

CHAPTER 5. RUSSET-SKINNED FRESH MARKET POTATO VARIETY TRIAL, 2003

General Comments

A goal of the Russet-Skinned Fresh Market Potato Variety trial is to identify a short-season russet skinned variety that produces a marketable crop under short-day production. Successful russet varieties could be grown for processing or for the fresh market. There is no current standard for North Florida production.

Planting Information

Planting Site	PSREU, Yelvington Farm, Hastings, FL
Planting Date	January 29, 2003
Vine Kill Date	May 14, 2003
Harvest Date	June 2, 2003
Season Length	105 days planting to vine kill; 124 days planting to harvest
Fertilizer Program	preplant, 100-43-86 lb/A; sidedress, 50-0-42 lb/A; 80-0-69 lb/A
Irrigation Program	seepage

Experimental Design

Number of Varieties	5 (Standard: Russet Norkotah)
Number of Clones	5
Within Row Spacing	8 in (20 cm)
Between Row Spacing	40 in (102 cm)
Replications	4
Plot Size	16 ft (4.9 m)

Production Statistics

Early Vigor Ratings	36 days after planting
Highest Total Yield	AF1753-16 (527 cwt/acre or 59.0 MT/ha)
Highest Marketable Yield	B1956-86 (266 cwt/acre or 29.8 MT/ha)
Best Appearance Rating	B1933-3 and B1956-86 (6.5, fair to good)

Specific Comments

Russet Norkotah (MFX). Russet Norkotah total and marketable tuber yields were 289 and 108 cwt/acre, respectively. Potato tuber skin color was brown with a moderate russet texture. Tuber flesh color was white to cream. Tuber shape was rated as ‘oblong’ to ‘oblong to long’ with an eye depth of intermediate to shallow. Overall external tuber appearance was noted as fair to good. Early plant vigor (size) was rated as 2 to 4 inches. Vine type at full flower was rated as upright with a good canopy. Plant maturity at vine kill was rated as yellow and dying to completely dead. Average specific gravity for Russet Norkotah tubers was 1.061. Seventeen percent of tubers were rated at harvest as “misshapen”.

Amey (MFX). Amey total and marketable tuber yields were 340 and 205 cwt/acre, respectively. Potato tuber skin color was dark brown with a heavy russet texture. Tuber flesh color was white to cream. Tuber shape was rated as ‘round to oblong’ to ‘oblong’ with an eye depth of shallow to very shallow. Overall external tuber appearance was noted as fair to good. Early plant vigor (size) was rated as 4 to 6 inches. Vine type at full flower was rated as spreading to upright with a good canopy. Plant maturity at vine kill was rated as yellow and dying to completely dead. Average specific gravity for Amey tubers was 1.071. Eleven and six percent of the tubers were rated at harvest as “misshapen” and “growth cracked”, respectively. Hollow heart was observed in 10% of tubers.

Belrus (MFX). Belrus total and marketable tuber yields were 297 and 147 cwt/acre, respectively. Potato tuber skin color was dark brown with a heavy russet texture. Tuber flesh color was cream. Tuber shape was rated as ‘mostly oblong’ to ‘oblong’ with an eye depth of intermediate to shallow. Overall external tuber appearance was noted as fair to good. Early plant vigor (size) was rated as 2 to 4 inches. Vine type at full flower was rated as spreading to upright with a good canopy. Plant maturity at vine kill was rated as yellow and dying to completely dead. Average specific gravity for Belrus tubers was 1.071. Nine percent of the tubers were rated at harvest as “misshapen”.

Gem Russet (MFX). Gem Russet total and marketable tuber yields were 247 and 139 cwt/acre, respectively. Potato tuber skin color was brown with a moderate russet to heavy russet texture. Tuber flesh color was cream. Tuber shape was rated as ‘mostly oblong’ to ‘oblong’ with an eye depth of intermediate to shallow. Overall external tuber appearance was noted as fair to good. Early plant vigor (size) was rated as leaves in a rosette. Vine type at full flower was rated as upright with a poor to fair canopy. Plant maturity at vine kill was rated as green and vigorous to starting to senesce. Average specific gravity for Gem Russet tubers was 1.060. Six percent of the tubers were rated at harvest as “misshapen”. Hollow heart was observed in 5% of tubers.

