

# Small Fruit News

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

## ***UGA Releases New Blueberry Variety to Honor Dr. Gerard Krewer***

D. Scott NeSmith



**Figure 1:** Berries of the new UGA blueberry variety 'Krewer™'.

A new blueberry variety has been released by The University of Georgia and is being named in honor of one of UGA's blueberry pioneers and recent retirees. 'Krewer™', named after Dr. Gerard Krewer, is a very large fruited blueberry (Fig. 1) that ripens in late May to early June in south Georgia. The new variety has shown high yield potential in early experimental trials (Fig. 2), and offers a great companion variety for the recently released large fruited 'Titan™'. 'Krewer™' is suitable for commercial production, pick-your-own operations, and home gardens.



**Figure 2:** Young plants of the new blueberry variety 'Krewer™' during ripening.

Dr. Krewer was a vital part of the early establishment and explosive growth of the blueberry industry in Georgia from the mid-1980's up through his retirement in 2013. He worked on numerous projects with growers, County Agents, and Research Scientists in his capacity as a CAES Extension Specialist. Dr. Krewer's blueberry work included growth regulator assessments, pruning trials, variety evaluations, and fertility and mulch experimentation among other things.

### **In This Issue**

Special Reports:

*UGA Releases New Blueberry Variety to Honor Dr. Gerard Krewer*

Blackberry and Raspberry Seasonal Checklist

UGA's blueberry breeder, Dr. Scott NeSmith, worked along side Dr. Krewer for more than 20 years.

When asked why he named a variety 'Krewer™', NeSmith replied, "It seemed only befitting that Dr. Krewer be honored with a variety named after him. His legacy of service to the industry will last for years to come and is worthy of honor and emulation."



**Figure 3:** Dr. Gerard Krewer (left) being presented the first plants of the new blueberry variety 'Krewer™' by Dr. Scott NeSmith (right) at the 2015 Georgia Fruit and Vegetable Tradeshow in Savannah, Ga.

For more information on 'Krewer™' licensing and availability, contact The University of Georgia Research Foundation's Technology Commercialization Office at 706---542--5942. Also, look for more detailed information on this and other UGA blueberry varieties on the Georgia's Integrated Cultivar Release System web site at <http://georgiacultivars.com/cultivars/blueberries/>

## **Blueberry Cultivar Development at The University of Georgia**

### ***A Progress Report on Rabbiteye for 2014***

D. Scott NeSmith

The UGA Blueberry Cultivar Development Program generates and evaluates hundreds of selections of southern highbush and rabbiteye blueberries each year. The UGA Blueberry Research Farm near Alapaha is the primary field site for evaluating new selections and replicated advanced selections. The following is a brief progress report for select rabbiteye trials at Alapaha during 2014.

#### ***General Season Overview***

The 2014 chill hours (hours < 45 F) from Oct. 1 thru Feb. 15 were 836 for the Alapaha site. This was near normal accumulations (825 hours is 10 year average), but much greater than the previous two years (550 in 2013; 685 in 2012). The spring season heat unit accumulation in 2014 was 762 heat units (base 50 F) from Feb. 15 through May 1, which is less than "normal" since the 10 year average heat units for this period are 831. However, two recent years (2011 and 2012) had extremely high heat unit accumulation from Feb. 15 thru May 1, with 1031 units in 2011, and 1184 units in 2012. Therefore, 2014 resulted in delayed flowering and subsequent ripening, especially when compared to 2011 and 2012. In fact, ripening times overall were 2 weeks or more later in 2014 than in those two years. But, the ripening times for 2014 were not so abnormal when compared to 10 year averages. There was some early season freeze damage experienced in 2014 which primarily affected the earliest

flowering selections. Notable minimum temperatures at Alapaha and dates were: 25.2 F on Jan. 30; 28.6 F on Feb. 14; 28.0 F on Feb. 28; 30.7 F on Mar. 14.

Comprehensive flowering notes, cropping notes and fruit characteristic evaluations were taken for numerous selections and advanced selections of rabbiteye blueberries, along with data for standard cultivars.

### ***Performance of Rabbiteye Replicated Advanced Selections***

In the past 6 to 8 years, we have established several Advanced Selection replicated trials at the Alapaha site. These trials have multiple replications of 10 to 15 plants for the Advanced Selections, along with cultivar standards. These trials are a culmination of advanced material from earlier selections trials, and offer a more comprehensive look at performance. This report contains data on trials that are 2 years old. All trials were started from 1 gallon plants, were grown in soil amended with pine bark, and were irrigated using a single line of drip tape. Overhead irrigation for frost protection is not available. Data presented are a numerical scale, where values range from 1 to 10, with a value of 6.0 or less being considered not commercially acceptable (with the exception of cropping score).

Table 1 shows data for several popular varieties and some UGA Advanced Selections for the 2 year old trial at the Alapaha Farm. These are all young plants, so they tended to flower later overall than plants in the 3 and 4 year old trials. Nearly all the rabbiteyes in this trial had only medium crop set at best, likely due to late season pollination problems associated with thrip damage and/or bee inactivity. 'Alapaha' and 'Vernon' have been released for over 10 years now, and these have become early season rabbiteye standards in Georgia. In this trial, 'Vernon' ripened about 5 days earlier than 'Alapaha', but it had less crop. Our recent release 'Titan' ripened near the time of 'Alapaha', but also had a reduced crop load. Notable early Advanced Selections included T-1069, T-1070, and T-1101. T-1070 is particularly noteworthy as it ripened 2 weeks earlier than 'Alapaha', even though it flowered slightly later. This selection has shown the early ripening trait for the past 3 years, and remains of great interest. We have seen a lower than desired crop load on the selection in the past, and the plant is often short on fruiting wood. However, these young plants of T-1070 set a good crop in 2014. This Advanced Selection needs further observations to see how it progresses as plants mature.

