Blackberry Advanced Breeding Line Trial: Bringing New Cultivars to NC

Karen Blaedow[1], Jeff Chandler[2], Gina Fernandez[3] and John Clark[4]

[1]Henderson County Extension Agent, NC State Cooperative Extension, 100 Jackson Park Drive, Hendersonville, NC 28791

[2]Director, Mountain Horticultural Crops Research & Extension Center, 455 Research Drive, Mills River, NC 28759

[3]Distinguished Professor, NC State University, 260 Kilgore Hall, Box 7609, Raleigh, NC 27695

[4]Distinguished Professor, University of Arkansas, PTSC 00307, Fayetteville, AR 72701

Abstract

In 2018, ten advanced breeding lines from the University of Arkansas' breeding program were planted at the Mountain Horticultural Crops Research and Extension Center in Mills River, NC to be evaluated for commercial suitability in Western North Carolina. The objective of the project is to help farmers identify the best genetics for environmental and market conditions in the mountains. Throughout the growing season each blackberry line was evaluated for overall viability, winter hardiness, harvest windows, fruit quality, and productivity. Results from the trial will be presented at the Annual North Carolina Commercial Blackberry and Raspberry Growers Association Meeting and Mountain Horticultural Crops Research and Extension Center field days. Trial outcomes will help growers identify highly adapted varieties to plant in the future to stay competitive and successful in the blackberry industry.

Materials and Methods

Seven floricane-fruiting and three primocane-fruiting varieties were planted in 2018 on black plastic with drip irrigation in five-plant plots 15 feet long with 5 feet separating each line. Plants are trained on a V-trellis system with metal T-post and 12 gauge high tensile wire and are maintained using standard commercial recommendations. Phenology data including budbreak, full bloom, green fruit, ripe fruit and harvest length are collected for each breeding line. In addition, across 3 harvest dates, a 25 berry subsample was randomly selected from each line and weighed to estimate average fruit weight and size. Soluble solids were also determined for each subsample using a digital refractometer (model PAL-1; ATAGO) and fruit length was measured using a digital caliber (model 01407A; NEIKO). Winter survival, overall plant health and vigor was assessed for each line and fruit was evaluated for flavor, firmness, white duplets, and uniform shape.

Results







Caddo
- Floricane Type
- Ripening Date: Early June
- Yield: 19,000 lbs/acre
- Flavor: Great
- Avg Brix: 10.3
- Size: 0.33 oz
- Notes: Recently Released; Excellent Plant Health

Ponca*
- Floricane Type
- Ripening Date: Early June
- Yield: 18,000 lbs/acre
- Flavor: Very Sweet
- Avg Brix: 11.3
- Size: 0.25 oz
- Notes: Recently Released; Short Internodes

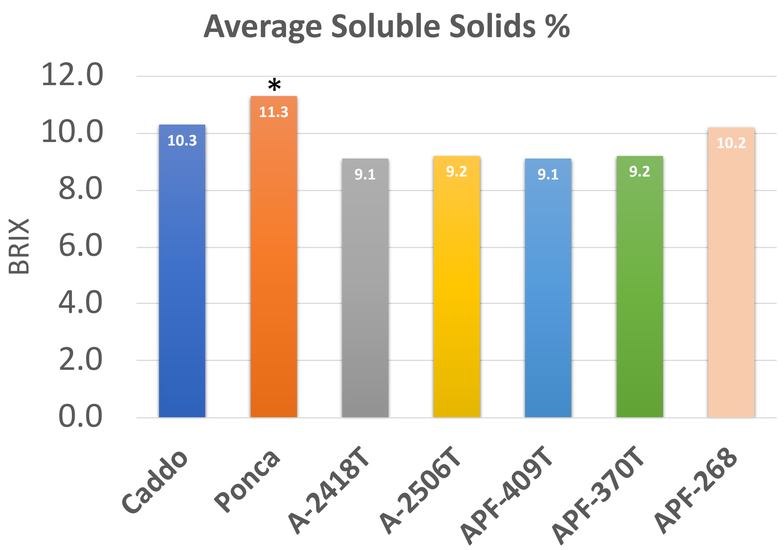
A-2418T
- Floricane Type
- Ripening Date: First week of July
- Yield: 17-19,000 lbs/acre
- Flavor: Tart
- Avg Brix: 9.1
- Size: 0.26 oz
- Notes: Late Harvest; Possible Navaho Replacement

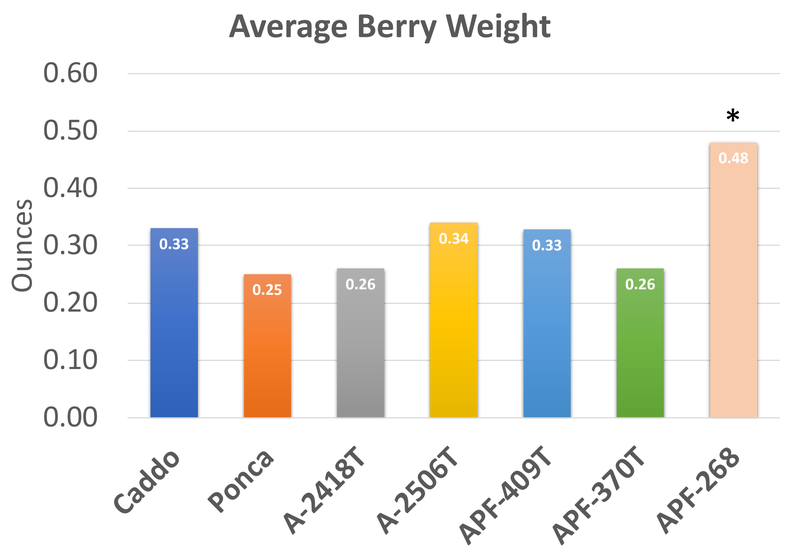
A-2506T
- Floricane Type
- Ripening Date: Mid-Late June
- Yield: 20,000 lbs/acre
- Flavor: Good
- Avg Brix: 9.2
- Size: 0.34 oz
- Notes: Short Internodes

APF-409T
- Primocane Type
- Ripening Date: Last week July
- Yield: 14-20,000 lbs/acre
- Flavor: Good
- Avg Brix: 9.1
- Size: 0.33 oz
- Notes: Floricane Fruit Too Early

APF-370T*
- Primocane Type
- Ripening Date: August
- Yield: 14-20,000 lbs/acre
- Flavor: Low Acid
- Avg Brix: 9.2
- Size: 0.26 oz
- Notes: Very Firm; Good Potential for Double Cropping

APF-268
- Primocane Type
- Ripening Date: August
- Yield: 25-30,000 lbs/acre
- Flavor: Variable
- Avg Brix: 10.2
- Size: 0.48 oz
- Notes: Very Vigorous, Thorns





Conclusions

Observations and data collected in 2019 identified two breeding lines of significant interest for commercial production in NC. Ponca produced fruit early in the season and exhibited superior flavor above all the others in the trial. Caddo is also early, and had large fruit and excellent plant health. Among the primocane-fruiting types tested, APF-370T showed the greatest potential for double cropping as well as excellent berry firmness and shelf-life. In terms of vigor, fruit size and yield potential, APF-268 excelled above the other lines in the trial. Currently APF-268 is not being considered for release because it lacks the thornless trait and therefore is difficult to manage. The advanced breeding line trial will continue to be evaluated in 2020 with additional parameters such as fruit shelf-life and yield potential being the main areas of investigation. Yields/acre are courtesy of the University of Arkansas.