSFC coordinator Tom Monaco. The program began with a general overview of virus vectors and symptoms by virologist Ioannis Tzanetakis, followed by details on insect vectors discussed by entomologists Hannah Burrack, NC State University and Donn Johnson, University of Arkansas. Terry Kirkpatrick, nematologist from University of Arkansas, described nematode vectors for caneberry viruses, and then agents were brought out to Gina Fernandez’s blackberry research plots to learn proper nematode soil sampling techniques through a hands-on team activity.

In This Issue

Special Reports: ***County Extension Agent
Training on Management of
Viruses in Caneberries
July 29-30, 2013***

Blackberry and Raspberry Seasonal
Checklist Fall 2013

Strawberry Seasonal Checklist Fall 2013

The second day of training commenced with a blackberry farm tour hosted by Marvin Owings of Henderson County Extension Office and Gina Fernandez, NC State University. The first stop was the family-run operation of Steve Dalton on Sugar Loaf Mountain. Mr. Dalton and his family grow 11 acres of ‘Ouachita’, ‘Natchez’, ‘Prime-

Ark 45' and 'Navaho' for U-pick and Driscoll's. Mr. Dalton recently received a grant that allowed them to plant raspberries on a trial basis and install a juicing operation. Dalton stressed the importance of buying plants from a reputable source as his main way of keeping his plantings virus-free and healthy over many growing seasons. The second farm site was Justus Farm in Edneyville, owned by Don Justus, a fourth generation apple farmer. Mr. Justus has five acres of blackberries for U-pick and markets to Driscoll's, and has first-hand experience with virus issues. He spoke of his experience in prior years with buying infected nursery stock, and the losses he incurred with having to replant his fields. The final stop on the farm tour was at a Driscoll's commercial farm in Edneyville. Farm manager Andy Brownlee explained that at that particular location, approximately 30 acres of raspberries and blackberries were being grown under high tunnels with additional acreage at other sites. All of the growers spoke of labor being an issue, but Brownlee especially stressed the importance of maintaining employee efficiency and accountability. It was evident from speaking with all the growers that viruses are an issue that they consider very important in their caneberries, and want to be the best informed that they can be to prevent and avoid them in their fields for as long as possible.

After being treated to a genuine North Carolina barbeque lunch, the training wrapped up with a final classroom session held at the Henderson County Cooperative Extension Office. Ioannis Tzanetakis informed participants about how to recognize viral symptoms, and updated them on the latest assays and resources available for testing viruses in caneberries. Erich Rudyj from USDA-APHIS, and coordinator of the National Clean Plant Program, discussed how federal policies and monies work to ensure that virus-free plant stock is being propagated and readily available for growers. Elena Garcia talked about virus-host interactions, and how the plant responds, symptomatically or otherwise, to an attack by a virus. The afternoon ended with

another team talk by Hannah Burrack and Donn Johnson focusing on integrated pest management practices that can be taken to prevent the spread of viruses through insect vectors.

A PowerPoint presentations from the training will be posted on the SRSFC website at <http://www.smallfruits.org/CoAgentTraining/>.



Virus symptoms on blackberry (Rubus spp.)



Agents bag soil samples for nematode testing during a hands-on activity at the Mountain Horticultural Crops Research Station lead by Terry Kirkpatrick of University of Arkansas.



Dr. Elena Garcia, Extension Fruit and Nut Specialist from the University of Arkansas, discusses Virus-Host Interactions on the afternoon of July 30.



Andy Brownlee, farm manager of Driscoll's Edneyville, discusses his production practices for blackberries and raspberries with training participants.



Agents tour the forced-air cooling facility at Sugar Loaf Mountain farm on July 30.



Ioannis Tzanetakis, virologist from the University of Arkansas, and Gina Fernandez, small fruit extension specialist from NC State University, describe virus symptoms on blackberry leaves.



Andy Brownlee describes the advantages of his electrostatic sprayer for pesticide application at Driscoll's Edneyville.



Steve Dalton describes his tipping technique to participants as an important part of blackberry management.

Nematode Sampling Exercise Caneberry Workshop, Ashville, NC, July 29-30, 2013

Terry Kirkpatrick
University of Arkansas
Southwest Research & Extension Center,
Hope, Arkansas

Participants in the "Update on Viruses in Caneberries Workshop" held at the North Carolina State University Mountain Horticultural Crops Research & Extension Center near Ashville joined forces for a "hands-on" demonstration of proper sampling technique for nematodes on the afternoon of July 29. County agents and other professionals from several states divided into five teams and each team sampled a two-year-old planting of Ouachita blackberries located on the Research & Extension Center. Relying on information provided earlier in the day and their own experience, each team developed a sampling

plan and then collected soil samples to determine the numbers and kinds of nematodes that were present in the site. Once soil had been collected, each team placed half of their soil into each of two non-vented plastic bags supplied by the North Carolina Department of Agriculture (NCDA) Nematode Assay Laboratory in Raleigh, NC. One bag of soil for each team was immediately placed into an insulated cooler and held overnight at cool (air conditioned) room temperature – the appropriate method for handling nematode samples. These samples were shipped via overnight courier to the NCDA laboratory the following day. Each team's other sample was placed into the trunk of a car for two days, then these samples were mailed by parcel post to the NCDA laboratory.

