

Southern Region Small Fruit Consortium Final Report Research

Title: Evaluation of Southern Highbush Blueberry Varieties for Yield and Fruit Quality throughout the Louisiana Harvest Season

Grant Code: SRSFC Project # 2021 R-27

Grant Period: March 1, 2020-February 28, 2021

Principal Investigator:

Kathryn Fontenot, 104 Sturgis Hall Baton Rouge LA 70803, kkfontenot@agcenter.lsu.edu

Co-Principal Investigator:

David Picha, 104 Sturgis Hall Baton Rouge LA 70803, dpich@agcenter.lsu.edu

Public Abstract

Ten cultivars of southern high bush blueberries were grown and evaluated for total yield and average berry size. Shrubs were planted in October 2018 from 38 count cells except 'Snowchaser' which shipped in 5.5-inch square pots. Cultivars were selected based on their low to no chill hour requirements as they were established and maintained in Baton Rouge, Louisiana. The liners were planted in 45-gallon containers filled only with pine bark from Phillips Bark, Brookhaven MS. In the spring of 2019, 2020 and 2021, plants were fertilized with Nursery Special 12-6-6 and top-dressed with Ironite.

All berries were removed in the spring 2019 to allow for proper plant establishment. Yield was measured in the spring seasons of 2020 and 2021. Data was collected twice a week on yield per shrub (10 replicate plants per cultivar) and average berry size (diameter mm) on 10 berries per shrub per harvest. 'Snowchaser' was the earliest maturing cultivar in the spring of 2020; however, phytophthora rot and a hard freeze killed half of the 'Snowchaser' plants in 2021. Yield data collection began in March 2020 and in February of 2021. These harvest dates are encouraging as most Louisiana commercial blueberry production is from Rabbiteye types which normally mature May through July. Aside from severe disease onset in 'Snowchaser', the other nine cultivars look promising for home production and 'Arcadia' and 'Star' may be suitable for commercial production in south Louisiana.

Introduction

Rabbiteye blueberries are the predominate cultivars grown in Louisiana. Very few Louisiana commercial producers are currently growing southern highbush blueberry cultivars, and those doing so are growing the shrubs in containers using drip irrigation. The primary types of southern highbush blueberries currently grown in Louisiana are 'Jewel', 'Emerald', and 'Star'.

Objectives

The objectives of this extension demonstration were to evaluate 10 cultivars of southern highbush blueberries for:

- Yield data
- Berry size
- Plant's ability to survive Louisiana's environment

Materials and Methods

All cultivars were ordered from Fall Creek Nursery in 38 count plugs except for the cultivar 'Snowchaser' which came in 5.5 square inch pots and were roughly 8 inches tall upon arrival. Ten shrubs of each cultivar were planted into 45-gallon containers in October 2018. Prior to planting, containers were filled with pine bark fines from Phillips Bark and top dressed twice a year with Ironite (1-0-1) 8% calcium, 5% sulfur, 20% iron, and Nursery Special (12-6-6) slow-release plant food. All berries were removed in 2019. Plants were harvested twice weekly from March 10, 2020-June 12, 2020, and again February 22, 2021-May 14, 2021. Harvest ended early in 2021 because berries were stolen off the plants. The trial was conducted at the Hill farm Teaching Facility located on LSU's main campus in Baton Rouge, Louisiana. Despite no harvest signage and the need to remove bird netting to harvest, we found a group of 5 people who had harvested not only all the mature blueberries but also all the green berries from our plants. Unfortunately, they were collected in 5-gallon buckets so we could not decipher which berries belonged to which shrub. Therefore the 2021 harvest ended early. While this is a huge problem for our data collection, it also points to the issue that non-horticulturalists need more training on how to harvest crops. This group of individuals did not understand that green blueberries will not continue to maturing after picked from the shrub. Maybe an extension publication from the SRSFC on how to determine ripeness and perfect quality of berries would be a good addition to our publications. In addition to theft, phytophthora rot became a major problem soon after blueberries were planted. To diminish disease pressure, containers were elevated onto pavers to reduce time spent in standing water. The Hill farm location is relatively flat. However, heavy rains will pool water in certain areas of the farm. Ridomil Gold was drenched into each container in the spring 2020 and 2021 seasons. Two layers of Agribon® (Ag 30 medium weight 4-6°F frost protection) covers were placed on plants in the early spring 2021 to protect from a 10-day freeze event. Bird netting was placed over all shrubs at fruit initiation until final harvest in the springs of 2020 and 2021. As the berries began to mature we would collect only the ripe fruit weekly from each individual shrub. The fruit weight was collected. Additionally we selected 10 random berries from each shrub and measured their diameters using calipers.

