

Mississippi *Vaccinium* Journal

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Where Do We Go From Here?

There was no doubt about it, 2015 was a strange and difficult weather year. Excessive rain followed by a lengthy drought has caused more than its share of headaches. However, weather is not the only thing to be concerned with when it comes to blueberries. The market for blueberries has not been good the last couple of years for many, especially the process market. Huge stockpiles of frozen berries have yet to be moved and the situation seems to be getting worse. The blueberry industry in Mississippi is certainly feeling the squeeze. Have blueberries been overplanted on a worldwide scale? Georgia has gotten big very fast, as have other regions. Fortunately, consumers still love blueberries, but they don't love worms in them so Stringer and Sampson are addressing that issue on Page 2. On a lighter note, the red foliage is starting to show up with the cooler weather and is covered on Page 3. Other interesting programs and publications of note are described on pages 4-6. And finally, a request for feedback on this newsletter is requested on Page 7.

Gulf South Blueberry Growers' Association Donates DVDs

The Gulf South Blueberry Growers' Association donated DVDs that they produced to the Mississippi State University Extension Service. The DVDs covered the basics of blueberry production as well as more advanced topics such as pest control, marketing, and government regulations. The DVDs were distributed to every county Extension office in Mississippi. Blueberries are grown in every county in the state; however, county Extension educators do not always have the expertise to give detailed advice on best management practices. Now, the county office can loan out the DVD to interested clients so that they can learn from watching the video. Once completed, they can be returned to the office. Methods for performing this are up to each individual office. The generosity of the Gulf South Blueberry Growers' Association is greatly appreciated and continues a strong working relationship with Mississippi State University Extension.

Evaluating Blueberry Germplasm for Resistance to Spotted Wing Drosophila

Stephen Stringer and Blair Sampson

USDA-ARS, TCHSL, Poplarville, MS 39470

Drs. Blair Sampson and Stephen Stringer are evaluating blueberry germplasm for resistance to the spotted wing drosophila, an important pest of blueberries. In the first year of the study (2014), the objectives were to develop an effective screening method for evaluating resistance in southern adapted blueberries to the spotted wing drosophila, and to evaluate representative cultivars and germplasm from the blueberry breeding and genetics research program at the TCHSL in Poplarville MS. The predominant types of blueberries under development include the hexaploid rabbiteye (*Vaccinium ashei* Reade = *V. virgatum* Aiton) and several hybrids containing some genes from wild rabbiteye blueberries, *V. constablaei*, and *V. corymbosum*; and southern highbush (*V. corymbosum* L. complex hybrid) derived with genes from *V. darrowii*, *V. elliotii*, *V. angustifolium*, *V. virgatum*, and/or *V. atrococcum*. A total of 88 genotypes were submitted for testing but due to time and labor constraints, only about half of those were included in the assay.

Drosophila suzukii (Spotted-Wing Drosophila abbreviated SWD) infestation present in the blueberry selection nursery and field evaluation site at Stone County, Mississippi was used to evaluate blueberry fruit from numerous genotypes for possible antibiosis. One hundred berries were sampled from 88 rabbiteye and southern highbush cultivars and selections and examined for the presence or absence of SWD feeding damage or egg laying. In laboratory bioassays using no-choice arenas, clutch size for SWD (number of eggs per fruit) as well as total brood per fruit were assessed after 3 days and these counts correlated with berry quality attributes that were independently recorded for each variety or accession before SWD infestation [berry weight, percentage soluble solids (Brix), and harvest seasonality (early-, mid-, and late-season harvest)].

Berry samples of these same cultivars and selections were provided to Blair Sampson for use in a ten replicated laboratory assays where berries were placed in 3 x 6 arrays (arenas) of specially constructed plastic bioassay chambers along with one or two fecundated female spotted-wing Drosophila flies. Interestingly, SWD females will misplace or abort some of their eggs by laying eggs, not inside the fruit, but on top of the berry surface, fully exposed to the air. These aborted eggs invariably shrivel and die. Hence, we developed a possible index that might more accurately detect antibiosis in a preferred fruit host. If these aborted eggs are related to some physical constraint imposed by host fruit, then we can use the ratio of viable to aborted fruit as an index of host suitability. We termed this index the "Oviposition Success Index" or OSI. The smaller the OSI value, the more antibiosis that a host fruit exhibits. Berry samples sometimes had to be refrigerated and, therefore, the effects of cold storage on SWD infestation and OSI were tested.