**Table 1:** Ratings of some fruit and plant characteristics of 2 year old Advanced Selections of southern highbush blueberry along with standard cultivars. Data are from Alapaha during 2014. Plants were established in Fall 2012.

Selection or Variety	Date of 50% Flower	Date of 50% Ripe	Berry Size	Berry Scar	Berry Color	Berry Firmness	Berry Flavor	Crop Load	Plant vigor
Alapaha	Mar. 30	June 15	6.3	7.3	7.0	7.0	7.0	5.0	7.8
Brightwell	Mar. 30	June 28	6.5	7.3	7.0	7.3	6.7	5.0	8.0
Ochlockonee	Apr. 3	July 7	6.5	7.5	7.0	7.0	7.0	4.0	8.0
Titan	Mar. 29	June 15	8.7	7.5	7.0	8.3	7.0	3.0	8.8
Vernon	Mar. 28	June 10	8.1	7.3	7.0	7.5	7.5	2.8	8.3
T-1069	Mar. 29	June 14	7.5	7.8	7.0	7.5	7.0	4.5	8.3
T-1070	Apr. 1	June 1	7.3	7.3	7.0	8.0	7.8	5.8	7.8
T-1083	Apr. 1	July 12	7.3	7.5	7.0	7.2	7.2	6.5	8.0
<b>T-1101</b>	<b>Mar. 23</b>	<b>June 11</b>	<b>9.0</b>	<b>7.0</b>	<b>6.8</b>	<b>7.8</b>	<b>7.0</b>	<b>5.5</b>	<b>8.5</b>
T-1220	Apr. 2	June 23	8.3	7.0	8.0	8.0	7.2	2.0	7.8

Another important early ripening Advanced Selection is T-1101 (Fig. 1). Although it does not ripen as early as T-1070, it does ripen with ‘Vernon’, and has very large berry size (Fig. 2). It had a better crop than ‘Vernon’ in 2014, and berry firmness is good.

Table 2 shows yield for T-1101 and ‘Vernon’ from 2013 and 2014 trials of plants that were established in 2010. In each of the years, T-1101 has yielded more than ‘Vernon’, and berry size is much larger. In fact, T-1101 berry size rivals ‘Titan’ in all of our trials, and offers a potential large-fruited companion variety to plant with ‘Titan’. T-1101 tends to flower earlier than ‘Titan’ and ‘Vernon’, however. A negative trait of T-1101 is that it can have a pink cast in the fruit if harvested too early. However, if fruit is allowed to hang it colors up well, and actually increases berry size even more. The selection also has some

tendency to rain split, but not to the degree that ‘Titan’ does. T-1101 has been submitted for release and is expected to be available for licensing in 2015.



**Figure 1:** Fruit ripening on young plant of T-1101.



**Figure 2:** Close-up of T-1101 berries.

**Table 2:** Yield and berry wt. for ‘T-1101’ and ‘Vernon’ at Alapaha, Ga 2013 and 2014. Plants were established in 2010.

Year	T-1101	Vernon
	Berry wt (g/berry)	
2013	2.75	1.93
2014	2.90	2.14
<b>Avg</b>	<b>2.83</b>	<b>2.03</b>
	Yield (lbs/plant)	
2013	12.5	9.5
2014	24.0	21.6
<b>Avg</b>	<b>18.3</b>	<b>15.6</b>

For mid-season rabbiteye, ‘Brightwell’ continues to out perform nearly all selections and varieties with regards to productivity. However, ‘Brightwell’ size and eating quality can be less than desired at times. T-1220 is a super high quality mid-season rabbiteye,

but crop load was low in 2014 (Table 1). For later season rabbiteye, ‘Ochlockonee’ continues to perform adequately. However, the Advanced Selection T-1083 looks to be more promising, as it is larger in size than ‘Ochlockonee’ and ripened 5 days later in 2014. T-1083 also had one of the best crop loads in this trial. We plan to investigate these Advanced Selections more carefully over the next 2 to 3 years to monitor reliability and consistency of performance.

### ***New Rabbiteye Selections of Interest***

In addition to the Advanced Selection trials, we also have numerous new selections of rabbiteye blueberries (less than 4 years old) growing in non-replicated smaller trials at the Alapaha Farm. Data for several of these selections and some cultivar standards from a 3 year old trial are presented in Table 3. We continue to look for improved blueberry varieties with regards to a number of traits, including: early ripening berries (T-1369, T-1389, T-1427), improved berry size (T-1286, T-1389, T-1427), good berry quality (T-1287, T-1389), and strong plant vigor (T-1272, T-1369, T-1389, T-1427). These new selections will be evaluated further in the next 3 years. We have already propagated several of these to start new Advanced Selection trials. Also, we continue to generate 200 to 300 new selections of blueberries each year. Our goal is to provide relevant material to help improve and sustain the blueberry industry for years to come

### **Growers Try Their Hand At Next Wave Of Berry Crops**

By: Christina Herrick  
January 2, 2015

Ever heard of a goji berry? What about a Saskatoon or an aronia berry? These might sound new but growers in the U.S. are trying their hand at growing these berries. They are favored for their ‘nutraceutical’ value, or health

profile, and with these unusual plantings growers are finding great market potential.



*Photo: Goji Berries (Photo Credit, Wikimedia Commons)*

### **GOJI: A CHALLENGING BERRY**

Goji berries are actually a popular crop in China, where the majority of the world's plantings are found. They've proven to be tricky in the U.S., with some climates considered unsuitable for these berries.

