

Annual Report of **Establishment of a Blackberry Cultivar Trial to Assess Important Attributes of Fresh Fruit, Juice, and Wine for Promotion of Name Recognition in the Marketplace** (2008) Stafne, McGlynn, Lucas, and Clark

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Progress:

Funds from the grant were deposited for use on March 24, 2008. Once available, plants were ordered from Sakuma Bros. Unfortunately, 'Kiowa' was not available due to virus problems; therefore 'Tupy', a Brazilian cultivar with University of Arkansas germplasm in its parentage was selected as a replacement. 'Natchez' was also substituted for 'Navaho'. Availability of 'Natchez' was unknown at the time of the grant proposal submission, and therefore not included. Since 'Natchez' is a new release it is important to have it included in this trial rather than an older, proven cultivar. Plants were received in late July and immediately transferred to larger pots to increase size. Planting will take place in spring 2009. Fall planting in Oklahoma can be problematic due to wide temperature swings that may predispose plants to serious freeze damage; therefore plants are being stored in pots in a protected location until planting in March of 2009.

The land where the planting will be is prepared, with late summer and early fall sprays done to kill bermudagrass and other weed species. Soil tests we completed to determine the need for amendments like Phosphorous (an amendment of 50 lbs/acre of  $P_2O_5$  was made). Results indicated adequate amounts potassium. Nitrogen will be added after planting in the spring. Soil pH was adequate as well (6.2). A drip irrigation system has been installed and is ready for the spring planting.

Total phenolics (TP), Flavonoid (F), Anthocyanin (A), and anti-inflammatory tests are currently being conducted and results are pending. The samples were taken from two different cultivars, 'Apache' and 'Ouachita' at two locations (Clarksville, AR and Broken Arrow, OK). Another location will be added in 2009 (Pawnee, OK). Fruit was not available at this location on both cultivars in 2008. Initial results for TP indicate that location possibly does not affect cultivars similarly. Total phenolic levels (mg/100g) for 'Ouachita' were 287.8 for the Oklahoma sample and 291.4 for the Arkansas sample. However, for 'Apache' the Oklahoma sample was 351.1 vs. 319.5 for the Arkansas sample. Differences between cultivars were significant ( $P = 0.0013$ ), but not between locations ( $P = 0.1782$ ). Flavonoid levels (mg/100g) for 'Ouachita' were 105.4 for Oklahoma and 100.9 for Arkansas. For 'Apache', F levels were 100.7 for Oklahoma and 89.3 for Arkansas. None of the main effects were significantly different. Anthocyanins (mg/100g) registered at 33.4 for Oklahoma 'Ouachita' and 29.0 for Arkansas 'Ouachita'. For 'Apache', A levels were 47.9 for Oklahoma vs. 60.0 for Arkansas. The cultivar  $\times$  location interaction was significant ( $P=0.0009$ ). The TP values were in line with recently published results from Alabama (Kao et al., 2007); however, F levels were higher than expects and A levels lower. Reasons for this are not yet clear, but may have to do with

maturity at harvest, environment, extraction method, or laboratory technique (Kao et al., 2007).

Sensory evaluation of fruit is set for January 21, 2009. The testing will take place on one day with volunteer taste panels consisting of faculty, staff, and students. Some of the traits to be evaluated in the fruit will be sweetness, seediness, astringency, texture, and overall acceptability. Sensory evaluation of juice/wine will be later in 2009 (as yet undetermined). Wine making will begin in January 2009. Other projects have necessitated a delay in the wine making process but those should be completed by January.

A “Blackberries for Wine” topic will be included in 2009 Grape Management Short Course. This short course runs from March through September. A visit to the research plots will also be a part of the educational experience of the students. Students of this course are generally the general public with ages ranging from 25-70; however, sometimes the course is taken for graduate credit by currently enrolled students.

A blackberry production workshop will be held April 8, 2009 at the Cimarron Valley Research Station in Perkins, Oklahoma. This workshop will cover all basic topics for blackberries including site selection, cultivar choice, IPM, marketing, irrigation, and other pertinent topics as well as current grower perspectives. Sustainable production will be a focus.

#### Tentative outline of Workshop, April 8, 2009

- 8-8:10am Introduction to Workshop  
(Eric Stafne, Assistant Professor and Fruit Crops Specialist)
- 8:10-8:30 What does Sustainability Mean and where do Blackberries Fit?  
(Kefy Desta, Assistant Professor, Sustainable Agriculture)
- 8:30-8:50 Blackberry Enterprise Budget  
(Roger Sahs, Extension Associate)
- 8:50-9:10 Blackberry Basics and Site Selection  
(Eric Stafne)
- 9:10-9:30 Cultivar Selection  
(Eric Stafne)
- 9:30-9:50 Fertilizer Application and Weed Control  
(Sue Gray, Tulsa County Extension Educator)
- 9:50-10:00 Break
- 10:00-10:30 Irrigation Design and Installation

(Mike Kizer, Professor and Irrigation Specialist)

- 10:30-10:50 Insect Pests and Control  
(Phil Mulder, Professor and Entomology Specialist)
- 10:50-11:10 Disease Pests and Control  
(Damon Smith, Professor and Plant Pathology Specialist)
- 11:10-11:30 Health-Based Properties of Blackberries as a Marketing Tool  
(Edralin Lucas, Associate Professor, Nutritional Sciences)
- 11:30-12:00 Current Grower Perspective Discussion
- 12:00-12:15 Workshop Evaluation
- 12:15-1:00pm Q&A in the Research Plots

Funding from NARBA lead to submission of another grant proposal to the USDA-CSREES SCRI entitled: “Assessing the attributes and economic potential of fruit and non-traditional grape juices and wines for production, processing, and marketing”. Although unsuccessful, we will continue to pursue other grant opportunities as a way to increase funding already received through NARBA.

Continued funding of this project from NARBA will help to achieve scientifically valid results through multiple years of testing as well as provide extension opportunities. The workshop on April 8, 2009 is only the first planned workshop with others to follow. The follow-up workshops will include topics like pruning, harvest, marketing, and processing.

#### Literature Cited:

Kao, M-W. S., F.M. Woods, W.A. Dozier, Jr., R.C. Ebel, M. Nesbitt, J. Jee, and D. Fields. 2007. Phenolic content and antioxidant capacities of Alabama-grown thornless blackberries. *Intl. J. Fruit Sci.* 7(4):33-46.