MISSISSIPPI STATE UNIVERSITY EXTENSION

Mississippi *Vaccinium* Journal

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Editor:

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- Amir Rezazadeh
- Eric T. Stafne

Inside this issue:

Dry Times

The wild swings we have in the weather here are something else. Last year? Wet, wet, wet. This year? Dry, dry, dry. It makes life interesting, does it not? In this issue I report on some drought tolerance work we did a couple years ago. Also, since 2020 we have not had an in-person workshop, but (hopefully) that will change in 2023. An in-person workshop has been scheduled, but also a virtual workshop. These virtual workshops during the worst of the pandemic have proven popular and informative. The best part is we get to learn from some of the best speakers on blueberries from around the country and not just in our own backyard. So, come to one or both (they will have different presentations and presenters). And, let's hope for a little rain (or dare I suggest, snow?).

2023 Annual Blueberry Education Workshops

The Mississippi State University Extension Service will be hosting 2 workshops for blueberry growers in 2023 — an in-person workshop in Hattiesburg and an online workshop . *The dates and times for the in-person workshop will be January 24 from 1-4pm.* **The Virtual workshop will be January 26 from 2-4pm.**

Right now things are in the planning stages with more information to follow.

If you have received this newsletter via email, you will get notification of the workshop details. The workshop will also be advertised via other outlets as well. Stay tuned for more information.

Look on Pages 2-5 for information on committed virtual workshop speakers and their topics.

2023 Virtual Blueberry Workshop Speakers

Amanda Davis

Senior Faculty Research Assistant II—Berry Crops

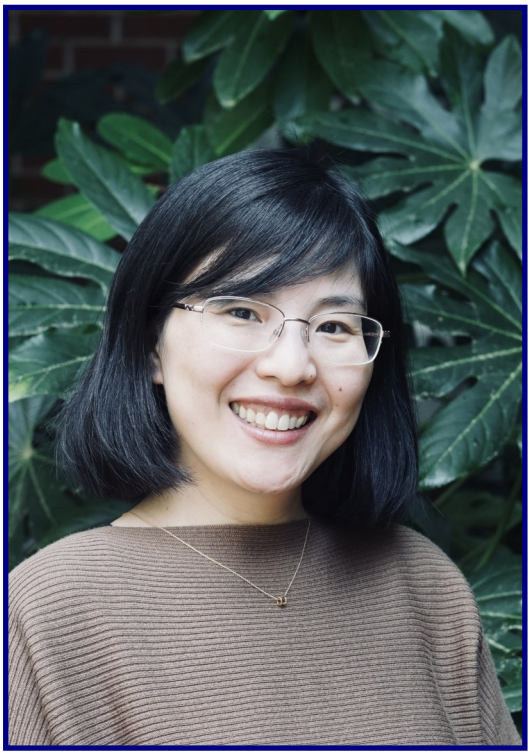
North Willamette Research & Extension Center

Oregon State University

Title: Splitting in blueberries: what do we know and what can we do?

Description: Blueberry splitting can be a major production problem for growers. We will review some of the causes, what we know and don't know about splitting, and outcomes of a research study conducted in Oregon that aimed to reduce splitting and improve fruit quality using a commercial biofilm product.

2023 Virtual Workshop, cont.



Dr. Sushan Ru

Assistant Professor of Small Fruit Breeding and Genetics

Department of Horticulture

Auburn University

Title: Blueberry breeding in Alabama – update on breeding, blueberry stem blight, and yield prediction

Description: I will present the status of the blueberry breeding program at Auburn University. Specifically, I will talk about breeding targets, germplasm collection, and ongoing research projects. Preliminary results on blueberry stem blight screening and high-throughput yield prediction will also be presented.