Goji are pesky and sensitive, says Kenny Demcik of LGD Farms in Spanish Springs, NV. Roots can grow 15 feet down, searching for water and minerals. Some plants will produce, some won't. Some only produce leaves, which can be used in a goji tea. They take about 5-7 years to get into full maturity.

"They are more intense than grapes. If the climate isn't perfect, you might not harvest. If the watering is not perfect, you might not harvest," he says.

Demcik also says hand harvesting is a must. The skin on goji berries is very easily bruised and should be picked early in the day, when it is cooler.

"Any machine picking could cause a large loss since the berries drop and move around," he says.



*Photo: Aronia Berries (Photo credit: Wikimedia Commons)*

### **ARONIA: AN EASY KEEPER**

When compared with goji berries, aronia berries seem like a piece of cake to grow.

"It really likes long, hard winters and it grows in almost any soil type. It is relatively pH tolerant," says Bill O'Brien of Bellbrook Berry Farm in Brooklyn, WI.

O'Brien says the berry plants do well with and without an irrigation and fertilization plan. Weeding, though, is vital for these plants.

"You don't want competition with the weeds, that is one of your biggest issues," he says.

### **SASKATOON: A POME BERRY?**

Saskatoon berries go by several names and they are actually a distant relative of pome fruit. These native plants are also hardy, although they too can be susceptible to early competition from weeds and take a while to get into full production.

"Once you get them past that second year, they're pretty hardy, because the canopy starts to shade the root system," Jim Dixon of the Saskatoon Berry Patch in Williamsburg, MI, says.



**Photo:** Saskatoon Berries (Photo credit: Wikimedia Commons)

Proper pruning can help keep these berries in check.

“They will actually grow too large, becoming tree-like without proper cultural practices,” says Duke Elsner, a small fruit educator with Michigan State University (MSU).

Saskatoon berries are prone to cedar apple rust. Berries of infected canes will turn bright orange. Researchers at MSU have worked on some timing of fungicide sprays. Good nutrition is also key.

“They like nitrogen. You can really put the nitrogen to them and they’ll get lots of good growth,” says AJ MacArthur of AJ’s Berry Farm in Lachine, MI.

## **Breeding strawberries for North Carolina and the Southern US**

Gina Fernandez<sup>1</sup>, Rocco Schiavone<sup>1</sup>, and Jeremy Pattison<sup>2</sup>

<sup>1</sup> *Department of Horticultural Science, North Carolina State University*

<sup>2</sup> *Driscoll Berry Associates, Watsonville, CA*

The NC State University Strawberry Breeding Program underwent a transition in 2014, Jeremy Pattison left the University for a position at Driscolls at the end of February and Gina Fernandez assumed interim leadership of the program on March 1, 2014. Dr. Pattison established several trials in the fall of 2013

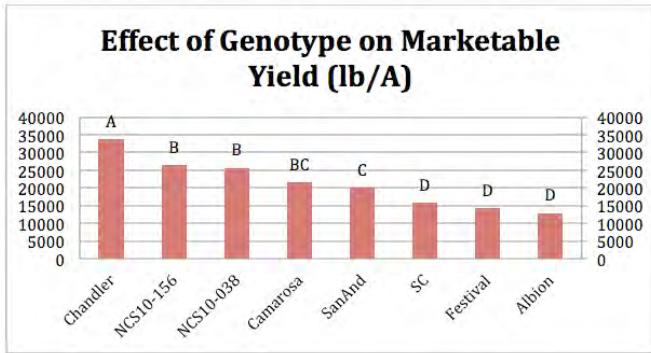
across the state of NC. The trials consisted of row cover experiments and advanced selections from the breeding program. Below is a summary of yield data and pictures of the selections.

Data collected over the past few years has indicated that 2 elite selections, NCS 10-038 and NCS 10-156 have superior fruit yield and excellent flavor. These selections are in the process of clean up at the NC State University Micropropagation and Research Unit. Once plants have been determined to be free of known viruses, they will be propagated and distributed to growers in NC and other states in the region.

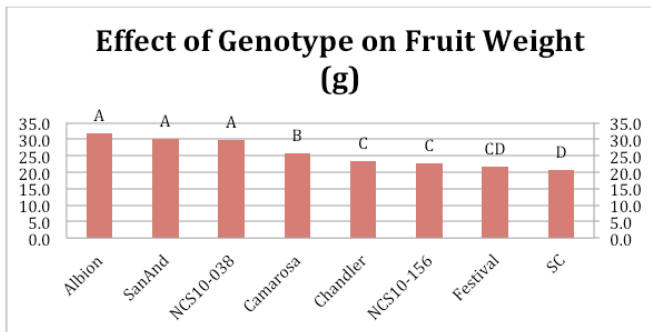
*Yield trials.* Trials were established in the fall of 2013 at four locations: 1) Upper Mountain Station (Laurel Springs, NC, USDA zone 6b), 2) Piedmont Station (Salisbury, NC, USDA zone 7a), 3) Central Crops Station (Clayton, NC, USDA zone 7b) and 4) Horticultural Crops Station (Castle Hayne, NC, USDA zone 8a). Each location had approximately 20 genotypes, which will include industry standards for reference. Data collection consisted of marketable yield; cull yield, average fruit weight, total soluble solids, pH and TA in addition to plant vigor, disease incidence, and survivability.

