



New Arkansas Blackberry Production Characteristics

Kirk W. Pomper*, Jeremiah D. Lowe*, and Sheri B. Crabtree

Department of Plant and Soil Science, Kentucky State University

John R. Clark

Department of Horticulture, University of Arkansas

John G. Strang

Department of Horticulture, University of Kentucky

Blackberry Terminology

- Canes: Stems of bramble plants
- Canes last for two seasons, then die
- Primocane: A bramble cane going through its first year of growth
- Floricane: A bramble cane going through its second year of growth
- Most blackberries are floricane fruiting
- Some blackberries are primocane fruiting

Floricanne Fruiting Blackberries

Arkansas Blackberry Breeding Program

- The University of Arkansas Blackberry Breeding Program has developed many excellent florican blackberry cultivars including:
 - Apache, Arapaho, Cherokee, Comanche, Cheyenne, Chickasaw, Choctaw, Kiowa, Navaho, Ouachita, and Shawnee

Objective

- To compare production characteristics from a number of advanced floricanes fruiting selections, developed by the University of Arkansas Blackberry Breeding Program under Kentucky growing conditions.

Materials and Methods

- In June 2006, a blackberry variety trial was established at Kentucky State University.
- Trial includes:
 - Standards:
 - Chickasaw (thorny erect)
 - Triple Crown (semi-erect, thornless)
 - University of Arkansas (Thornless, erect):
 - A-1937T
 - A-2215T
 - A-2241T
 - A-2315T
 - A-2241T (Natchez)

Materials and Methods

- Completely randomized design (2 replicate plots containing 5 plants of each selection in a 10 foot plot).
- Rows were spaced 14 feet apart.
- This trial was managed with organic practices following the National Organic Program Standards.
 - Weed control: 6-8 inch layer of straw and hand weeding.
 - Irrigated weekly with t-tape laid in the rows.
 - Plastic wire t-post trellis



Wire and post trellis

Flowering

- Flower buds of the floricanes of all blackberry selections were destroyed by the Easter freeze event of 2007.
- In 2008, selections flowered in June and ripe fruit were harvested from plants each Monday and Thursday until August.



Chickasaw



A-1937T



A-2215T



A-2315T



A-2241T



Chickasaw



A-2241T

Natchez

Yield and Berry Weight in 2008

<i>Selection</i>	<i>Yield (lb/acre)</i>	<i>Berry weight (g)</i>	<i>Brix</i>	<i>2008 Harvest Period</i>
A-1937T	10,430	4.3	8.0	6/30 – 8/3
A-2215T	8,359	3.8	9.2	7/3 – 8/11
A-2315T	6,526	5.5	7.8	7/3 – 8/3
Natchez	8,924	6.8	8.7	6/26 – 8/3
Chickasaw	8,259	5.4	9.2	6/30 – 8/3
Triple Crown	6,782	4.6	11.3	7/17 – 8/14
Significance	ns	**	***	-
LSD (5%)	-	1.2	0.7	-

Arkansas Trials Established in 2004

	<i>Yield (lbs/Acre)</i>			<i>Wt/berry</i>	
<u>Cultivar</u>	<u>2005</u>	<u>2006</u>		<u>2005</u>	<u>2006</u>
			Clarksville		
Natchez	11,400	7,763		8.7	8.0
Apache	11,655	9,549		8.6	8.2
Quachita	7,955	7,137		6.3	6.2
			Hope		
Natchez	6,398	7,513		6.7	4.4
Apache	3,818	8,887		7.9	6.7
Quachita	2,820	19,347		5.8	4.7

(Clark and Moore, 2008)