Although potential virus vectors (dagger nematodes) were detected by some teams in this site, nematode numbers were low in the site in general (Table 1). There tended to be a higher number of nematodes reported where samples were held in an insulated cooler and sent by overnight express to the nematology laboratory, although the low numbers preclude any clear differences. These results illustrate the variability that is innate to soil sampling for nematode detection. Note that even with a small site such as this where only two rows were sampled, two of the teams failed to capture any dagger nematodes at all. Possible reasons might include: 1) More individual cores should have been taken; 2) Samples were collected where roots were less common i.e. samples were not deep enough, too deep, too far away from the plant, etc. 3) The low population density of the nematode in the site and non-uniform distribution of the individuals. Conversely, note that the Dingle team found 10 dagger nematodes in the "Delayed Surface Mail" samples but not in the sample that was handled properly - which is also likely coincidental given the low nematode population densities in the site in general.

This exercise illustrates the importance of thorough and careful sampling technique particularly where nematode population densities are low – remember, the threshold is 1 (the detectable presence of dagger at any level in a site) where virus vectors are concerned. The following is a brief reminder of the best procedure for collecting and handling nematode samples:

Table 1: Dagger (*Xiphinema* spp.) nematodes recovered from blackberries, Fletcher NC

Team	Dagger Nematodes/500 cm ³ Soil	
	Overnight Express	Delayed Surface Mail
Razorback	0	0
Dingle	0	10
Virginia	50	10
Bulldog	90	0
Tennessee	0	0

Collecting a Good Nematode Sample.



Figure 1: Collecting soil samples from blackberries for nematode assay.

1. Late summer and fall are the best times for sampling for nematodes, when nematode populations are at their highest level of the season.
2. A single sample should not represent more than 2 acres.
3. Samples should be collected from the root zone of the crop to a depth of 8 to 12 inches. Nematodes will be most abundant where the most active feeder roots are located, which may be several inches away from the main plant stems in the row.

4. A minimum of 20 cores, collected with a sampling tube or other sampling device, should be collected randomly from the area to be tested.
5. Remember: nematodes are NOT uniformly distributed. Be sure your sample is representative – collect cores from all over the area. Do not confine your individual cores to only one or a few regions within the site.
6. All of the soil cores that are collected from a site should be combined in a bucket or other container as they are collected. When all the cores have been collected, mix the soil thoroughly in the bucket.
7. Remove an appropriate volume of the mixed soil. Most nematology laboratories request that only about 500 cm³ (1 pint) of soil be sent in for assay.
8. Place this soil immediately into a plastic bag and seal it to prevent the soil from drying out. Regular unvented freezer bags are the best type to use for nematode soil samples. Bags with a zip system are satisfactory, but may pop open during shipping and handling. Bags with a "zipper type" closure tend to stay closed the best.

Handling Samples Correctly.



Figure 2: Proper handling of soil samples for nematode assay.

1. The soil **MUST** remain out of the sun, cool (but not frozen) and sealed to prevent excessive drying out until it can be delivered to the laboratory. An insulated cooler provides the best protection for the sample from sunlight and rapid changes in temperature.
2. Unless the cooler will remain in the field for an extended period of time (several hours) ice is not necessary. If ice must be added to the cooler to lower the temperature, place ice or ice packs in the bottom of the cooler and separate them from the soil samples using cardboard or other packing material. **DO NOT ALLOW SAMPLES TO COME INTO DIRECT CONTACT WITH THE ICE.**
3. Label each sample clearly and permanently. A good rule of thumb is to write identification information on an external tag attached to the plastic bag containing the sample, and also write the information on the bag itself with a permanent marker. **DO NOT WRITE THE INFORMATION ON PAPER AND PLACE IT INSIDE THE BAG.** Paper will deteriorate rapidly inside a plastic bag containing soil.
4. Overnight or 2-day courier or mail delivery is best for shipping nematode samples to the laboratory, and this method is recommended for one or a few samples. However, with multiple samples, these services may be somewhat expensive. Where multiple samples are accumulated and then shipped to the lab, first class U.S. mail can be used but the following precautions should be considered:
 - a) Do not mail samples late in the week. Samples should be mailed on Monday or Tuesday so they have time to be delivered to the laboratory without an extended stay in transit.
 - b) Use an insulated container for the samples. Place a few frozen gel packs in the bottom of the container and separate these from the samples with cardboard or other packing material. **DO NOT PUT ICE** into the shipping container.
 - c) Use common sense in packing – soil is heavy! Placing too many samples into one container will likely result in the container rupturing in transit. Ship

several small containers with a few samples each rather than one large container filled with samples.

5. Fill out submission forms and other identifying information required by the laboratory that will receive the sample. Doing everything else correctly will be of no value whatsoever if the laboratory can't return the results to the proper individual.