Figures below are from data collected from the CCRS, Clayton, NC. Chandler, our industry standard had highest total and marketable yield. It also had the highest cull yield. NCS 10-038, a potential alternative to Chandler had total and marketable yields comparable to Camarosa. The harvest season of NCS 10-038 has a similar season to Camarosa, but with a steady harvest season with a peak in mid may. The elite selections, NCS 10-156, a potential alternative to Sweet Charlie had yields comparable to Camarosa and higher than Sweet Charlie. The harvest season of NCS 10-156 is early like Sweet Charlie and continues to produce fruit through the season.

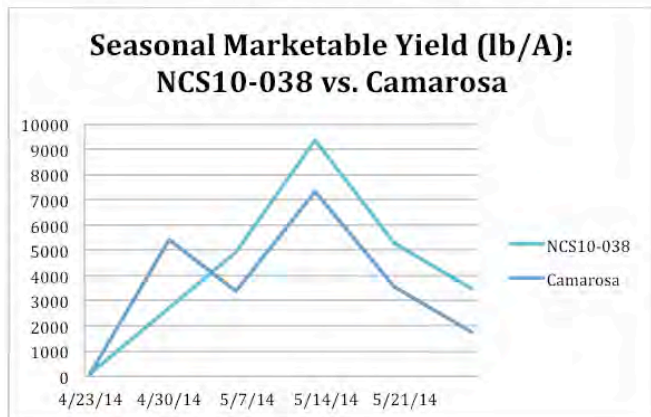
For more information, contact  
Gina\_Fernandez@ncsu.edu



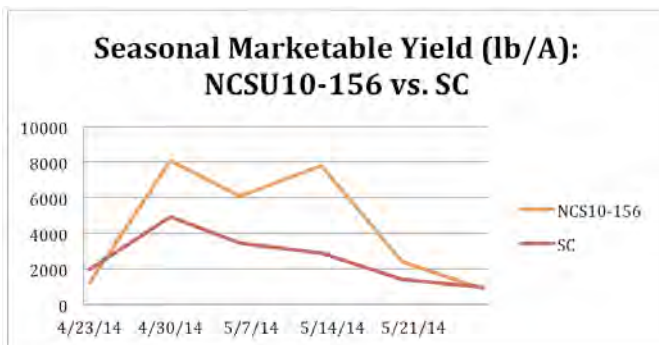
*Photo: Chandler fruit.*



*Photo: NCS 10-038 fruit, a potential replacement for Chandler.*



*Photo: Sweet Charlie fruit.*



*Photo: NCS 10-156 fruit, a potential replacement for Sweet Charlie.*



## **“Year of the Soil” and a New Resource for Southeastern Strawberry Farmers**

Press Release 1/22/15

The United Nations has named 2015 the “International Year of Soils”, with the aim to increase the public’s understanding of soil as a valuable natural resource. This nomination follows a trend of increasing focus on agriculture’s impact on the health of the soil and how changes to soil health impact this natural resources’ ability to sustain crop production. The idea of using targeted agricultural practices to sustain soil health and increase production can increasingly be put into practice by farmers here in the SE with the help of the recently released extension publication, “Sustainable Practices for Plasticulture Strawberry Production in the Southeast”. The free and online-interactive publication was produced by researchers at North Carolina State University (NCSU) as a resource to help guide strawberry growers in the implementation of sustainable agricultural practices. The resource particularly focuses on soil management practices like cover crops, compost and the use of beneficial soil microbes whose use and benefits to strawberry production are backed by research conducted in the Southeastern region. Amanda McWhirt, a PhD student at NCSU and lead author of the publication, points out that, “Growers are increasingly aware that by making soil protection and improvement a top priority they are able to reduce or even eliminate other pest and nutrient problems later in the season.” Strawberry growers in North Carolina and surrounding states who are interested in using sustainable practices on their farms will benefit from this valuable new resource, which outlines the steps and specific considerations of implementing such practices. However, the publication also provides live links to related videos, examples of how growers can calculate nitrogen inputs from compost and cover crops and includes a production calendar that

outlines timing for the recommended practices. Of note the publication has been dedicated to John Vollmer a local early-pioneer of the use of sustainable soil management practices for strawberry production in North Carolina. John, who passed away in June of 2014, was a leader in testing and promoting the use of compost and cover crops for strawberry production on his farm in Bunn, NC. He worked closely with NCSU researchers to evaluate these practices on his farm and as Dr. Gina Fernandez co-author of the publication says, “He used to call me up when I first moved to North Carolina and ask lots of questions about the strawberry plant that no one else had ever asked before or even since. He was a keen observer of plants and shared his observations. I think I learned more from him about growing strawberries than he learned from me.” While John’s farm, now managed by his son Russ, is certified organic John was respected by both conventional and organic growers alike. As farmers worldwide increasingly turn to production practices that improve soil quality, this publication shares John’s outlook that healthy soil is something we can all benefit from and as such seeks to help increase soil health across all types of strawberry farms in the SE for 2015 and beyond.