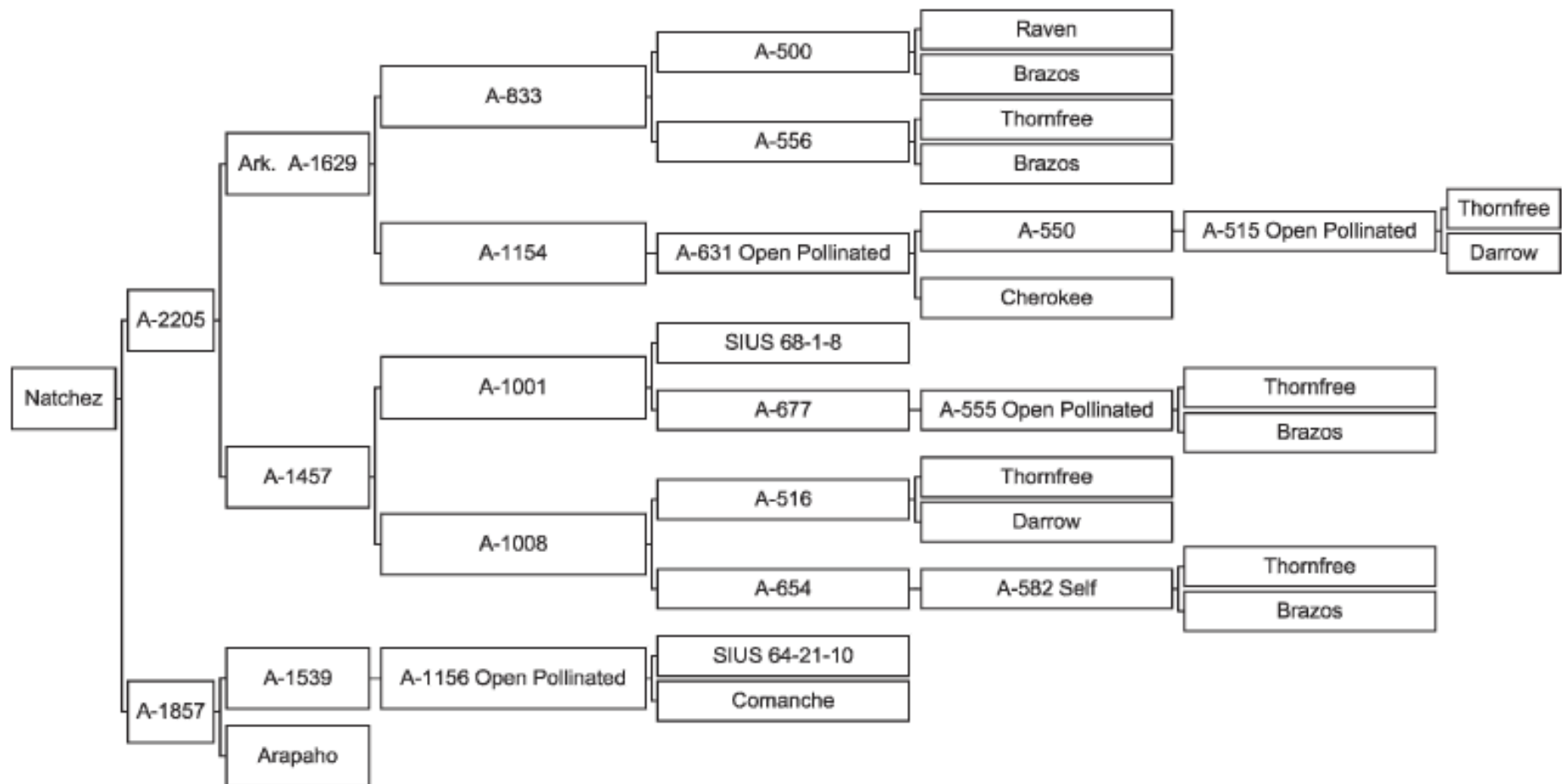


Fig. 1. Pedigree of 'Natchez' blackberry.

Summary

- Natchez has been released for commercial production and could potentially be a popular new addition for blackberry production in Kentucky.

Primocane Fruiting Blackberries

Prime-Jim & Prime-Jan

- Released by the University of Arkansas
- Recommended for home gardeners and for very limited commercial trial
- Fruit have poor shipping characteristics
- Fruit size and quality are affected by the hot temperatures
 - temperatures above 85°F can greatly reduce fruit set, size and quality on primocanes

Primocane Fruiting Blackberries

- Great for Farmers Markets in Kentucky (fruit from August until frost!)
- Floricane and Primocane fruiting
- Mowing instead of pruning
- Erect selections do not need a trellis
- Potential organic production



Objective

- To determine if advanced selections developed by the University of Arkansas Blackberry Breeding Program were superior to Prime-Jim® and Prime-Jan® in terms of yield and fruit quality under Kentucky growing conditions.