2023 Virtual Workshop, cont.

Dr. Joshua VanderWeide

Assistant Professor

Department of Horticulture

Michigan State University

Title: Effects of Plant Growth Regulators on Blueberry Ripening Rate and Fruit Quality

Description: Fresh blueberry pricing is determined by market demand at a particular harvest date. In Michigan, a significantly earlier harvest would increase the market price of late-season fruit before imported berries arrive. Two popular varieties were subjected to treatments using plant growth regulators (PGRs) involved in the endogenous ripening process with the goal of advancing maturity compared to an untreated control treatment. Aggregate berry samples collected during ripening were evaluated for individual weight, diameter, firmness, total soluble solids, pH, and titratable acidity. Additionally, individual berries were also collected at harvest maturity to evaluate the uniformity of individual berry weight, firmness, and total soluble solids. The impact of these PGRs on blueberry ripening rate and fruit quality will be discussed. Future evaluations will include the quantification of anthocyanins and aroma volatiles in both cultivars.

2023 Virtual Workshop, cont.

Dr. Zilfina Rubio Ames

Assistant Professor & Small Fruit Extension Specialist

University of Georgia

Tifton Campus

Title: Is Sap Analysis a New Tool to Determine Plant Nutrient Status?

Description: Recently producers had added sap analysis to their routine soil and leaf samples. Sap analysis are generally performed at overseas laboratories, which provide growers with minimal guidance on how to interpret the results or relate them to soil or leaf sample analysis. Educating growers on how to interpret sap analysis to adjust fertilization management practices can help growers to better manage fertilization, reduce production cost, and increase fertilizer use efficiency.

2023 Mississippi Education Workshop

Where?

MSU Forrest County Extension Office

952 Sullivan Dr, Hattiesburg, MS 39401

When?

Tuesday, January 24, 2023 from 1-4PM

Who? (So far)

Dr. Guihong Bi — Mississippi State University

Topic: Containerized production in high tunnels

Dr. Blair Sampson — USDA-ARS Poplarville

Topic: The latest on SWD and pollination

Dr. Michael Goblirsch — USDA-ARS Poplarville

Topic: Using Artificial Intelligence (AI) to develop a monitoring tool of honey bee visitation of southern highbush and rabbiteye blueberry in real-time

Dr. Stephen Stringer — USDA-ARS Poplarville

Topic: 'USDA-Spiers' rabbiteye blueberry

Dr. Eric Stafne — Mississippi State University

Topic: Drought tolerance in blueberry

Davis Edwards — Mississippi Department of Agriculture and Commerce

Topic: What You Need to Know About Inspections

How much?

Free

Drought and Blueberry Bushes

Eric T. Stafne (MSU) and Amir Rezazadeh (University of Florida)

South Mississippi is one of the rainiest locations in the continental U.S., but what a difference a year can make. Last year some locations had 100 inches of rain for the year, whereas this year is far less. The summer was very dry, especially late. Dry periods are not always bad (they can help reduce fungal disease pressure), but at the wrong times they can prove detrimental to the bush. Since fruiting buds are initiated and develop in the late summer and early fall, drought during this time could potentially reduce the number and viability of those buds. Any early defoliation from drought (or heavy disease infestations) can lead to poor fruiting bud development. Therefore, irrigation during hot, dry conditions would prove beneficial.

There is little good information on which cultivars are the most drought tolerant. So, a couple years ago my post-doc at the time (Dr. Amir Rezazadeh, now at the University of Florida) performed an assay with 2 rabbiteye cultivars (Premier and Climax) and 3 southern highbush cultivars (Star, Rebel, Springhigh). A description of the experiments follows:

Fully developed leaves were placed in an airtight plastic box containing a salt solution for seven hours. This provided a controlled environment to study leaf water loss. Drought tolerance differed significantly between rabbiteye and southern highbush blueberries cultivars may indicate different sensitivities to dehydration. Despite having the highest stomatal density, 'Rebel' and 'Springhigh' lost the least amount of water, indicating they were least sensitive to dehydration. Application of abscisic acid (ABA) before the experiment decreased the amount of water loss in leaves, indicating the effectiveness of the assay to detect different responses of leaves to dehydration. Water loss was significantly affected by leaf age as younger leaves lost more water compared to intermediate and old leaves. A leaf dehydration assay can be used as a simple and reliable method to compare plant responses to water stress among blueberry cultivars.