No antibiosis could be detected among blueberry or blackberry hosts tested in our experiments; SWD flies within 3 days lay anywhere from 5 to 10 viable eggs per host fruit. However, Bonita and Briteblue were the exception, with SWD egg loads that were three times higher than any other genotype tested. Although these two rabbiteye blueberries were kept in cold storage for the briefest time, their brix levels were optimal for SWD oviposition. Consequently, SWD fecundity (viable eggs) and total brood production was strongly associated with sugar levels in blueberry fruit. Almost all variation (97%) in overall early SWD reproductive success (total brood per berry) was attributable to the percentage soluble solids in host blueberry fruit. Sugar levels in blueberry, which are optimal for SWD females to lay viable eggs is ~14.0 – 14.5% soluble solids. Fruit could be refrigerated for at least 40 days before being used for bioassays.

Stringer and Sampson are applying for a grant to continue the SWD research and hope to screen over 50 *Vaccinium* species and over 200 accessions from the USDA-ARS *Vaccinium* repository in Corvallis, OR.

Fall Color in Blueberries

Eric T. Stafne, MSU-ES Fruit Specialist

Ah, fall. That time of year when a respite from oppressive heat and humidity comes to south Mississippi. Fall, to me, is the best time of year. Growing up in Michigan I appreciated the great leaf color show every year. If pressed, I will admit to missing that (but not the awful dreary weather that comes with it). Most of the plant species in south Mississippi are not known for their fall color. Sure, there are some Swamp Red Maple (*Acer rubrum*) and Sweetgum (*Liquidambar styraciflua*), but most don't have really good fall color. One primary reason for that is the lack of cold temperatures. Blueberries do have some fall color, some cultivars and species more so than others. But, let's talk more about why fall color happens in the first place.

Many blueberry leaves turn red in the fall — or so it seems. Actually the red pigments are there the whole time, it is just that the chlorophyll (green) overshadows the other colors. In the fall, these chlorophyll pigments degrade, leaving behind the red and orange colors. Chlorophyll breaks down in sunlight so the plant needs to continue synthesizing new chlorophyll to keep the green color in its leaves. The conditions that promote this are warmth and sunshine, both at their peak during summer. Part of the chlorophyll degradation is the plant preparing for winter — it is reallocating nutrients back to the root system. Since leaves are mainly disposable on deciduous species, it makes sense for the plant to take nutrients like Nitrogen and return it to a permanent plant structure. Once stored in the roots it can be reused in the next year.

Blueberries have anthocyanins in the leaves. Once the chlorophyll is lost, the leaves appear red due to the color spectrum of light it is absorbing. This is a natural process that helps the plant maintain leaves while it reallocates nutrient reserves to the root system. Of course there are times of the year when we don't want to see red leaves on blueberries, especially in the spring after a frost/freeze event, but seeing red during the fall is a natural, normal thing that portends the coming winter. Great red fall color can be seen on commercial blueberry cultivars, but also native *Vaccinium* species like *V. ellottii* and *V. darrowii*. Below is a photo of 'Springhigh', a southern highbush blueberry released from the University of Florida blueberry breeding program.

Many blueberry plants are still green here in south Mississippi. Many won't turn red, or at least not completely, before falling off the bush. Some cultivars retain their leaves throughout the winter. So much variation among blueberry cultivars and species! Enjoy the fall — while it lasts.



Economics of Organic vs Conventional Blueberry Production

A recent study in Washington state looked at the differences in organic vs conventional blueberry production. Below is a short excerpt from that study as well as a link to the final results:

“Washington State is the leading producer of organic blueberries in the United States, and recent data on acreage, production, and value are presented here to help growers assess entry into, or expansion of, organic blueberry production. From 2009 to 2012, organic blueberry acreage in Washington increased 130%, while production tripled. Nearly 75% of the acreage in the state is east of the Cascade Range. Washington organic blueberry producers reported a farmgate value of \$23 million for the 2012 crop, up from \$7 million for the 2009 crop. Recent average organic yields were lower than those reported by USDA-NASS for all blueberries in the state, which is partially due to the high proportion of young plantings. However, average organic blueberry market prices exceeded those reported by NASS for all blueberries. A large increase in supply of both conventional and organic blueberries is expected within the next few years because a significant portion of planted acres are not yet fully bearing and still more acreage is being planted. This could lead to a supply/demand imbalance that might depress prices.”

“ The value-added nature of organic production is evident with blueberries, as 12% of all blueberry acres in the state were organic in 2012, generating 17% of all production and 27% of all sales value. With Washington organic blueberries already contributing over \$23 million in sales per year, they are poised to be one of the more important economic crops in the state’s organic sector.”