Contact: Amanda McWhirt  
([almcwhir@ncsu.edu](mailto:almcwhir@ncsu.edu))

Link to the Publication:  
<http://content.ces.ncsu.edu/sustainable-practices-for-plasticulture-strawberry-production-in-the-southeast/>



**Photos:** Taken by Amanda McWhirt

## Developing Resistant Genotypes to Combat Anthracnose Crown and Fruit Rot of Strawberry

Ray L. Jacobs  
Plants for Human Health Institute  
North Carolina State University,  
Kannapolis, NC



Anthracnose crown rot (ACR) and fruit rot (AFR) caused by *Colletotrichum gloeosporioides* and *C. acutatum* are two of the most prominent and destructive diseases of cultivated strawberry in North Carolina and the southeastern United

States. Insidious by nature, these pathogens exemplify a biphasic lifestyle shared among many *Colletotrichum* species characterized by the establishment of symptomless foliar infections followed by a latent period and eventual destructive necrotrophic rots of the crown and fruit. Initial infections often begin at the strawberry nursery. Infected plants are symptomless, encouraging the undetected dissemination of diseased plant material to fruit production fields and inciting subsequent crown- and fruit-rotting epidemics. Anthracnose epidemics can be financially devastating to growers in years of high disease pressure or when incidence of infected nursery material is

high. Integrated Pest Management programs at NCSU have been established to aid in managing ACR and AFR but current IPM programs lack genetic host resistance and have limited impact during periods favoring disease development. Cultivars currently favored for use in North Carolina are widely susceptible to ACR and AFR.

We have demonstrated evidence of a novel foliar resistance mechanism inhibiting foliar infections of both *Colletotrichum* species. Genetic information describing how this resistance is inherited may be used to develop cultivars adapted to North Carolina with the capacity to limit the establishment of foliar infections in strawberry nurseries. This form of resistance can be described as ‘rate-limiting’ as sporulation is inhibited in resistant genotypes, reducing the plant-to plant spread of disease within nursery and fruiting fields. The use of cultivars with ‘rate-limiting’ resistance would reduce the risk of purchasing infected material and provide growers with an economic solution to managing anthracnose epidemics in the future.



**Photo:** Fruit Rot



*Photo: Crown Rot*

Until competitive genotypes resistant to anthracnose are developed and deployed, growers should be careful to purchase disease-free plants from a trusted source. Starting with clean material is the most effective means of controlling anthracnose each season. Scout fields during warm and wet weather after fall planting and in late spring for signs of disease. Remove diseased and surrounding plants from the field. Chemical control may be necessary if anthracnose is detected. For more information on these diseases, their management, and recommended fungicide applications please visit <http://content.ces.ncsu.edu/anthracnose-crown-rot-of-strawberry/> or <http://content.ces.ncsu.edu/anthracnose-fruit-rot-of-strawberry/>

## 'Lane' Muscadine

Patrick Conner  
University of Georgia – Tifton Campus

Lane is a new muscadine cultivar released from the University of Georgia muscadine breeding program. Lane was selected in 2007 from a cross of Supreme x Tara made in 2005 and tested as Ga. 5-1-45 by Dr. Patrick Conner. Lane was tested in yield trials from 2010 to 2014. Lane was released in 2012 and a U.S. plant patent has been obtained by the University of Georgia Research Foundation.

Vines of Lane are self-fertile and have moderate vine vigor. Total yields from Lane at Tifton were lower than highly productive cultivars like Triumph and Supreme, but higher than most female cultivars like Fry in years 3 through 5. In general yields appear on the low end of what most self-fertile cultivars display, but better than most female cultivars. Lane berries have a tendency to split and tear during picking, but flesh firmness limits juice leakage after tearing. Levels of split and tear were similar to Fry and greater than Tara and Hall which have excellent dry pedicel scars. Growers may wish to reduce irrigation during harvest and delay picking until the afternoon to reduce berry split.

Average first harvest of Hall was August 4, which was similar to the early check cultivars (Hall, Tara, and Triumph), and two weeks prior to the first harvest of the main season check cultivars, Fry and Supreme (Table 1). Average percent of the total yield of the first harvest was 51%, and percent soluble solids of the first harvest was 14.8%, which was similar to the other early cultivars tested. Previously growers have had no options for an early-season self-fertile black muscadine. Lane will allow growers to have a black muscadine as early as the earliest bronze muscadines so that both colors will be available for the early season market.

At maturity, the berries of Lane are round and average 9 grams in weight and 1 inch in diameter (Table 1). Berry size is slightly smaller than the other self-fertile cultivars, and significantly smaller than the female cultivars Fry and Supreme. Lane berry flesh is noticeably more firm than most other muscadines, and the skin adheres to the flesh, providing a unique berry texture. Due to the high firmness of the flesh, Lane berries hold well on the vine allowing growers to delay picking if necessary. Lane berries have a sweet and mild muscadine flavor and average 15.5% soluble solids over all harvests. The color of ripe Lane berries is a uniform black with no redness around the pedicel scar.

Symptoms of Pierce’s disease have not been observed on Lane at any location. Under a typical fungicide schedule, very low levels of infection of various fruit rots was demonstrated. Infection levels were similar to Supreme and much better than the bronze cultivars tested. Angular leaf spot was observed during the late season at levels similar to the other cultivars tested.

Lane is recommended as an early season black muscadine for the fresh market. Although Lane berries are smaller than Supreme, berry size is similar to other successful fresh market cultivars. Appearance of Lane in clamshells is excellent due to a consistent berry size and very dark, evenly colored berries. Due to its lower yields, Lane is only recommended for the early market, before other black muscadines become available. Currently, growers in south Georgia enter the early market by picking the very first berries to ripen on Supreme. This requires multiple harvests of Supreme resulting in high labor costs. Lane ripens relatively uniformly and can be harvested with two pickings at the beginning of the season. Growers can then move into Supreme as the main season cultivar when a greater percentage of its berries are ripe. The similar flesh quality between Lane and Supreme should facilitate their use in the same

market. Lane needs to be trialed more thoroughly in northern muscadine production regions before large plantings are made in these locations. The author may be contacted ([pconner@uga.edu](mailto:pconner@uga.edu)) for a list of nurseries licensed to sell Lane muscadine.