A Strong Defense is Your Best Offense

Michael White
Iowa State University Extension and Outreach
Viticulture Specialist

A discussion of herbicide drift into vineyards comes up often when “viners” and/or “winers” get together. These conversations can become very emotional. An underlying theme of these conversations often centers upon the conventional farmer or commercial applicator who really does not care about herbicide drift. My past experience as a sales manager of a large ag dealer working with aerial, farm field and turf application services in Iowa instilled in me a completely different real-world mindset. Following up on herbicide drift calls during my 13-year stint as a regional ISU Extension Agronomist provided even more insight into herbicide drift and showed me that:

1. Commercial applicators *do not* want to deal with herbicide drift complaints. Settling a herbicide drift complaint can be very time consuming and very costly.
2. Out-of-court and in-court settlements typically compensate those drifted upon in excess of the herbicide damage incurred.
3. More *awareness* and *common sense* by the pesticide applicator would probably have eliminated 80% of the herbicide drift cases on which I have consulted.

Which herbicides are problematic? There are many herbicides and/or herbicide combinations that can potentially harm a vineyard. The *big*

three that are most commonly found drifting into vineyards seem to be 2,4-D, dicamba (e.g. [Banvel](#)), or glyphosate (e.g. [Roundup](#)). Brush killers, which are typically composed of one to three phenoxy-type herbicides in combination, would probably come in a strong number *four*.

The typical phenoxy-type herbicide(s) found in these brush killers could include 2,4-D, dicamba, [MCPA](#), clopyralid (e.g. [Stinger](#) or [Transline](#)), triclopyr ([Crossbow](#) or [Garlon](#)) or picloram ([Tordon](#), [Transline](#), [Grazon](#)). These are increasingly becoming more of a problem with vineyards as people spray road ditches, fence lines, rights-of-way and pastures during the heat of the growing season. These phenoxy herbicides all have the potential to volatilize into the air after an application.

New herbicide technology. Attention is now being focused on 2,4-D- and dicamba-tolerant soybeans and the potential for off-site herbicide damage. [Dow AgroSciences](#) plans to debut their [Enlist](#) program for corn in 2013 and for soybeans in 2015. The Enlist program consists of a new 2,4-D choline chemistry which is pre-mixed with glyphosate for genetically-modified, herbicide tolerant corn, soybeans and cotton. The 2,4-D choline chemistry is shown to have 90% less volatility than the conventional 2,4-D low-volatile esters that are commonly used today.

In 2005, [Monsanto](#) signed a [licensing agreement with the University of Nebraska](#) to produce and market dicamba-tolerant soybeans. [BASF Crop Protection](#) is the manufacturer of dicamba. Working together, both BASF and Monsanto plan to introduce separate herbicide programs to be used on dicamba-tolerant soybeans in 2014. BASF will introduce “[Engenia](#),” a new low volatile dicamba. Engenia will use BAPMA, N, N-Bis-(aminopropyl) methylamine. BAPMA “is a tridentate amine that provides strong and effective binding of dicamba spray residues.” BASF says that it is 40% less volatile than current dicamba formulations. Monsanto plans

to offer a [Roundup Ready Xtend herbicide program](#) for their Roundup- and dicamba-tolerant soybeans. Monsanto says that the low volatile dicamba & Roundup with a polyplastic polymer in a mix will reduce volatility of the new dicamba by over 90%.

Some have concerns that the debut of 2,4-D- and dicamba -tolerant soybeans will create a tidal wave of herbicide drift issues with nearby sensitive plants. I do not believe that the use of 2,4-D- and dicamba-tolerant soybeans will create this problem. I think it may well reduce the potential of 2,4-D and/or dicamba drift cases as these new low volatile herbicides are licensed and labeled to replace the more volatile 2,4-D and dicamba formulations currently on the market. I find it difficult to believe that either Dow AgroSciences, BASF Crop Protection, Monsanto, the commercial applicators or the farmer applicators will be interested in using a spray program that increases their liability to herbicide drift lawsuits and settlements.

Protect yourself. Vineyard owners may be best served by being proactive in their defense against herbicide drift. Here are some common sense steps you can use to reduce the potential of herbicides drifting into your vineyards:

1. Register your vineyard location for free on your state's [Sensitive Crops](#) or [Drift Watch](#) website. Pesticide applicators use these sites to locate potential drift hazards. Most Midwestern states now have this service available through their departments of agriculture.
2. Don't establish a vineyard next to areas where phenoxy herbicides are constantly being applied for broadleaf weed control. Examples could include schools, golf courses, athletic turf areas or cemeteries.
3. Signs. A sign along the road or property fence with the simple word "vineyard" is worth a thousand words.
4. Buffers are good. Shrubs, trees, physical barriers or just distance can all be used to shelter vineyards from nearby herbicide applications.

5. A simple aerial map of your property showing the vine- yard location can be shared with neighbors and commercial pesticide applicators to heighten their awareness.