To read the full study go to the link below:

[Trends and Economics of Washington State Organic Blueberry Production](#)

Whole-Farm Revenue Protection Pilot Program (WFRP)

Whole-Farm Revenue Protection (WFRP) provides a risk management safety net for all commodities on the farm under one insurance policy and is available in all counties nationwide. This insurance plan is tailored for any farm with up to \$8.5 million in insured revenue, including farms with specialty or organic commodities (both crops and livestock), or those marketing to local, regional, farm-identity preserved, specialty, or direct markets.

Policy

WFRP Pilot Policy ([16-0076](#)) (Aug 2015)

Handbook

WFRP Pilot Handbook ([16 18160](#)) (Sep 2015)

Other Information

[WFRP Pilot Fact Sheet](#)

[WFRP Pilot Lender's Fact Sheet](#)

[WFRP Pilot FAQs](#) (Aug 2015)

[WFRP Pilot Press Release](#)

[Producer Perspectives](#)

Modifications to WFRP for 2016

Training Materials

[Introduction to WFRP Pilot PowerPoint](#) (Aug 2015)

WFRP Pilot Comprehensive Training PowerPoint (Aug 2015)

Recordkeeping Aids for Direct Market Producers

Recordkeeping Aid for Direct Marketers with Price Information: [PDF](#) | [Excel](#)

Basic Recordkeeping Aid for Direct Marketed Commodities: [PDF](#) | [Excel](#)

Product Management Informational Memorandum

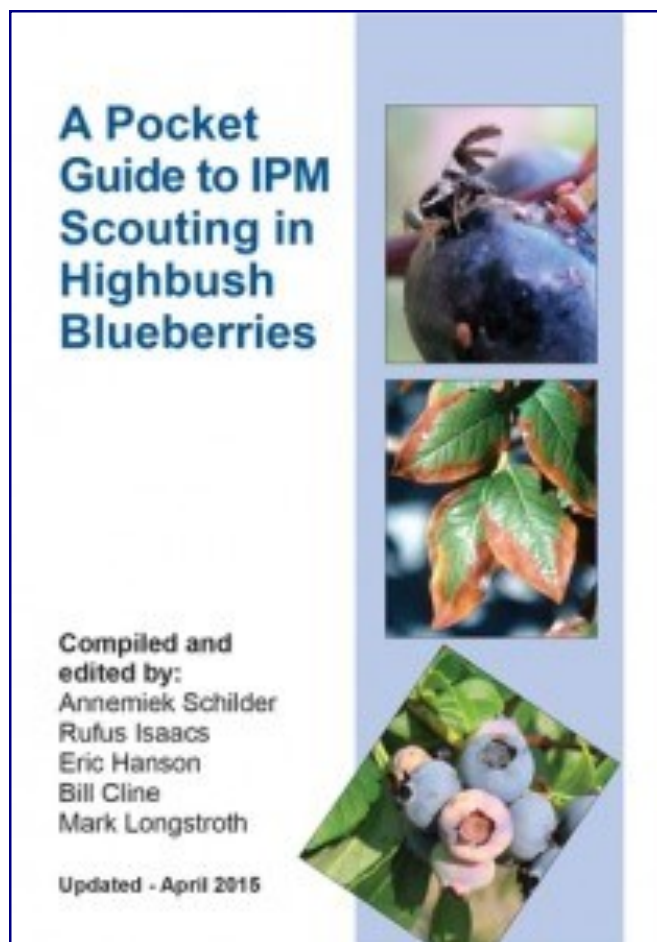
[Whole-Farm Revenue Protection \(WFRP\) Pilot Plan of Insurance Modifications](#) (Aug 27, 2015)

Contact Information

For more information, contact [RMA Public Affairs](#).

Pocket Scouting Guide revised in 2015

The popular Extension publication A Pocket Guide to IPM Scouting in Highbush Blueberries has been revised (April 2015) and is again available from Michigan State University. This third edition includes information on new pests that have emerged since the previous revision in 2008, most notably Spotted Wing Drosophila. The cost is \$19.00 each, with discounts for volume purchases. For more information, see: http://shop.msu.edu/product_p/bulletin-e2928.htm



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Feedback Requested!

Eric Stafne, MSU-ES

This issue represents the final issue for 2015. I have had a lot of fun putting these newsletters together and I hope they are useful and educational for you. As with many of our Cooperative Extension activities, feedback from those receiving information is very important. Therefore I would like to extend this opportunity to all who read this newsletter (and any of the past newsletters) to tell me what you liked about it or what needs to be improved.

Any feedback can be sent to me at eric.stafne@msstate.edu. I will read any response that I get and go through it carefully so that the next volume in 2015 is even better.

Thanks for reading the award-winning Mississippi Vaccinium Journal.