**Table:** Flower and fruit attributes of ‘Lane’ and standard muscadine cultivars at Tifton, GA, in years 2010-2014.

Cultivar	Flower type <sup>2</sup>	Berry color	Avg. day of first harvest	Berry weight (grams)	Berry diameter (mm)	Percent soluble solids
Lane	S F	Black	Aug. 4	9.2	25	15.5
Supreme	F	Black	Aug. 18	14.9	30	14.5
Hall	S F	Bronze	Aug. 2	10.3	26	15.6
Tara	S F	Bronze	Aug. 5	10.4	26	13.5
Fry	F	Bronze	Aug. 18	12.2	28	14.5

<sup>2</sup>SF = self-fertile (perfect), F = female.



**Photo:** Lane and Supreme berries in pint clamshells.



**Photo:** Ripe 'Lane' muscadines.



**Photo:** 'Lane' muscadines.

## 'Hall' Muscadine

Patrick Conner  
University of Georgia – Tifton Campus

Hall is a new muscadine cultivar released from the University of Georgia muscadine breeding program. Hall was selected in 2004 from a cross of Fry x Tara made by Dr. Melvin Hall. Hall was selected and tested as Ga. 1-1-48 by Dr. Patrick Conner who took over the muscadine breeding program when Dr. Hall retired. Hall muscadine was observed in a selection block from 2006 to 2010 and in replicated yield trials from 2010 to 2014. Hall was released in 2014 and a U.S. plant patent was applied for later that year.

Vines of Hall are self-fertile and have good vine vigor. Total yields from Hall at Tifton and Wray Georgia were lower than Triumph and equal to or better than the other check cultivars in years

3 through 5. In general yields appear similar to most self-fertile cultivars and better than most female cultivars. Importantly, Hall had excellent low levels of pedicel scar split and pedicel scar tear at both locations each year, giving a higher percentage of usable berries.

Average first harvest of Hall was August 2, which was similar to the early check cultivars (Lane, Tara, and Triumph), and two weeks prior to the first harvest of the main season check cultivar, Fry (Table 1). Average percent of the total yield of the first harvest was 47%, and percent soluble solids of the first harvest was 14.9%, which was similar to the other early cultivars tested. At maturity, the berries of Hall are round and average 10 grams in weight and 1 inch in diameter. Berry size is similar to the other self-fertile cultivars, but smaller than the female cultivar Fry. Skin of Hall is more friable than Fry and Triumph, but not as much so as Lane as measured by berry penetration work. Flesh firmness is more firm than Fry, but less than Lane. Hall berries have an excellent flavor and average 15.6% soluble solids. Hall berries have not demonstrated the off-flavor that is common in its parent 'Tara'. The color of Hall berries is a bright yellowish-green which is lighter and more yellow than other bronze cultivars.

Symptoms of Pierce's disease have not been observed on Hall at any location. Under a typical fungicide schedule, Hall was susceptible to various fruit rots including bitter rot, ripe rot, and macrophoma rot. Infection levels varied by year and were similar to the other bronze cultivars tested. Growers should expect to apply fungicides to control fruit rotting fungi and pick fruit promptly. Angular leaf spot was observed during the late season at levels similar to the other cultivars tested. Despite occasional problems with berry rot, percent usable yield and was as good or better than all check cultivars.

Hall is recommended as an early-season bronze muscadine for the fresh market. In

general, Hall is similar to its parent Tara, but has higher soluble solids content, a lighter and more yellow berry color, and unlike Tara, has not produced any off-flavors. The cold hardiness of Hall has not been determined, but young vines have done well in Watkinsville, GA. Hall is currently licensed for sale by Ison's Nursery (770.599.1727).



*Photo: Ripe 'Hall' muscadines.*



*Photo: 'Hall' muscadines.*

**Table:** Flower and fruit attributes of 'Hall' and standard muscadine cultivars at Tifton, GA, in years 2010-2014.

Cultivar	Flower type <sup>z</sup>	Berry color	Avg. day of first harvest	Berry weight (grams)	Berry diameter (mm)	Percent soluble solids
Hall	SF	Bronze	Aug. 2	10.3	26	15.6
Lane	SF	Black	Aug. 4	9.2	25	15.5
Tara	SF	Bronze	Aug. 5	10.4	26	13.5
Triumph	SF	Bronze	Aug. 4	9.5	25	15.8
Fry	F	Bronze	Aug. 18	12.2	28	14.5

<sup>z</sup>SF = self-fertile (perfect), F = female.



*Photo: Hall is more brighter and more yellow in color than other bronze muscadines.*

## \$66.5 Million Pledged For Produce Industry

*Previously published: Growing Produce, 3/10/2015*

Agriculture Secretary Tom Vilsack today announced the availability of more than \$66.5 million in funding for research and Extension activities to address the needs of America's specialty crop industry and solve critical organic agricultural production issues.

The grants will be funded through the [Specialty Crop Research Initiative](#) and the [Organic Agriculture Research and Extension Initiative](#). Both programs are administered by USDA's National Institute of Food and Agriculture (NIFA) and made available through the 2014 Farm Bill.

"Investments in projects to help organic producers and specialty crop growers are an important way USDA helps American farmers establish new business opportunities throughout the country," said Vilsack. "The projects funded by these programs will build on

USDA support for local and regional markets. And strengthening local markets grows the rural economy while improving access to healthy food for millions of children and supplying farmers markets, restaurants and other businesses with fresh, high-quality fruits and vegetables.”

Specialty crops are defined in law as “fruits and vegetables, tree nuts, dried fruits and horticulture and nursery crops, including floriculture.” The [Specialty Crop Research Initiative](#) (SCRI) develops and disseminates science-based tools to address the needs of specific crops.