Blackberry Selections

- Established June 2006 at KSU
- Floriscane fruiting selections:
 - Apache (thornless erect)
 - Chickasaw (thorny erect)
 - Triple Crown (thornless-trailing)
- Primocane fruiting selections:
 - Prime-Jim®
 - Prime-Jan®
 - APF-27, APF-40, APF-41, APF-42, APF-46, and APF-77
 - (all thorny erect, primocane-fruited)

Trial Design

- Randomized complete block design
 - 4 blocks
 - 20 plants of each cultivar or selection
- Spacing
 - 2 feet between each plant
 - Rows 70 feet long
 - Rows 14 feet apart
- Managed using National Organic Program standards
- Harvested on Monday and Thursday

Weed Control

- Manual
 - Hand
 - Hoe
 - Weed eater
- Mulching
 - Straw



Irrigation

- T-tape
- Lack of water seriously reduces yields
- Require 1" water/wk during growing season
- Best to irrigate throughout entire season



Flowering and Fruiting

- 2007
 - No fruit production data collected from floricanes due to spring frost.
 - Fruit harvested from primocanes.
- 2008
 - Floricane and primocane crops harvested.
 - Drought conditions negatively impacted primocane crop.



June 15, 2006



October 6, 2006



June 8, 2007



August 18, 2007



October 5, 2008

Selected Floricane Fruit



Chickasaw



APF-77



APF-41

Primocane Fruit



Prime Jim



APF-41



Prime Jan



APF-42



APF-27



APF-46



APF-40



APF-77

2007 and 2008 Yield Data

<u>Selection</u>	<u>Yield (lb/ac)</u>		
	<u>2007</u>	<u>2008</u>	<u>2008</u>
	<u>Primocane</u>	<u>Floricanne</u>	<u>Primocane</u>
APF-27	1494	1097	3005
APF-40	2598	1999	1947
APF-41	1415	4415	873
APF-46	1021	672	1179
APF-77	1104	3717	2229
Prime Jan	1718	856	2003
Prime Jim	295	1856	691
Significance	**	**	**
LSD	604	1007	1048

2007 and 2008 Fruit Weights

<u>Selection</u>	<u>Average Fruit Weight (g)</u>		
	<u>2007</u>	<u>2008</u>	<u>2008</u>
	<u>Primocane</u>	<u>Floricanne</u>	<u>Primocane</u>
APF-27	3.0	3.6	3.5
APF-40	4.0	5.0	3.9
APF-41	3.9	6.2	4.4
APF-46	2.5	3.0	3.0
APF-77	3.3	3.8	3.9
Prime Jan	3.3	4.0	3.2
Prime Jim	2.0	3.6	2.7
Significance	**	**	**
LSD	0.4	0.5	0.7

Harvest Dates 2007 and 2008

<u>Harvest Dates (start and end)</u>				
<u>Selection</u>	<u>2007</u>	<u>2007</u>	<u>2008</u>	<u>2008</u>
	<u>Florricane</u>	<u>Primocane</u>	<u>Florricane</u>	<u>Primocane</u>
APF-27	-	8/2 - 10/26	6/18 - 7/21	8/3 - 10/20
APF-40	-	8/6 - 10/26	6/18 - 8/1	8/3 - 10/20
APF-41	-	8/20 - 10/26	6/18 - 8/11	8/25 - 10/20
APF-46	-	8/2 - 10/26	6/18 - 7/24	8/11 - 10/20
APF-77	-	8/2 - 10/26	6/18 - 7/28	8/3 - 10/20
Prime Jan	-	8/2 - 10/26	6/18 - 7/24	8/11 - 10/20
Prime Jim	-	8/2 - 10/26	6/18 - 7/21	8/14 - 10/20

Conclusions

- Primocane fruiting blackberries could be a niche-market crop for Kentucky growers (farmers markets) from Mid-summer until frost.
- Mowing instead of pruning, no trellis, and potential organic production are also attractive to growers.
- APF-41 is in the final stages of release and should be available to the public soon.
- APF-45 was established at KSU in 2008 and will be evaluated.



Questions?