



New Arkansas Blackberry Production Characteristics

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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 floricanes 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 floricanne 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 and 2009, 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 in 2008 and 2009

Selection	2008 Yield (lb/acre) ¹	2009 Yield (lb/acre)
A-1937T	10430	1220
A-2215T	8359	1515
A-2315T	6526	1343
'Natchez'	8924	3158
'Chickasaw'	8259	3750
'Triple Crown'	6782	5541
Significance	ns	ns

Berry Weight in 2008 and 2009

Selection	2008 Berry weight (g)	2009 Berry weight (g)
A-1937T	4.3 cd	3.1 bc
A-2215T	3.8 d	2.9 c
A-2315T	5.5 b	4.5 abc
'Natchez'	6.8 a	5.4 ab
'Chickasaw'	5.4 bc	4.9 abc
'Triple Crown'	4.6 bcd	5.9 a
Significance	0.007	0.05

Harvest Dates in 2008 and 2009

Selection	2008 Harvest dates	2009 Harvest dates
A-1937T	6/30 – 8/3	7/2 – 7/30
A-2215T	7/3 – 8/11	6/25– 8/3
A-2315T	7/3 – 8/3	7/2 – 8/3
‘Natchez’	6/26 – 8/3	6/25 – 8/3
‘Chickasaw’	6/30 – 8/3	6/25 – 8/6
‘Triple Crown’	7/17 – 8/14	7/2 – 8/13
Significance	-	-

Summary

- Drought in 2008 reduced the number of floricanes and yields in all selections in 2009.
- Anthracnose damaged some canes and reduced yields.
- 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
- Floricanes 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-fruiting)

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



Blackberry Pests



Blackberry Pests



Blackberry Diseases



Flowering and Fruiting

- 2007
 - No fruit production data collected from floricanes due to spring frost.
 - Fruit harvested from primocanes.
- 2008 and 2009
 - Floricane and primocane crops harvested.



June 15, 2006



October 6, 2006



June 8, 2007



August 18, 2007



October 5, 2008



June, 2009

2007-2009 Yield Data

<u>Selection</u>	<u>Yield (lb/ac)</u>				
	<u>2007</u> <u>Primocane</u>	<u>2008</u> <u>Floricane</u>	<u>2008</u> <u>Primocane</u>	<u>2009</u> <u>Floricane</u>	<u>2009</u> <u>Primocane</u>
APF-27	1494 bc	1097 bcd	3005 a	-	3682 ab
APF-40	2598 a	1999 b	1947 bc	-	3669 ab
APF-41	1415 bc	4415 a	873 d	580 a	3465 ab
APF-46	1021 c	672 d	1179 cd	-	-
APF-77	1104 c	3717 a	2229 ab	-	4189 a
Prime Jan	1718 b	856 cd	2003 abc	31 b	2517 bc
Prime Jim	295 d	1856 bc	691 d	5 b	1390 c

2007-2009 Fruit Weights

<u>Selection</u>	<u>Average Fruit Weight (g)</u>				
	<u>2007</u>	<u>2008</u>	<u>2008</u>	<u>2009</u>	<u>2009</u>
	<u>Primocane</u>	<u>Floricanes</u>	<u>Primocane</u>	<u>Floricanes</u>	<u>Primocane</u>
APF-27	3.0 b	3.6 c	3.5 bc	-	5.3 abc
APF-40	4.0 a	5.0 b	3.9 ab	-	5.9 ab
APF-41	3.9 a	6.2 a	4.4 a	5.1 a	6.3 a
APF-46	2.5 c	3.0 d	3.0 cd	-	-
APF-77	3.3 b	3.8 c	3.9 ab	-	5.9 ab
Prime Jan	3.3 b	4.0 c	3.2 cd	1.7 b	4.9 bc
Prime Jim	2.0 d	3.6 c	2.7 d	0.6 b	4.2 c



Chickasaw



APF-77



APF-41

Harvest Dates 2007-2009

<u>Harvest Dates (start and end)</u>						
<u>Selection</u>	<u>2007</u> <u>Florricane</u>	<u>2007</u> <u>Primocane</u>	<u>2008</u> <u>Florricane</u>	<u>2008</u> <u>Primocane</u>	<u>2009</u> <u>Florricane</u>	<u>2009</u> <u>Primocane</u>
APF-27	-	8/2 - 10/26	6/18 - 7/21	8/3 - 10/20	-	7/23 - 10/13
APF-40	-	8/6 - 10/26	6/18 - 8/1	8/3 - 10/20	-	7/23 - 10/13
APF-41	-	8/20 - 10/26	6/18 - 8/11	8/25 - 10/20	7/2 - 8/10	8/13 - 10/13
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	-	7/23 - 10/13
Prime Jan	-	8/2 - 10/26	6/18 - 7/24	8/11 - 10/20	7/2 - 8/6	8/10 - 10/13
Prime Jim	-	8/2 - 10/26	6/18 - 7/21	8/14 - 10/20	7/2 - 8/3	8/6 - 10/13

Conclusions

- Small 2009 floricanes crop due to:
 - 1) 2008 drought reduced the number of canes for floricanes production in 2009
 - 2) winter injury to canes (-2.7°F on 1/26/09)
 - 3) anthracnose canker damaged some canes
- 2009 Primocane crops were high for all selections

Conclusions (continued)

- 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-45 has been released.
- APF-40, 41, and 77 are under consideration for release by the University of Arkansas.

2009 Thornless Primocane Blackberry Trial at KSU





Questions?