The projects funded address research and extension needs for crops that span the entire spectrum of specialty crops production, from researching plant genetics to improving crop characteristics; identifying and addressing threats from pests and diseases; improving production and profitability; developing new production innovations and technologies; and developing methods to respond to food safety hazards.

Past projects include a project at Michigan State University to develop sustainable pollination strategies for U.S. specialty crops, a grant to the University of Arkansas to create genomic resources needed for spinach to develop resistance to the downy mildew pathogen, and a project at North Carolina State University that is developing genomic tools to produce low cost and high quality Christmas trees with properties desired by consumers.

SCRI pre-applications are due March 30, and full applications are due July 2. Check the [request for applications](#) for specific program requirements.

Additionally, in fiscal year 2015, NIFA will make \$25 million available through the Citrus Disease Research and Extension (CDRE) program, a subset of SCRI focused on research and extension activities to improve

citrus health. NIFA will issue a supplemental Request For Applications for CDRE subsequently.

The purpose of the [Organic Agriculture Research and Extension Initiative](#) (OREI) is to fund high-priority research, education, and extension projects that enhance the ability of producers and processors who have already adopted organic standards to grow and market high quality organic products. Priority concerns include biological, physical, and social sciences, including economics.

Past projects include a project at Utah State University to foster the development of economically viable and environmentally sustainable farming systems to address the issues facing western U.S. dry land organic wheat producers, a grant to Iowa State University to enhance the sustainability of organic systems by integrating crop and livestock production systems, and a project at Purdue University that addresses crop management issues faced by organic tomato producers.

Funded projects will aid farmers and ranchers with whole farm planning by delivering practical research-based information and will improve the ability for growers to develop the Organic System Plan required for certification.

OREI has eight legislatively-defined goals:

- Facilitating the development and improvement of organic agriculture production, breeding, and processing methods.
- Evaluating the potential economic benefits of organic agricultural production and methods to producers, processors and rural communities.
- Exploring international trade opportunities for organically grown and processed agricultural commodities.
- Determining desirable traits for organic commodities.
- Identifying marketing and policy constraints on the expansion of organic agriculture.

- Conducting advanced on-farm research and development that emphasizes observation of, experimentation with, and innovation for working organic farms, including research relating to production, marketing, food safety, socioeconomic conditions, and farm business management.
- Examining optimal conservation and environmental outcomes relating to organically produced agricultural products.
- Developing new and improved seed varieties that are particularly suited for organic agriculture.

A Notification of Intent to Submit an Application is due on April 1. Full applications are due April 30. Please see the [request for applications](#) for specific program requirements.

NIFA previously announced more than \$51 million in funding for the fiscal year [2014 SCRI grantees](#).

Additionally, NIFA announced more than \$19 million in funding for the fiscal year [2014 OREI grants](#).

Today's announcement was authorized by the 2014 Farm Bill. For more information, visit [www.usda.gov/farmbill](http://www.usda.gov/farmbill).

*Source: USDA*

## **Southern Region Small Fruit Consortium Awards \$107,255 in Grants for 2015**

Tom Monaco, Coordinator, SRSFC

The Steering Committee of the Southern Region Small Fruit Consortium (SRSFC) awarded \$107,255 in research and extension grants at their annual meeting held January

2015 in Savannah, GA. A total of 24 research and 4 Extension proposals were submitted

Eighteen research proposals totaling \$87,755 were funded and three extension proposals for a total of \$15,000 were funded. Also \$4,500 was awarded to the extension efforts in updating the IPM/Production Guides.

The IR4 Performance program provided a half match to five research proposals which added \$24,999 in additional funding so the total amount funded for 2015 was \$132,254

Research and Extension projects funded for 2015 can be viewed at

<http://www.smallfruits.org/SRSFCResearchFunding/2015.html>

## **A New Blackberry: Prime-Ark® Traveler Thornless, Primocane-Fruiting Blackberry**

'Prime-Ark® Traveler is the fifth release in a series of erect-growing, high-quality, productive, primocane-fruiting blackberry cultivars developed by the University of Arkansas Division of Agriculture. This is the first thornless, primocane-fruiting cultivar with shipping-quality fruit recommended for the commercial market. It produces medium-large berries, good yields, and has excellent plant health. It is intended to complement Prime-Ark® 45 for commercial use.

Prime-Ark® Traveler resulted from a cross of two Arkansas breeding selections, both thornless plants, and one expressing the primocane-fruiting trait, with the cross made in 2004. The selection APF-190T (the patent name for Prime-Ark® Traveler) was made in June, 2008. Testing was most extensively done at the University of Arkansas Fruit Research Station, Clarksville, with additional testing in other locations including California.



**Important information on Prime-Ark® Traveler (data from Clarksville, AR unless otherwise noted):**

**Type:**

Erect, thornless, primocane-fruiting.

**Ripe date:**

Average first floricanes harvest date for Prime-Ark® Traveler was June 5, usually with Prime-Ark® 45 and Natchez.

Primocane first-ripe date ranged from July 23 to August 8, 7-12 days earlier than Prime-Ark® 45. This primocane first-ripe date should be important in California to allow an earlier harvest season, and in more northern areas of the US where primocane cropping period can be reduced by early frost.

**Berry characteristics:**

Size/weight/shape: Berry average d 7-8 g, and is a semi-elongated berry that should be easy to pick and pack in clamshells. Double fruits have been uncommon.