If drift occurs. However, your best defense may not guarantee that pesticide drift will not ever affect your vineyard. Here are some key steps you may want to consider if you are affected by drift:

1. Identify area affected.
2. Document the date, time and growth stage of the grapes.
3. If possible, identify the source of the drift and make a determination if you want to settle the problem between friends or foes.
4. Contact your state department of agriculture ASAP if you cannot determine the source of the drift and/or you want to formalize the complaint (30 - 45 day deadline in many states).
5. Flag both affected and unaffected plants, take high resolution pictures weekly until symptoms subside and measure final yields per plant.
6. Severe injury settlements should be delayed until after next season's harvest. Photo and yield documentation should be continued.

Insurance companies often become involved in pesticide drift settlements. Experience has shown me that the typical insurance adjustor will do everything he or she can to settle as soon as possible. They do not want to increase their administrative cost of carrying over the claim into another season or take that chance of increasing their liability by waiting until the next season to settle. Unless the settlement offered seems exceptionally lucrative, I would suggest delaying any settlements until after next season's harvest.

Here are some potential sources of technical support if you find that you need an experienced consultant to support your case:

1. University weed specialist

2. State crop consultant association
3. [National Alliance of Independent Crop Consultants](#)
4. [National Association of Insurance Adjusters](#)
5. State horticulture or nursery & landscape associations
6. Experienced vineyard managers
7. State arborist association
8. [American Association of Agronomy](#) Certified Crop Advisor or Certified Professional Agronomist
9. Online search for "pesticide drift consultant"

On a final note, remember that pesticide spray drift can travel both into and out of a vineyard. Most vineyard operators follow a very intensive pesticide spray schedule. Vineyard operators should also be practicing good pesticide sprayer husbandry.

Additional Resources

1. *Effective Vineyard Spraying*, 260 page book by Dr. Andrew Landers of Cornell University, approximately \$66 delivered by mail:
<http://www.effectivespraying.com/>
2. *Protecting Pesticide Sensitive Crops*, University of Nebraska publication G2179:
<http://www.ianrpubs.unl.edu/epublic/live/g2179/build/g2179.pdf>
3. *Protecting Oklahoma's Vineyards from Phenoxy (Hormone) Herbicide Effects*, Oklahoma Dept. of Agriculture:
<http://www.oda.state.ok.us/forms/cps/grapebroc.pdf>
4. EPA's *Pesticide Registration (PR) Notice 2001-X Draft: Spray and Dust Drift Label Statements for Pesticide Products*:
http://www.epa.gov/PR_Notices/prdraft-spraydrift801.htm
5. *Leaf Index and Severity Rating for Phenoxy Herbicide Damage to Grapes*, Washington State University Extension:
<http://feql.wsu.edu/eb/index.htm#/EB/se5.jpg>

UGA plant produces blueberries up to four times the size of average berries

Sharon Dowdy
University of Georgia
College of Agricultural and
Environmental Sciences



When it comes to choosing fruit, most people reach for the biggest piece. Titan™, a new blueberry variety bred by a University of Georgia scientist, makes that an easy task. It produces berries two to four times the size of average blueberries.

"People like big strawberries and big blackberries. Now they can get big blueberries," said Scott NeSmith, the UGA College of Agricultural and Environmental Sciences researcher who bred the new variety.

The UGA Research Foundation has applied for a plant patent for Titan™.

For commercial and homeowner use

Titan™ was designed for both commercial and homeowner use. NeSmith says backyard growers will like the berry size and so will visitors at pick-your-own farms. "Common sense tells you that picking

blueberries by hand takes a long time. Not with Titan™," he said.

Average blueberries are usually a little smaller than a dime. NeSmith has seen Titan™ berries grow as large as a quarter. A rabbiteye blueberry, Titan™ is well suited for growing in Georgia and produces well in USDA hardiness zones 6a through 9a.

Released in 2012, Titan™ hasn't been added to Georgia blueberry farmers' fields yet, but it is available in limited supplies for homeowners.

"Right now, most nurseries have waiting lists for Titan™ plants. That's how popular it is," Nesmith said. "They have more orders than they do plants."

Ask stores to stock Titan

He encourages homeowners to contact their local garden center and request the variety. "If enough people ask for it, hopefully the big box stores like Lowe's and Home Depot will start carrying it," NeSmith said.

Titan™ is officially available through the following licensed nurseries: Ken James Greenhouses (www.jamesgreenhouses.com); Cornelius Farms (corneliusfarms.com/nurserydivision.html); and Oregon Blueberry (www.oreblueberry.com).

No matter which blueberry variety you add to your home landscape, Nesmith says to set aside the first year as a growing year for the plant. "You may see a small amount of fruit the second year, but the third year will bring a good blueberry crop," he said.

While some varieties are self-fruiting, NeSmith advises planting two or more

varieties to insure good pollination and fruit set. Two additional homeowner varieties that have been recently released are Summer Sunset™ and Blue Suede®.

Award-winning blueberry breeder

Based on the UGA campus in Griffin, Ga., NeSmith has been researching blueberries in Georgia since 1990. He was recently awarded the UGA Inventor's Award for his research efforts that include the release of 10 new patented commercial blueberry varieties and two patented ornamental blueberry varieties. The award is presented each year by the UGA Research Foundation to recognize an inventor for a unique and innovative discovery that has impacted the community, state and/or world. UGA-developed blueberries are grown around the world on all continents except Antarctica.

