

Small Fruit News

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small fruits consortium

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Clemson University
NC State University
University of Georgia

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Research Reports

Comparison of two Fertilization Systems on Yield of Annual-Hill Culture Strawberries

Powell Smith
Clemson University

Summary. The performance of ‘Chandler’ and ‘Camarosa’ strawberries was studied in plots fertilized conventionally (conv.) or with Meisterblend® programmed-release fertilizer (MPRF). No significant difference in total yield or number of berries was observed. However, petiole nitrate concentration remained consistently high in the MPRF plots without additional nitrogen from fertigation and picking began one week earlier in the MPRF plots

Experimental setup. The commercial strawberry field consisted of three 3.3-acre zones planted with ‘Camarosa’ on the western portion of each zone, and ‘Chandler’ on the eastern portion of each zone. Planting was completed by October 20, 1999. Four plots were established in each of four sectors in each variety in the south zone and the north zone for a total of eight plots in each zone. Each plot consisted of five plants in each of two rows for a total of ten plants. The conventionally fertilized zone received 600 lbs./acre of 10-10-20 before bedding and mulch

laying. As indicated by petiole-nitrate concentration taken every two weeks beginning on March 3, 2000, this zone also received eight applications of 7.6 gallons per acre of 7-0-7 liquid fertilizer through the irrigation system. The Meisterblend® programmed release fertilizer (MPRF)-zone received 450 lbs./acre of 21-5-15 Meisterblend® programmed release fertilizer before planting and mulch laying. This zone received no liquid fertilizer, as the bimonthly petiole analyses showed consistently high nitrate-concentrations. All treatments were harvested twice-weekly beginning April 3, 2000 and continuing through May 13, 2000.

Results. No significant differences were detected comparing the means of the total weights of berries and total numbers of berries from the four plots in each variety in each fertilizer treatment.

	Camarosa Conv.	Camarosa MPRF	Chandler Conv.	Chandler MPRF
Yield	220.6	212.7	196.2	194.7
Number	366.0	342.5	391.5	370.0

The MPRF plots in each variety were ready to pick one week before the conventionally fertilized plots in either variety and the petiole nitrate concentration was consistently high in the

MRF plots without the addition of any liquid fertilizer. The total cost of conventional fertilization was \$136.00/acre and that of the MRF fertilization was \$270.00/acre.

Survey of Blueberry Viruses in Southern U.S.

Phil Brannen and Bill Cline
University of Georgia and North Carolina State

Southeastern blueberry growers are generally concerned about mummy berry and rots. However, if you were to ask them about blueberry viruses, they might not even realize that blueberries can be infected by viruses. We just don't think about viruses, because thus far, they have not been a major concern in southeastern production. However, blueberry viruses are known to cause severe yield reductions where present!

Southeastern blueberry producers are largely unaware of the symptoms associated with blueberry viruses, and they often are attributed to insect damage or nutrient deficiencies. Symptoms include "strapping" (elongated leaves), "witches' brooms" (shortened internodes, deformed leaves, and mosaic patterns (alternating dark and light green coloration) on the leaves. Sometimes the viruses don't produce many symptoms at all, but they can sap yield.

Danny Stanaland, county agent in Bacon County, identified blueberry shoestring virus and strawberry latent virus in south Georgia blueberry plantings in 2000. The extent of the infections was not determined. However, it was assumed that the blueberry shoestring virus was likely present in multiple plantings. In Michigan, this virus has caused losses as great as \$3 million in some years, and the virus can result in 25% yield losses on a regular basis. The shoestring virus was also observed in the "Duplin" variety from North Carolina in 1999.

The primary objective of this survey was to determine whether or not viruses were highly prevalent in the major blueberry production

regions of Georgia and North Carolina. A total of 55 symptomatic samples were collected from GA, and a total of 38 samples were collected from North Carolina. Samples were overnighted to Agdia, Inc. (Elkhart, IN) for analysis of viruses present. Agdia utilized the enzyme-linked immunosorbent assay (ELISA) technique to test for the presence of 16 viruses, which occur on blueberry. Without exception, none of the samples indicated the presence of blueberry viruses. While this did come as a surprise, it is encouraging. Many of the symptomatic plants may have resulted from herbicide injury; glyphosate damage can closely mimic viral symptoms. Alternatively, phytoplasmas or insects may cause similar symptoms. Assuming that the ELISA results were correct, this survey indicates that we may not have a major issue with viruses of blueberry in the Southeast -- yet. However, our southeastern propagation industry does not generally take precautions to prevent virus intrusion, such as testing mother plants, and viral spread could be an issue for us. The recent occurrence of shock virus in the Northeast demonstrates the potential danger; new viruses can "pop up" anywhere if the proper control methods (mainly cultural as related to testing of propagation material) are not utilized. Since blueberry aphids and dagger nematodes are major vectors of many blueberry viruses, the low or nonexistent numbers of these vectors in many southeastern plantings could explain the low levels of viruses currently observed in the Southeast. Also, higher temperatures may possibly have an effect on the spread and survival of blueberry viruses in the Southeast, but this is probably mere speculation at this point.