Results and Discussion

'Atlas Blue', 'Arcadia', 'Star', and 'Ventura' survived Louisiana's harsh growing conditions and resisted phytophthora rot through 2021. 'Arcadia' and 'Jewel' consistently produced top yields over both years (Tables 1 and 3). 'Ventura', 'Arcadia' and 'Star' consistently produced large berries over both years. However, all cultivars were similar in size except for 'Snowchaser' (Tables 2 and 4). 'Snowchaser' was the earliest yielding cultivar in both years but was not resistant to phytophthora rot and had >50% mortality. 'Ventura' warrants further research as half of the shrubs were subjected to greater amounts of shade compared to other cultivars, for the 2022 season we removed the cultivar 'Snowchaser' and placed the 'Ventura' shrubs in the positions of the 'Snowchaser' shrubs as they would receive more sunlight.

Directly behind our small 4 acre farm is a tall alumni center and hotel. The taller buildings shaded just the very back rows of our trial casting afternoon shade on the Ventura shrubs only.

Conclusions

- 'Atlas Blue', 'Arcadia', 'Star', and 'Ventura' were the only varieties to 100% survive Louisiana's harsh growing conditions and resisted phytophthora rot through the end of the 2021 harvest.
- 'Arcadia' and 'Jewel' consistently produced top yields over both years 2020-2021.
- 'Ventura', 'Arcadia' and 'Star' consistently produced large berries over both years. However, all cultivars were similar in size except for 'Snowchaser'. 'Snowchaser' was a smaller sized berry. But we hypothesize if we had a high tunnel over this crop and the water did not drain towards this side of the canyon, we would have seen better survivability of 'Snowchaser' and maybe even larger fruit size.
- 'Snowchaser' was the earliest yielding cultivar in both years but was not resistant to phytophthora rot and had >50% mortality.
- 'Ventura' warrants further research as half of the shrubs were subjected to greater amounts of shade compared to other cultivars.

Impact Statement

This research from the LSU AgCenter generated data useful for commercial and home blueberry production. Ten varieties of Southern Highbush blueberries were evaluated. The data from this study has been presented at field days, the annual American Society for Horticultural Science meeting, Farm Bureau Conventions, and individual farmer meetings, as well as to local plant groups interested in blueberry production. The outcomes of this project have helped us build interest in local wholesale nurseries beginning to consider carrying southern highbush blueberries for purchase to commercial producers and home gardeners.

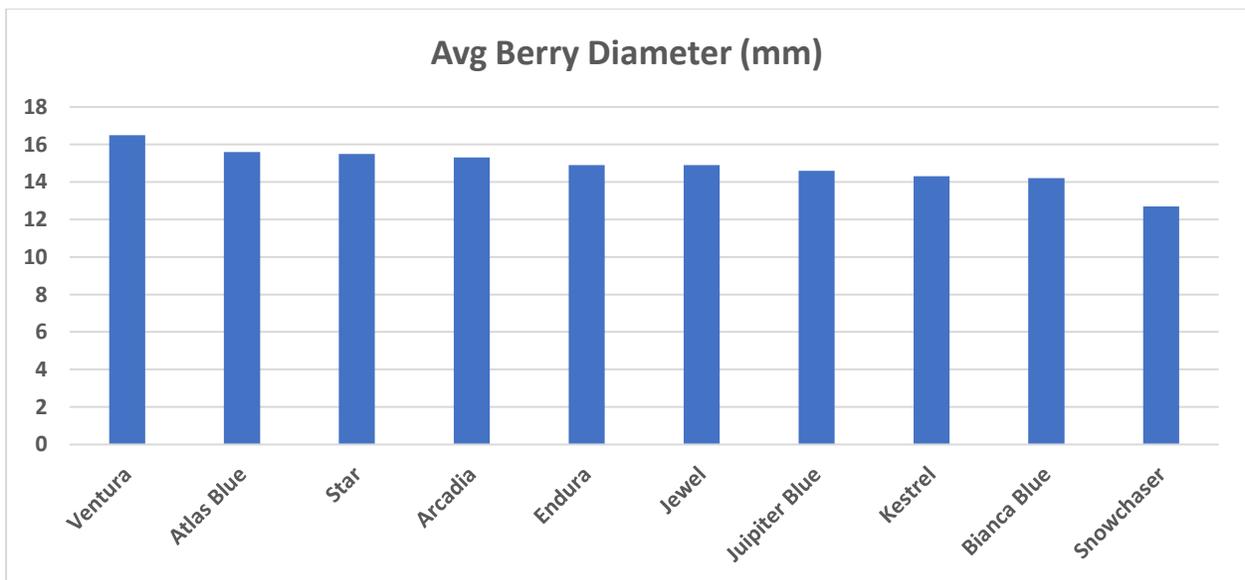
Tables

Table 1. 2020 Production of Southern Highbush blueberries between March 10-June 12, 2020