Blueberry production has surpassed peaches as the No. 1 fruit crop in Georgia. "Nationally, we may be close to number one in acres now, and we are second or third in production," NeSmith said. Georgia farmers use about 21,749 acres for blueberry production, and the farm gate value was more than \$254 million in 2011, according to the Georgia Farm Gate Value Report.

For more information on how to add blueberry plants to home landscapes, visit the UGA CAES publication website at caes.uga.edu/publications.

Sharon Dowdy is a news editor with the University of Georgia College of Agricultural and Environmental Sciences.

'Florida Sensation' Strawberry

Vance Whitaker
GCREC Strawberry Breeder



Figure 1: 'Florida Sensation' grown in Dover, FL during the 2012-13 season.

The University of Florida strawberry breeding program has released 'Florida Sensation' (U.S. PPAF), a new cultivar which was previously trialed as FL 09-127. As the trial number suggests, this cultivar was selected as a seedling during the 2009-10 season, and after additional years of scrutiny was tested by grower cooperators in west-central Florida during the 2012-13 season. Plants will be commercially available to Florida growers beginning in fall, 2014.

Notable characteristics of 'Florida Sensation' based on UF trial data include:

- ✓ High early and total yield similar to 'Florida Radiance'.
- ✓ Fruit size equal to or greater than 'Florida Radiance' throughout the season.
- ✓ Good firmness, intermediate between 'Florida Radiance' (medium firmness) and Winterstar™ (high firmness).
- ✓ Bright red color that maintains fresh appearance postharvest.
- ✓ Sweet flavor

The flavor of this cultivar has been examined in multiple sensory panels, in which "sweetness" was rated higher than 'Florida Radiance' on 6 of 7 dates tested and "flavor" was also rated higher on 5 of 7 dates tested. This is consistent with soluble solids content data, which showed higher soluble solids for 'Florida Sensation' than for 'Florida Radiance' on all 5 dates tested.

Initial disease resistance trials in collaboration with Dr. Natalia Peres indicate that 'Florida Sensation' has a very similar disease resistance profile compared with 'Florida Radiance', except that the new cultivar appears to have greater resistance to *Colletotrichum* crown rot. While this new cultivar has greater plant vigor than 'Florida Radiance', the genetic susceptibility of 'Florida Sensation' to *Phytophthora* root and crown rots is of concern, and both nurserymen and growers are urged to take preventative action against this disease.

A limited number of trial plants of 'Florida Sensation' will be available on or around October 1st for trial this season. The Florida Strawberry Growers Association will be managing the distribution of these plants in collaboration with Florida Foundation Seed Producers, and all inquiries should be directed to the FSGA.

Disease	Causal Agent	Festival	Radiance	Sensation
Anthraco nose fruit rot	<i>Colletotrichum acutatum</i>	MR	R	R
Angular leaf spot	<i>Xanthomonas</i> spp.	S	S	S
Botrytis fruit rot	<i>Botrytis cinerea</i>	MR	MS	MS
Charcoal rot	<i>Macrophomina phaseolina</i>	S	MR	MR
Colletotrichum crown rot	<i>Colletotrichum gloeosporoides</i>	S	MS	MR
Phytophthora root rot	<i>Phytophthora cactorum</i>	R	HS	HS

Figure 2: Disease resistance/susceptibility of 'Florida Sensation' in comparison with industry standards based on initial trial data. R= Resistant; MR=Moderately Resistant; MS=Moderately Susceptible; S=Susceptible; HS=Highly Susceptible.

New fruit specialist hired at UGA-Tifton campus

Clint Thompson
University of Georgia
College of Agricultural and
Environmental Sciences



Photo: Erick Smith specializes in blueberries

Blueberry expert Erick Smith was recently hired by the University of Georgia College of Agricultural and Environmental Sciences as a fruit specialist for southern Georgia on the Tifton Campus.

In his new position, he'll spend 80 percent of his time working with fruit farmers on critical issues affecting the industry and blueberry production. He'll spend the other 20 percent of his time researching ways to make fruit production more efficient in south Georgia.

"This is a very important hire for the Georgia fruit industries, especially the blueberry industry," said Douglas Bailey, a professor and head of the UGA Department of the Horticulture in Athens. "The retirement of Dr. (Gerard) Krewer a few years ago has left a large void in support for our fruit growers. We are very excited to have been able to attract someone of such high caliber as Dr. Smith."

According to the UGA Center for Agribusiness Farm Gate Value Report, blueberries were the highest selling fruit in Georgia in 2011. They

were grown on more than 21,000 acres and raked in a farm gate value of \$254 million.

"Over the last 20 years, blueberry research has explored the fruit's nutritional benefits," Smith said.

Blueberries have significant levels of antioxidants (anti-cancer metabolites).

"The public has responded positively, as seen by the demand in Georgia and worldwide," he said. Competition has the industry looking for efficiencies in production that would reduce input costs, he said. Growers have specifically expressed to Smith a need for help identifying pests, diseases and cultural management.