Despite the results observed in this survey, we can not become complacent in our approach to blueberry viruses. It would be wise for propagators to at least randomly sample and test the plants from which they will take cuttings. Also, when plants show viral symptoms, it would be of value to have the plants tested immediately, assuming that no herbicide damage or other explanation is available for the symptoms. As always, contact your local county

agent if you have questions on this or any other topic related to blueberry production.

Pesticide News

DuPont pulls Benomyl Registration

Benomyl (Benlate) is frequently used for disease control in caneberries, blueberries, grapes and strawberries. Distribution or sale of existing stocks by DuPont was not lawful after August 8, 2001. Sale or distribution by any person of existing stocks will not be lawful after December 31, 2002. The Environmental Protection Agency (EPA) believes that the end use of any remaining existing stocks of Benomyl products will likely end in 2003. At this time EPA is determining how long treated food containing residues of benomyl could remain in the channels of trade assuming that the last treatment occurred on December 31, 2003, and will set the expiration date accordingly.

The loss of Benomyl could be devastating especially to caneberry producers in the Southeast. Benomyl is a key product for the control of double blossom, one of the most serious fungal diseases in blackberries. Many major blackberry varieties like Shawnee, Choctaw, Triple Crown, and Black Satin are susceptible. Disease tolerant varieties like Apache and Arapaho show increased susceptibility to freeze injury in South Carolina. Benomyl is also critical for spur blight and cane blight control in raspberries. It will leave us with just two Botryticides, Rovral and Ronilan in raspberries. This could result in quick development of fungicide resistance, because cross resistance is likely between Rovral and Ronilan. That means if the fungus is resistant to one fungicide, it will also be resistant to the other.

Topsin-M is a material that metabolizes into MBC, the active ingredient of Benlate, thus it should have similar activity against caneberry diseases. However, Topsin-M is not registered for the use in caneberries. The IR-4 initiative has

recognized this problem and views a new registration of Topsin-M for caneberries as a top priority. IR-4 is a federal cooperative program established in 1963 to help the producers of minor crops obtain clearances for pest control materials on minor crops. The purpose of IR-4 is to work with farmers, agriculture scientists and Extension personnel to carry out research and petition the Environmental Protection Agency (EPA) in order to obtain tolerances for specific pesticide uses needed by minor crop producers.

Also, EPA continues to expedite new fungicides through its reduced risk initiative, which shortens the time required to register new chemicals and uses.

Full Registration for Switch 62.5WG

Switch™ 62.5 WG fungicide is now registered by the U.S. Environmental Protection Agency (EPA) for control of grey mold in strawberries. State registrations are pending in California and Florida. Registration of the material for the control of fungal diseases in blueberries and caneberries is pending.

Switch is a prepack mixture of two active ingredients, cyprodinil and fludioxonil. Cyprodinil is the systemic component of the product, which is taken up into the upper layers of the leave and fruits and is distributed to other parts of the plant. Fludioxonil is the residual component of Switch, which stays on the leaf and fruit surfaces to provide contact activity.

Fungicide trials from Michigan indicate that Switch also controls Anthracnose and Alternaria plant infections. However, the new material was not the best for Anthracnose fruit rot, but gave acceptable control. The preharvest interval is 0-days. Growers be aware: The label says that you cannot plant anything other than strawberries or onions for 12 months following the last application of Switch.

‘Savey 50DF’ Registered for Mite Control in Caneberries

Savey 50DF from Gowan Company is now registered for the control of two spotted spider mite, McDaniel spider mite, yellow spider mite and pacific mite in caneberries. The product is recommended at 4-6 oz/acre and restricted to one application per year. Applications may be made post harvest. For more information contact Rebecca Lamas, Gowan Company, phone (928) 819-1531.