Soluble solids (sweetness), acidity, flavor: Berries were usually 10-11% SS, and rated very good in flavor, equal to Prime-Ark® 45, and a little higher than Natchez. California SS values ranged from 10-12% SS. Berry acidity is reduced, below 1.0% titratable acidity and lower than Natchez and slightly lower than Ouachita and Prime-Ark® 45.

Berry firmness by compression was measured using a texture analyzer and results indicated Prime-Ark® Traveler had firmer berries than Natchez, Ouachita, Osage and Prime-Ark® 45, both prior to storage and after cold storage for 7 days.

**Postharvest Performance:**

Postharvest storage results have been good and consistent for Prime-Ark® Traveler, rated comparable to Ouachita and Prime-Ark® 45 in most comparisons.

This variety should perform well in the shipping market.

**Plant characteristics:**

Yield on floricanes for Prime-Ark® Traveler have either been comparable to Prime-Ark® 45 or lower, depending on year, ranging from 10,000 to 22,000 lb/year depending partially on the amount of primocane-fruiting that occurred the year prior. Primocane yields (from plants that produced a floricanes crop) in Arkansas have been comparable for these two varieties, with yields of 4,000 to 7,500 lb/acre. In California, Prime-Ark® Traveler provided good yields, but were not as high as Prime-Ark® 45.

Plant vigor and health have been rated high for Prime-Ark® Traveler, higher than for Ouachita, Natchez and Prime-Ark® 45. In some years the leaves of Prime-Ark® Traveler exhibited upward curling, but no disease symptoms were seen. No orange rust was observed on Prime-Ark® Traveler in any evaluations, even though infected plants were seen within 30-50 yards of data collection plots in each year of evaluation. Prime-Ark® Traveler berries or canes have not been observed to be susceptible to anthracnose in Arkansas. Plants of Prime-Ark® Traveler produce a more extended fruiting cluster on primocanes than Prime-Ark® 45, and double tipping of primocanes will likely be beneficial to enhance primocane yields.

Heat tolerance of primocane flowers and fruits appear to be similar to Prime-Ark® 45, or possibly slightly improved.

Chilling requirement of Prime-Ark® Traveler not verified, likely near that of Prime-Ark® 45 which is estimated to be 300 hours.

Prime-Ark® Traveler has completed virus testing and heat treatment at the USDA-ARS

Horticultural Crops Research Laboratory,  
Corvallis OR. Initial plants should be on the  
market by the Fall, 2015 for 2016 planting



*Photo: Prime-Ark® Traveler.*



*Photo: Prime-Ark® Traveler.*

## **Spring Caneberry (Raspberry and Blackberry) Chores 2015**

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. For  
IPM recommendations, see the Southeast  
Regional Caneberry Integrated Management  
Guide:

[http://www.smallfruits.org/SmallFruitsRegGuide/Guides/2015/2015BrambleSpray%20Guide12\\_22\\_14.pdf](http://www.smallfruits.org/SmallFruitsRegGuide/Guides/2015/2015BrambleSpray%20Guide12_22_14.pdf)

### Plant growth and development

- Plants deacclimate quickly
- Bud differentiation (additional flowers formed)
- Bud break
- Flowering
- Primocane emergence

### Pruning and trellising

- Finish pruning and make sure all floricanes are tied to the trellis before budbreak
- Remove canes from field to minimize spread of diseases
- Rotate shift trellises to horizontal position before budbreak; rotate to upright position immediately after flowering.
- Prepare for flower to fruit monitoring (see article in separate part of newsletter)

### Weeds

- Weed growth can be very vigorous at the same time as the bramble crop peaks
- Weed control is best done earlier in the season, with pre-emergent herbicides before harvest commences
- Hand-weed perennial weeds in and around plots

### Insect and disease scouting

- Growers with a history of cane diseases and/or mites often find that certain fungicides and oils are most effective just prior to bud break. The period of time in the spring when the plant is flowering is the most important season for control of insects and diseases. Know what your pests are and how to control them.

### Water management

- Test irrigation system and look for leaks
- Bramble plants need about 1"-2" water/week. This amount will be especially critical during harvest

Nutrient management (based on NCDA&CS recommendations, also see your state recommendations)

- Preplant
  - Lime, P2O5, and K2O

- Apply based on a recent soil test report.
- Take a soil test three to six months prior to planting to ensure that soil amendments are added appropriately.
- First year
  - N 20-50 lb/acre. Apply in a split application, 1-2 weeks after an early spring planting and then again 30 days later. Optimally, N can be applied through a drip system on a weekly basis during the growing season.
  - P and K. Should not be needed if applied pre-plant. If not done so in pre-plant, apply in bands around but not closer than 6 " from stems or via drip system on a weekly basis during the growing season.
- Second year N 35-60 lb/acre.
  - Apply in split application March and May. Spread around base of canes, not closer than 6". Alternately, N can be applied through drip system on a weekly basis through growing season. Implement post harvest application of N is leaf tissue analysis indicated N is low. Leaf tissue analysis should be taken 10-14 days after harvest. Do not continue addition of N into fall as it may not allow for adequate hardening off of tissue before cold temperatures occur.
  - P and K. 30-60 lb/acre. Apply as recommended according to tissue analysis.
- Third and subsequent years (see comments for second year)
  - N 60-80 lb/acre
  - P and K 30-60 lb/acre
- Make sure you have enough containers for fruit in the coming season
- Prepare advertising and signage for your stand
- Contact buyers to finalize orders
- Hire pickers
- Prepare signage for field orientation; it is easier to tell pickers where to go if rows are numbered
- Check buds and canes for cold damage
- Monitor and record peak flowering date for each variety

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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](mailto:brendaw@uga.edu).

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#### Marketing and miscellaneous

- Service and clean coolers