"Right now, as I understand it from my conversations with people in the blueberry industry, many farmers worry about market saturation, which can lower returns to the farm," Smith said. "This allows for many opportunities to develop a program focused on plant health, production efficiencies and fruit quality. I see, going forward, very exciting challenges."

With \$108 million and 7,875 acres, Bacon County sold more blueberries in 2011 than any county in Georgia.

Smith was a research associate at Washington State University prior to moving to Georgia. His appointment at UGA takes affect April 1.

Clint Thompson is a news editor with the University of Georgia College of Agricultural and Environmental Sciences based in Tifton.

NC Strawberry Extension Position

Article reprinted from The Strawberry Grower

The Department of Horticultural Science and the College of Agriculture and Life Science at NC State University has announced that Jeremy Pattison will be assuming Cooperative Extension responsibilities for strawberries on July 1, 2013. As most members know, Dr. Pattison is based at the Plants for Human Health Institute at the NC Research Campus in Kannapolis, where he has been conducting research in strawberry breeding and genetics working to develop cultivars with high yield, superior eating quality, and resistance to industry-limiting pathogens, that are widely adapted throughout NC and the mid-South. Jeremy has long had an interest in working directly with growers and industry. Prior to starting at NC State University in 2008, he was the Small Fruit Research and Extension Specialist for Virginia Tech.

Jeremy will continue with his breeding work as well, hopefully with additional staff and technical support. For the last five years, NCSA has provided significant financial support to this work.

Comments John Dole, head of the Horticultural Science department, "Horticultural Science and CALS would also like to thank Barclay Poling for coming back from retirement for a year to provide Cooperative Extension support for strawberries, allowing NCSU to transition to Jeremy's leadership. Barclay's long history of small fruit extension and research and extensive knowledge has been invaluable and greatly appreciated by NC State University and by the strawberry industry."

Comments Jeremy Pattison: "Extension is the cornerstone to success in all land grant institution research programs, especially mine! Now, with a formal extension assignment, I'm excited to not only continue extension activities but also develop comprehensive programming!

As we move forward, we will strive to be creative, collaborative, innovative and effective in our research and extension programs. It's my belief that we have an exceptional network of growers, agents, regional agronomists and university specialists, and all of us are critically important to strengthening the regional strawberry industry. Besides sharing research-related information during the upcoming preplant meetings, I would like to utilize them as informal "listening sessions" to hear directly from growers and agents to help shape future extension efforts. I look forward to continuing to serve in both research and extension."

Wild Ride in the Vineyard of 2013

Sara E. Spayd
Extension Viticulturist
Department of Horticultural Science
NC State University

As of the third week of August, 2013 has provided a challenge to NC grape growers, particularly bunch grape growers. Excessive rain and below average temperatures have kept Downy mildew pressure high. European wine grape (*Vitis vinifera*) producers should have been in the vineyard spraying every five to seven days for disease management. The second week of June I observed Botrytis on green Chardonnay berries. All of the backroom chat that I have had with Plant Pathologists through my career indicated that Botrytis was not a problem on unripe fruit, particularly pre-veraison fruit. These clusters were just at bunch closure and the berries were still in Phase I of growth! Some of the French-American hybrids are faring better, particularly those with some resistance to Downy mildew. Muscadines are not under the spray regime that the bunch grapes are enduring.

In addition to Downy mildew, black rot is also in the vineyards on fruit and on leaves. With harvest slowly approaching, growers are losing options for some spray materials due to pre-

harvest intervals. I also had a report of berry loss due to powdery mildew in one variety of muscadine in one grower vineyard.

Japanese beetles were abundant, but with the excessive foliage in most vineyards this year. They maybe more help than hindrance this year, as long as they are not decimating the leaves in older 3 feet of canopy that are the primary sources of sugar for fruit and permanent wood tissues.

Aerial roots, regularly seen on muscadines and less often on bunch grapes, began developing as early as June in some vineyards. There is no reason to remove them and nothing to spray on them to control them. The development of the aerial roots is another outcome of the high rainfall and humidity this growing season.

We still have at least three to four weeks until the bulk of harvest begins, if harvest is to wait for fruit ripening. We started the season late by at least two weeks, depending on site maybe later. Harvest this year is likely to be primarily driven by fruit condition rather than fruit maturity. Fruit development has not “caught-up” and is not likely to at this point of the growing season. I had my first report of harvest of Pinot gris, one of the earlier ripening varieties, today (21 Aug).

What does it mean for my vines this winter? Some growers expressed concern with regard to winter-hardiness and the potential for cold damage due to the high moisture content in the soil. The true issue is getting the vine growth to shut down this fall. The basal portion of the shoots that are left at pruning should already have begun to harden off or lignify (turn brown) if they have not done so already. Any shoot tissues that are green at the time of the first frost will be killed – normally not a problem since they are pruned-off. In more extreme cold irrigated regions, soil moisture is brought to field capacity (full-tank) before onset of cold weather. High soil moisture is a buffer to very low temperatures in those areas that can drop soil

temperatures below freezing which kills root systems when it occurs. Anyone with a young vineyard using GROW TUBES needs to REMOVE them IMMEDIATELY or the vines will suffer cold damage. In October, it may already be too late to prevent injury.