While an assay such as this doesn't give us certainty of a cultivars drought tolerant under field conditions, it does give us a starting place to look further.

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Drought and Blueberry Plants, cont.

Two interesting figures from the study are below. The first shows water loss over time for each cultivar. The two rabbiteye cultivars had the greatest water loss over the 7 hours when compared to the southern highbush cultivars. It could mean that rabbiteye cultivars are generally less tolerant of drought than southern highbush. Previous studies have also indicated this trait in southern highbush blueberry bushes.

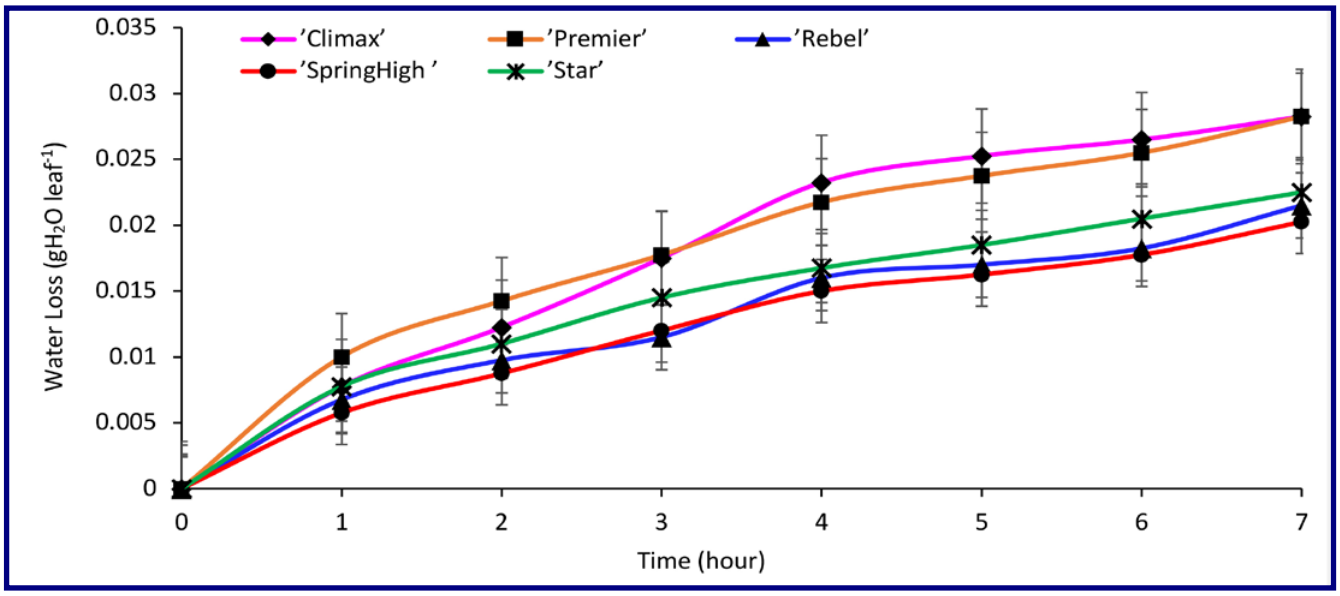

Fig. 1. Water loss per leaf in the dehydration assay. Each data point is presented as the mean ±SE.

On the next page you will see the different between leaves of different ages. Since late in the summer and early fall a bush will have fewer new leaves, we can see this as a potential benefit vs. having many new leaves.

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Drought and Blueberry Bushes, cont.