Bramble Chores

Fall/Winter Work Schedule for Bramble Growers

Gina Fernandez
North Carolina State University

Pruning. Fall bearing (actually mid to late summer for most of us in NC) raspberries fruit at the top of the current season's canes ("primocanes"). The simplest way to manage these varieties is to mow them off at ground level during the dormant season. Be sure to mow them off close to the ground so that new shoots come from the roots and not from lateral buds on cane stumps. Blackberries and summer fruiting raspberries fruit on second year canes. During the winter prune out the spent floricanes from the previous season. The remaining primocanes are thinned 3-4 / ft².

Trellis. Make trellis repairs after plants have defoliated.

Weeds. 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 control. Crown borer and *Phytophthora* root rot control should be implemented in the fall if they are known to be a problem in your area. Check with your states agricultural chemical manual and local extension agent for labeled chemicals to control these pests. Heavily infested sites should be removed, as both of these pests will steadily weaken the planting. Apply liquid lime Sulfur or Bordeaux for control of Anthracnose in late winter or early spring.

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 me at Gina_Fernandez@ncsu.edu. Take soil tests to determine fertility needs for spring plantings. Prepare list of cultivars for next years new plantings. Find the commercial small fruit nursery list at <http://www.ces.ncsu.edu/depts/hort/hil/smfruit-index.html>.

Fertilizer. Place nitrogenous fertilizers in row before new canes emerge in spring. For raspberries: apply 500-800 lbs of 10-10-10 per acre in split applications. Apply half in Feb-March and the remainder in April-May. Spread uniformly across the row or side dress with half on each side of row in a 3 foot wide band. For blackberries: In established plantings apply 60 to 80 lb/acre Nitrogen in split or single applications. If using a split application, apply the first portion at bud break and the remainder just after harvest. Ammonium nitrate is the most common form of Nitrogen used on blackberries.

Marketing etc. Order containers for next season; make contacts for selling fruit next season; attend the North American Bramble Growers meeting Feb. 5-6, 2002 (see section ‘meetings’ in the ‘Focus’ category of this issue of Small Fruit News).

From the Plant Problem Clinics...

Margaret A. Williamson and Guido Schnabel
Clemson University

Shown below is a summary of small fruit samples received between January and September 2001 from the Plant Problem Clinics in South Carolina (SC), North Carolina (NC) and Georgia (GA)

HOST	DIAGNOSIS	CAUSAL ORGANISM	NUMBER OF OCCURENCES		
			SC	NC	GA
Blackberry	Cane blight	<i>Coniothyrium sp.</i>	1		
	Decline	Undetermined	1		
	Fire blight	<i>Erwinia amylovora</i>			1
	Leaf spot	<i>Cercospora sp.</i>			1
	Orange rust	<i>Arthuriomyces peckianus</i>		1	1
	Powdery mildew	Undetermined		1	
	Root borer	<i>Pennisetia marginata</i>	2		
	Root rot	Undetermined		1	
	Spur blight	<i>Phoma sp.</i>		1	
	Virus	Undetermined		1	
		Raspberry bushy dwarf			1
Blueberry	Anthracnose	<i>Colletotrichum acutatum</i>		2	
	Decline	Undetermined		1	
		Low nutrients	3		
	Leaf spot	<i>Cercospora sp.</i>		2	1
		<i>Septoria sp.</i>			4
	Mummy berry	<i>Monilinia vaccinii-corymbosi</i>			1
	Root rot	<i>Phytophthora sp.</i>	1		3
		<i>Phythium sp.</i>			5
	<i>Rhizoctonia sp.</i>			1	
	Stem blight	<i>Botryosphaeria dothidea</i>		3	1
Fig	Anthracnose	<i>Colletotrichum sp.</i>		2	
	Crown gall	<i>Agrobacterium tumefaciens</i>		1	
	Fruit rot	<i>Phytophthora palmivora</i>		1	
	Nematodes	<i>Meloidogyne sp.</i>		1	
Grape	Beetle damage	Undetermined	1		
	Bitter rot, Black rot	<i>Greeneria uvicola, Guignardia bidwellii</i>	2	7	
	Cane and leaf spot	<i>Phomopsis sp.</i>		2	
	Canker	<i>Botryosphaeria sp.</i>	1		
	Downy mildew	<i>Plasmopora viticola</i>			2
	Leaf blight	<i>Pseudocercospora sp.</i>		1	
	Pierce's disease	<i>Xylella fastidiosa</i>		2	3
	Powdery mildew	<i>Oidium sp.</i>	1	1	
	Ripe rot	<i>Colletotrichum sp.</i>		1	
Mayhaw	Blossom blight	<i>Monilinia vaccinii-corymbosi</i>			2
	Fire blight	<i>Erwinia amylovora</i>			2