How to handle vines for the rest of the season? Maintain the leaves in a healthy condition. If leaves are lost, the fruit **MUST** be removed from the vines. The new leaves that develop lack sufficient area to ripen the fruit. Grapevines will pull sugar from woody tissues. Grapevines ripen the fruit to attract wildlife for seed dispersal (survival of the species mechanism). This resource reallocation weakens the vine and will affect its ability to survive the winter, ability to produce a crop the following growing season and affects the long term health of the vine. Some vineyards may look nutrient deficient. This is certainly not the time to apply nitrogen to any of the grape species. Waterlogged soils are going to affect root-health and roots’ ability to take up nutrients. This winter diseased tissues should be removed from the vineyard and be burned or buried away from the site. This is not the season to chop diseased wood back into the vineyard.

Blackberry and Raspberry Seasonal Checklist Fall 2013

Gina Fernandez, Small Fruit Specialist
North Carolina State University

The cool and wet summer in NC and other parts of the southern US during the summer may impact how you manage your crop this fall. In particular, see notes below in fertility management.

FALL

Plant growth and development

- ✓ Primocanes continue to grow but slow down.
- ✓ Flower buds start to form in leaf axils on summer-fruiting types.

- ✓ Carbohydrates and nutrients in canes begin to move into the roots.
- ✓ Primocane leaves senesce late fall.
- ✓ Primocane fruiting types begin to flower in late summer/early fall and fruit matures until frost in fall

Harvest

- ✓ Primocane harvest continues until frost

Pruning and trellising

- ✓ 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

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>
- ✓ Also check out Hannah Burrack's blog. She posts timely information on insects of interest.
<http://ncsmallfruitsipm.blogspot.com/>

Planting

- ✓ Growers in warmer areas (e.g. extreme southeastern NC) can plant in December. Preparations for winter planting should have already been made. If you have questions about winter planting please contact your local county extension agent
- ✓ In cooler areas, prepare list of -cultivars for next spring's new plantings. Find a

commercial small fruit nursery list at
www.fruit.cornell.edu/Berries/-nurseries

Fertilizer

Make sure you send in leaf tissue samples to determine if there are any nutrient deficiencies. According to Dr. Carl Crozier, NCSU soil scientist "nitrogen management could be even more unpredictable than usual. Depending on timing of N, the nature of the soil profile, and the crop management (including mulching) system; excess water may have enhanced deeper N movement and/or N runoff or denitrification losses, and an elevated water table may have restricted crop rooting."

- ✓ 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.

-NARBA late January, 2014 in Hershey, PA, with the Mid-Atlantic Fruit and Vegetable Conference.
<http://www.raspberryblackberry.com>
-Southeast Regional Conference and Tradeshow, with sessions on blackberry January 2014, at the Savannah International Trade and Convention Center
<http://www.seregionalconference.com/index.html>

Key Resources:

Southern Region Integrated Bramble Management Guide and the Southeast Regional Bramble Production Guide:
<http://www.smallfruits.org/SmallFruitsRegGuide/index.htm>

Blackberry and Raspberry Grower Information Portal:
<http://rubusvirus.trainings.ces.ncsu.edu>

Social Media links:

Twitter: @NCTeamRubus

Facebook : Team Rubus

Blogs: <http://teamrubus.blogspot.com/>

Strawberry Seasonal Checklist

Jeremy Pattison

Strawberry Extension Specialist

North Carolina State University

This checklist was originally developed for growers in North Carolina. You will have to adjust your work activities either earlier or later depending on your location. For more detailed information, check the Southern Region Integrated Strawberry Management Guide and the Southeast Regional Strawberry Plasticulture Production Guide at:

<http://www.smallfruits.org/SmallFruitsRegGuide/index.htm>

October–November

Planting

- ✓ Check plants for possible biological (insects and diseases) and physiological (nutrient) disorders prior to planting and treat appropriately. Consult your local extension agent if plants appear unthrifty. Get diagnosis if disease is suspected. Notify plant seller of any problems.
- ✓ Fertigating plug trays to correct for nutrient deficiencies is best accomplished using a proportioner such as a brass venturi siphon type (i.e. Hozon) that easily attaches to a standard ¾" hose bib. These operate on a 16:1 ratio (for every 16 gallons of output, 1 gallon of stock fertilizer is injected). To achieve a 100ppm nitrogen solution using a 15% N water soluble fertilizer (15-5-15) add 1.35 oz (38g) of fertilizer per gallon of stock water. Proper proportioning requires a minimum pressure of 35 psi. Siphoning rates vary with pressure (higher pressure will result in more fertilizer and a higher finished ppm). It is recommended to include a 35 psi pressure regulator on the supply line in front of the siphon to keep constant pressure and therefore a consistent rate of fertilizer delivery. Other proportioners such as Dosatron, DosMatic or Chemilizer, maintain a constant nutrient output if bulk flow varies due to pressure changes. These are much more expensive but deliver greater precision. Consult your irrigation supplier to discuss flow rates and pressure specifications of your system to select the best option.
- ✓ Water wheel transplanters are commonly used to punch holes and deliver either water or a dilute fertilizer solution to “seal in” plug plants. There is no data to support any plant growth or yield increase by using a fertilizer solution in the transplanter. The main caution is not to use a solution that is too “hot” that has the potential to cause damage. One lb of water-soluble 20-20-20 dissolved in 100 gallons of water will produce a solution containing approximately 240 ppm N, P and K. Therefore, if 8 oz of fertilized water are applied to each planting hole (12” spacing), an additional 2 lb of N/A will be applied via the transplant water.
- ✓ Planting depth is extremely important to getting off to a good start. Set plug plants deep enough to have approximately 3/8” of soil covering the top of the media plug. Set fresh plugs at the depth at which they were growing in the nursery or mid-way on the crown.
- ✓ Overhead irrigation is still the favored approach for plug establishment, especially in red clay soils which have large mass particles (ie clods!). The objective of overhead irrigation during plant establishment for any soil type is to seal in the plant by minimizing air spaces and maximizing soil to plug/root contact. A common schedule for “seed bed” type beds is to irrigate plugs 5 hours the first day, 3 hours the second and 2 hours the third day using a frost protection type setup (5/32nd, one sided impacts). Higher irrigation rates and durations (larger nozzles and run time)