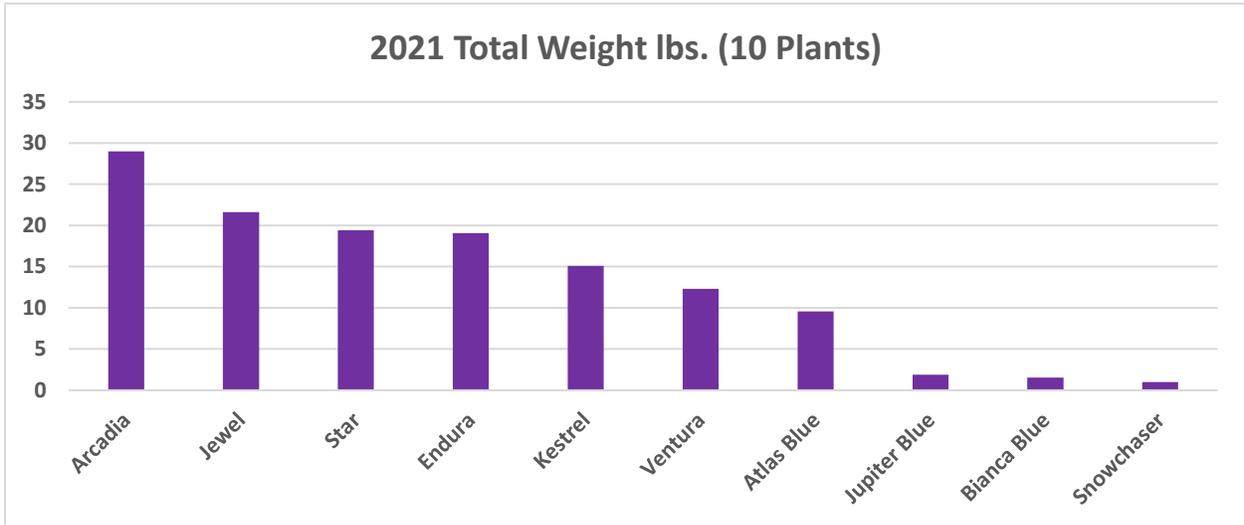
N= 10 plants/ variety

Table 2. 2020 Average diameter of Southern Highbush Blueberry fruit.



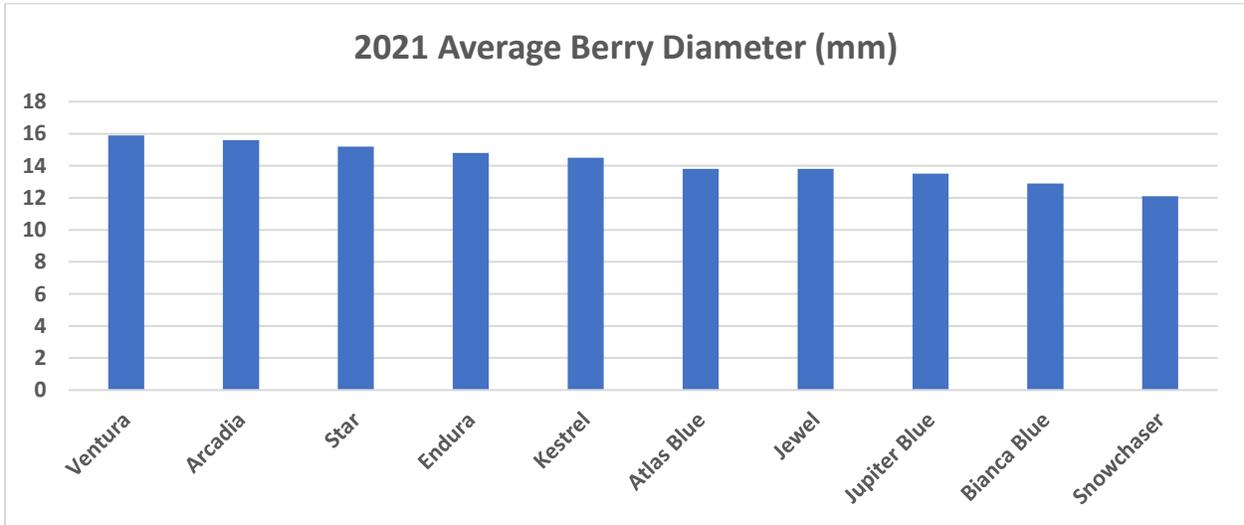
N= 10 berries per plant at each individual harvest date.

Table 3. 2021 Production of Southern Highbush blueberries between February 22,- May 14, 2021



N= 10 plants / variety. By the end of the 2021 season, Bianca Blue had 7/ 10 plants surviving, Jupiter blue had 5/ 10 plants surviving, Snowchaser had 4/ 10 plants surviving, Endura had 8 / 10 plants surviving, Kestrel had 9 / 10 plants surviving, and Jewel had 8/10 plants surviving.

Table 4. 2021 Average diameter of Southern Highbush Blueberry fruit



N= 10 berries per plant at each individual harvest date.