HOST	DIAGNOSIS	CAUSAL ORGANISM	NUMBER OF OCCURENCES			
			SC	NC	GA	
Raspberry	Canker, Rust	Undetermined		2		
	Decline	planted too deeply	1			
		fertilizer burn suspected	1			
	Root rot	<i>Phytophthora sp.</i>		1		
Strawberry	Anthracnose	<i>Colletotrichum sp.</i>	1	19	3	
	Black root rot	<i>Pythium sp.</i>		3	2	
	Black spot	<i>Alternaria sp.</i>		1		
	Blight	<i>Phoma sp.</i>		1		
	Crown rot		<i>Fusarium sp.</i>		1	
			<i>Phytophthora sp.</i>	3	17	1
			<i>Rhizoctonia solani</i>		1	2
		Undetermined		2		
	Decline	low nutrients, low pH	1			
	Grey mold	<i>Botrytis cinerea</i>		8	4	
	Insect damage	Undetermined		2		
	Leaf blight	<i>Phomopsis obscurans</i>		3		
	Leaf blotch	<i>Gnomonia comari</i>	3	2		
	Leaf scorch	<i>Diplocarpon</i>		1		
	Leaf spots		<i>Cercospora sp.</i>		1	
		<i>Mycosphaerella fragariae</i>		2		
		<i>Xanthomonas fragariae</i>	1	2		
Powdery mildew	<i>Sphaerotheca macularis</i>	1	5	1		

Focus

Small Fruit News Favorites

Compiled by Guido Schnabel
Clemson University

Berries may help prevent heart attacks, reports Thomas J. Payne (The Northland Berry News, Volume 15, No. 2, Summer 2001)

Fall or early winter contact of glyphosate with blackberry canes or roots can impact yields, reports Herbert D. Stiles, VA Tech (Bramble, Volume 17, Issue 3, Fall 2001)

Managing grapevine canopy for better grapes, less disease, reports Tony Wolf, Virginia Cooperative Extension (The Fruit Grower News, Vol. 40, No. 9, September 2001)

Production of raspberries in the winter, reports David Himelrick, Auburn University (American Fruit Grower, September 2001)

Biotechnology may yield Pierce's disease solutions via resistant varieties (The Grower, August 2001).

Managing the glassywinged sharpshooter in vineyards, published by the University of California and the USDA:
http://www.ucr.edu/news/gwss/GWSS_brochure.pdf

Blueberry plants set in deep and narrow planting holes produce 40% more fruit, report A. Otterbacher and R. Skirvin, University of Illinois (for information e-mail skirvin@uiuc.edu The Fruit Grower News, Vol. 40, No.10, October 2001)

You may request a copy of one (or more) of the above articles by fax (call 864 656 2335) or by sending a stamped and self-addressed envelope to Janice Merck, Clemson University, Department of Plant Pathology & Physiology, 120 Long Hall, Clemson, SC 29634-0377. Don't forget to indicate which article you would like.

Meetings and Agent Training

Wine grape extension agent training short course. Mountain Horticultural Crops Research and Extension Center, Fletcher, NC, January 14-15, 2002.

Sponsored by the Southern Region Small Fruit Consortium. For further information contact Andy Allen (andy_allen@ncsu.edu) or Jim Ballington (jim_ballington@ncsu.edu).

Bramble production extension agent training short course. Sheraton Imperial Hotel, Raleigh, NC, February 5-6, 2002. Sponsored by the Southern Region Small Fruit Consortium and held in conjunction with the NABGA annual meeting. For further information contact Gina Fernandez (gina_fernandez@ncsu.edu) or Jim Ballington (jim_ballington@ncsu.edu)

Southeast Strawberry Expo/North American Berry Conference. Hosted by the North Carolina Strawberry Association and joining forces with the North American Strawberry Growers Association, the North American Bramble Growers Association and The International Ribes Association, Feb. 2-6 in Durham, NC (Contact information: Debby Wechsler, call 919 542-3687, ncstrawberry@mindspring.com)

2002 Georgia-South Carolina wine grape meeting. Sat., Jan. 12, 2002, Savannah Civic Center (Registration information: call 1-877-99GFVGA)

2002 Georgia blueberry meeting. Fri. and Sat., Jan. 11-12, 2002, Savannah Civic Center (Registration information: call 1-877-99GFVGA)

2002 Georgia-South Carolina strawberry meeting. Sat., Jan. 12, 2002, Savannah Civic Center (Registration information: call 1-877-99GFVGA)

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