What's New with Blackberry Varieties and Arkansas Blackberry Breeding Update: New Developments Ready or On the Horizon

John R. Clark
Department of Horticulture
University of Arkansas

Blackberry breeding is progressing well at the University of Arkansas Division of Agriculture. The breeding program concluded its 50th year of work in 2013. The years 2012 and 2013 provided for good program progress, with many selections made, hundreds of thousands of hybrid seeds produced, and substantial seedling populations established in the field. As most know, the program focuses on floricane- and primocane-fruiting varieties, primarily thornless, with commercial shipping potential, good flavor, and high quality as top priorities. I want to highlight two recent releases from the program.

‘Osage’

The latest thornless, floricane-fruiting variety released is ‘Osage’ in 2012. ‘Osage’ is the thirteenth release from the program. An enhanced effort in the improvement of flavor in blackberries has been underway in the Arkansas program for a number of years, and ‘Osage’ was developed with the intention of advancing flavor to a higher level in a thornless blackberry cultivar. ‘Osage’ ripens mid-early, slightly before ‘Ouachita’ and just after ‘Natchez’. ‘Osage’ produces medium-sized berries, smaller than that of ‘Natchez’ but comparable to that of ‘Ouachita’. ‘Osage’ has excellent postharvest quality for the shipping market in addition to local markets. It is expected that ‘Osage’ will complement ‘Ouachita’ in the mid-early to mid-season harvest period. Key highlights:

- **Ripe date**: Average first harvest date for ‘Osage’ is June 10th, 5 days after ‘Natchez’, 3 days before ‘Ouachita’, at Clarksville, AR.
- **Berry characteristics**: Average weight usually 6-7 g; soluble solids (sweetness) 11%; mostly round shape similar to ‘Ouachita’; very firm; excellent flavor; glossy; white drupelets not observed.
- **Plant characteristics**: Yield comparable to higher than ‘Ouachita’; chilling requirement not verified, likely near that of ‘Ouachita’ or possibly lower; hardiness comparable to hardiest Arkansas varieties but not tested in severe environments; very erect canes and consistently healthy plants.
- **Post-harvest handling**: ‘Osage’ demonstrated excellent storage potential, comparable to ‘Ouachita’, ‘Natchez’ and ‘Prime-Ark® 45’ and exceeding that of ‘Tupy’. Development of red drupes on berries was very low in most years for ‘Osage’, 0 to 1% except for 2008 where this value was higher for ‘Osage’ along with most other cultivars. ‘Osage’ is expected to perform well in commercial shipping use based on this comparison.

‘Prime-Ark® Freedom’

It is very exciting to announce the first thornless, primocane-fruiting blackberry, ‘Prime-Ark® Freedom’. It is intended primarily as a home garden or local-market plant. In addition to having thornless canes, this new introduction has very large fruits with good characteristics.
flavor, and is very early ripening on floricanes, the earliest of all Arkansas blackberry varieties. Fruit of ‘Prime-Ark® Freedom’ does not exhibit exceptional postharvest storage potential, therefore ‘Prime-Ark® Freedom’ is not recommended for the shipping market. Key highlights:

Ripe date: Floricane first harvest date for ‘Prime-Ark® Freedom’ is very early, up to 9-11 days earlier than the early ripening ‘Natchez’, and 16-18 days before ‘Ouachita’. This exceptionally early floricane harvest date should make this cultivar very attractive to homeowners and local marketers as it provides very early fruit, earlier than any prior Arkansas thornless blackberry cultivars. Primocane first ripe fruit date has been difficult to fully determine for ‘Prime-Ark® Freedom’ in Arkansas. Observations indicated that first ripe fruit was 10-20 of July on tipped primocanes, although amount of fruit can be limited, depending on summer heat. Floricane yields of ‘Prime-Ark® Freedom’ have ranged from less than to comparable to ‘Prime-Ark® 45’, and can be substantial if the plants do not have much primocane fruit the prior year.