- may be needed if soil is cloddy or if conditions are excessively hot and sunny.
- ✓ If you establish plugs with drip irrigation only, be sure to hook up the system before planting. Drip irrigate often enough after transplanting to keep beds near field capacity during the first 4 weeks. Avoid having standing water. Using a water wheel transplanter is recommended if no overhead irrigation is available.
 - ✓ Irrigate fresh dug plants 9 am–5 pm for 7–12 days. (More may be needed if weather is hot and sunny.) Growers typically reduce irrigation times on the “tails” of the day during the latter part of fresh dug establishment (later am start times and earlier pm stop times). Let the plants tell you when they are becoming established and adjust irrigation schedules based on plant response.

Post Planting Maintenance

- ✓ If deer predation has been a historic site problem, install fencing NOW. A double row of electrified fence (tape or wire type) has been effective when installed early in the season. Consider attaching foil, paper plates or grocery store plastic bags at regular intervals to increase the visibility of the fence.
- ✓ Drip irrigate in the fall as needed to keep soil from drying out.
- ✓ Scout for pest injury, including deer.
- ✓ Check for dead plants and reset ASAP. Send suspicious-looking plants to the Disease & Insect Clinic for positive ID; notify plant seller of any problems.
- ✓ Place order for row covers NOW; these will help greatly to conserve irrigation water during frost protection next spring and...
- ✓ If planting is delayed a week or more, fall row covers can help enhance plant growth and partially compensate for late planting for both Chandler and Camarosa.
- ✓ If fall temperatures (October, November and early December), are below average, row covers can optimize Camarosa yields. Chandler generally does not need fall covers

in the piedmont or coastal plain if planted on time; however, mountain locations require both fall and winter row cover use to produce maximum yields.

- ✓ Consider using fall covers for late planted “trimmed” plants to enhance fall flower bud development and spring yield.
- ✓ If row covers are used for extended periods, consider treating annual ryegrass with reduced or full rates of Poast to control for excessive growth and potential bed shading.
- ✓ Watch the extended forecast for any unseasonably warm and or cold periods throughout the row cover application period. Excessive heating units in December can cause some cultivars to break bud and flower (Sweet Charlie>Camarosa>Chandler). Alternatively, sudden cold snaps (teens) could cause crown damage to unprotected plants (depending on physiological state/ degree of dormancy) and applying row covers during punctuated events can help minimize cold injury.
- ✓ If strawberry plants form runners in the fall after planting, these runners should be cut off – hand scissors or pruners do an excellent job. Delaying runner removal until early to mid-November has been observed to not negatively impact spring yield and results in a single pass exercise (very few new runners form after mid-November). Runner removal may be combined with hand-weeding operations.
- ✓ Typically a few transplant leaves will be lost during the establishment process (fresh dug>plugs). Unless excessive leaf loss occurs, early fall leaf sanitation may not be economically beneficial. However, after the coldest part of winter has past, leaf sanitation can be a beneficial practice to reduce botrytis fruit rot pressure (especially important in organic or no spray cultivation). Caution on leaf sanitation: Don’t hand prune if anthracnose is known to be present. Rely on spray recommendations to manage disease severity
- ✓ If there has been a history in the soil of Phytophthora Crown Rot, you may need to

inject Ridomil Gold soon after transplanting – see 2013 NC Ag. Chem Manual or SRSFC IPM Guide for recommendations.

- ✓ Hand weed emerging winter weeds from planting holes.
- ✓ Make plans to attend the Strawberry Expo December 3-6 (see page 1).

Small Fruit News

Volume 13, No.4

October 2013

Editor and Contributor Tom Monaco

Published is four times a year. Small Fruit News is available on the Southern Region Small Fruit Consortium (SRSFC) web site www.smallfruits.org.

To subscribe to an electronic notification service of new Small Fruit News issues on the web, send your e-mail address to brendaw@uga.edu.