The second figure shows how water loss differs among leaves of different ages. Young leaves lose water faster than other leaves, especially intermediately-aged leaves. New leaves are mostly produced early in the season, so by the end of summer they fall into the intermediate or old leaf stage and are more tolerant of drought conditions.

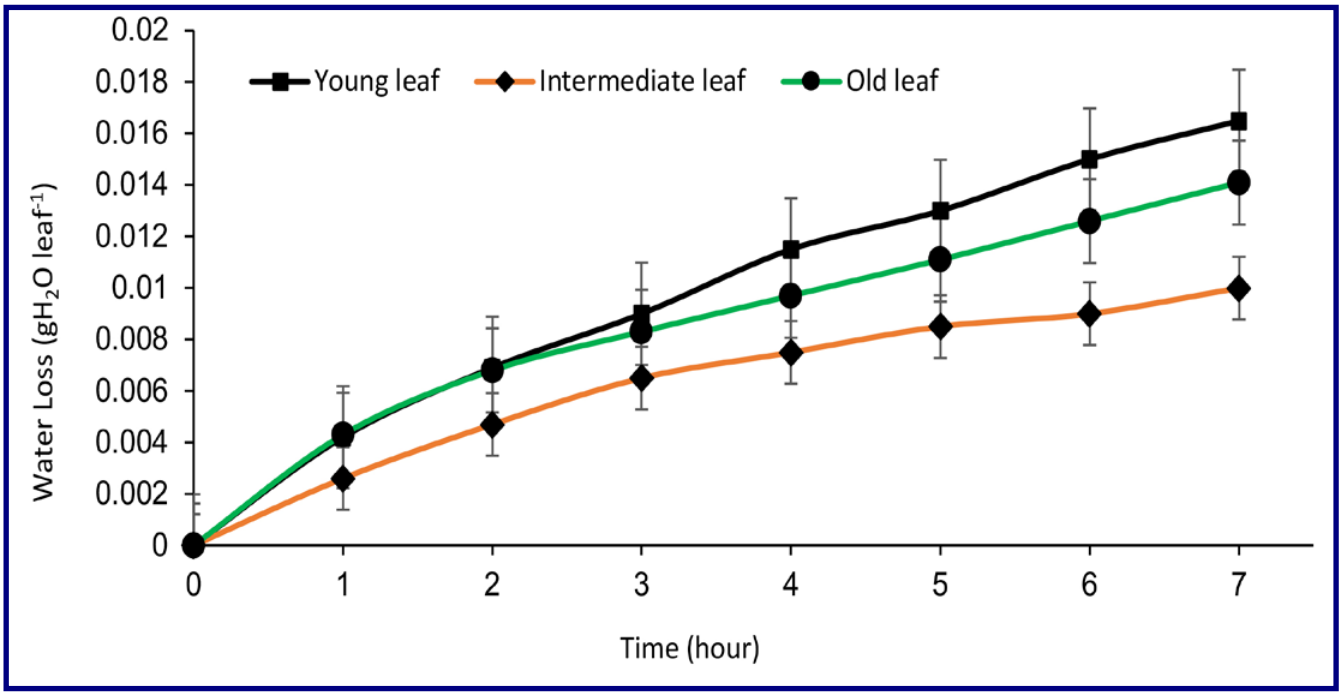

Fig. 2 The effect of leaf age on water loss in the leaf dehydration assay. Young leaves were detached from third to fourth nodes, intermediate from fifth to sixth nodes, and old leaves from tenth to twelfth nodes. Each data point is presented as the mean ±SE.

You can read the entire study here: http://fshs.org/wp-content/uploads/2021/05/2020-FSHS_PROC_FINAL.pdf (starts on page 51 of the PDF. Page number is 25), or I can send it to you directly via email. We plan to continue this work on more cultivars in the future.

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Feedback Requested!

Eric Stafne, MSU-ES

This issue represents the final issue for 2022. I hope these newsletters 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 2023 is even better.

Thanks for reading the award-winning Mississippi Vaccinium Journal.

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