Berry characteristics: ‘Prime-Ark® Freedom’ floricane berries average 9 g in Arkansas, larger than other named varieties including ‘Natchez’. For primocane berries, weight in Arkansas was slightly less for ‘Prime-Ark® Freedom’ compared to the floricane fruits of the same cultivar, but was significantly larger than that for ‘Prime-Ark® 45’. Soluble solids concentration averaged 10.4% for ‘Prime-Ark® Freedom’, slightly lower than ‘Prime-Ark® 45’ (11.4%) and similar to ‘Natchez’. Flavor ratings for ‘Prime-Ark® Freedom’ averaged 7.8 (on a 10-point scale, with 10 as best), the same as for ‘Prime-Ark® 45’, higher than for ‘Natchez’ (7.0) but lower than ‘Ouachita’ (8.8) and ‘Osage’ (8.3).

Plant characteristics: Canes of ‘Prime-Ark® Freedom’ are thornless and very erect, similar to ‘Ouachita’ and more erect than ‘Natchez’. Vigor of ‘Prime-Ark®’ has usually been rated good, but not excessively vigorous. This variety has not been tested in colder climates than Arkansas, so it is not known if it is as hardy as other Arkansas developments.

Postharvest handling: ‘Prime-Ark® Freedom’ had lower overall ratings compared to ‘Prime-Ark® 45’, indicating limited shipping potential. Berry leakage was the primary variable that ‘Prime-Ark® Freedom’ had poor ratings for, with some concerns for soft berries. However, ‘Prime-Ark® Freedom’ should be acceptable for pick-your-own operations or possibly local marketing where 7-day or longer storage potential is not required.

As far as prior releases from the program, the top sellers in the last few years have been led by ‘Ouachita’, ‘Prime-Ark® 45’, and ‘Natchez’. These three varieties accounted for over 4.2 million plants sold in recent years. ‘Ouachita’ has proven to be a reliable producer coast to coast. ‘Natchez’ was released several years after ‘Ouachita’ and has been a favorite of some growers due to its large fruit that ripens early. Negatives of ‘Natchez’ include less erect canes, tart fruit flavor at some harvest dates, and reduced primocane numbers. Likely a key to growing ‘Natchez’ is crop control, as it has been observed to fruit heavily resulting in reduced sweetness in berries, and reducing subsequent primocane emergence. ‘Prime-Ark® 45’ has been planted quite heavily since its release in 2009, with the most successful plantings near the coast of California. The moderate temperatures in that region provide conditions for tremendous yields of high-quality berries from mid-August until November (or when it either gets cold, folks get tired of picking, or Mexican imports enter the market). Some production of ‘Prime-Ark® 45’ has been carried out in the eastern US, and more moderate temperatures in summer of 2013 provided for improved
primocane yields. However, the floricane crop has been valuable to some growers also, as it ripens early (with ‘Natchez’) and has excellent quality.

New developments should continue from the program. Substantial interest has been focused on other early selections to complement ‘Natchez’ with more uniform flavor and improved cane erectness. Enhanced firmness (some describe as crispy) has been incorporated into thornless selections, and improvements in plant yields are a major focus with this berry type. Primocane-fruiting selections with enhanced fruit quality are getting a close look, and one may be in hand for potential release.

The future is bright for new blackberry developments to provide for expansion of both shipping and local markets. This is an exciting time for blackberries!

John R. Clark is a university professor of horticulture at the University of Arkansas. His research responsibilities are his primary appointment, where he directs the University’s Division of Agriculture fruit breeding program and teaches in the areas of fruit production and plant breeding. Crops he works with include blackberries, table grapes, muscadine grapes, blueberries, and peaches/nectarines. His research activities are carried out in Arkansas, several US states, and various countries in the world. A native of Mississippi, he has BS and MS degrees from Mississippi State Univ. and a PhD from the Univ. of Arkansas.