Russet Burbank (MFX). Russet Burbank total and marketable tuber yields were 354 and 104 cwt/acre, respectively. Potato tuber skin color was brown with a moderate russet texture. Tuber flesh color was cream. Tuber shape was rated as ‘mostly oblong’ to ‘oblong’ with an eye depth of intermediate to shallow. Overall external tuber appearance was noted as fair to good. Early plant vigor (size) was rated as 2 to 4 inches. Vine type at full flower was rated as spreading to upright with a fair canopy. Plant maturity at vine kill was rated as yellow and dying to completely dead. Average specific gravity for Russet Burbank tubers was 1.066. Thirty-six percent of tubers were rated at harvest as “misshapen”.

AF1753-16 (UM). AF1753-16 total and marketable tuber yields were 527 and 245 cwt/acre, respectively. Potato tuber skin color was tan with a light russet texture. Tuber flesh color was white to cream. Tuber shape was rated as ‘oblong’ to ‘oblong to long’ with an eye depth of shallow. Overall external tuber appearance was noted as fair to good. Early plant vigor (size) was rated as 4 to 6 inches. Vine type at full flower was rated as spreading to upright with a fair canopy. Plant maturity at vine kill was rated as moderately senesced to yellow and dying. Average specific gravity for AF1753-16 tubers was 1.069. Thirty-six percent of tubers were rated at harvest as “misshapen”.

AF1808-18 (UM). AF1808-18 total and marketable tuber yields were 369 and 174 cwt/acre, respectively. Potato tuber skin color was dark brown with a moderate to heavy russet texture. Tuber flesh color was white to cream. Tuber shape was rated as ‘oblong to long’ with an eye depth of shallow. Overall external tuber appearance was noted as fair to good. Early plant vigor (size) was rated as 4 to 6 inches. Vine type at full

flower was rated as upright with a fair canopy. Plant maturity at vine kill was rated as yellow and dying to completely dead. Average specific gravity for AF1808-18 tubers was 1.067. Fifteen percent of tubers were rated at harvest as “misshapen”.

AF2285-5 (UM). AF2285-5 total and marketable tuber yields were 356 and 154 cwt/acre, respectively. Potato tuber skin color was dark brown with a heavy russet texture. Tuber flesh color was white to white. Tuber shape was rated as ‘oblong’ with an eye depth of shallow to very shallow. Overall external tuber appearance was noted as fair to good. Early plant vigor (size) was rated as leaves in a rosette. Vine type at full flower was rated as upright with a fair to good canopy. Plant maturity at vine kill was rated as yellow and dying to completely dead. Average specific gravity for AF2285-5 tubers was 1.060. Twelve percent of tubers were rated at harvest as “misshapen”.

B1933-3 (USDA). B1933-3 total and marketable tuber yields were 342 and 178 cwt/acre, respectively. Potato tuber skin color was dark brown with a moderate to heavy russet texture. Tuber flesh color was white to cream. Tuber shape was rated as ‘oblong’ with an eye depth of shallow to very shallow. Overall external tuber appearance was noted as fair to good. Early plant vigor (size) was rated as 6 to 8 inches. Vine type at full flower was rated as spreading to upright with a good canopy. Plant maturity at vine kill was rated as yellow and dying to completely dead. Average specific gravity for B1933-3 tubers was 1.068. Eight percent of tubers were rated at harvest as “misshapen”.

B1956-86 (USDA). B1956-86 total and marketable tuber yields were 492 and 266 cwt/acre, respectively. Potato tuber skin color was brown with a moderate to heavy russet texture. Tuber flesh color was cream. Tuber shape was rated as ‘oblong’ to ‘oblong to long’ with an eye depth of shallow to very shallow. Overall external tuber appearance was noted as fair to good. Early plant vigor (size) was rated as 4 to 6 inches. Vine type at full flower was rated as spreading to upright with a good canopy. Plant maturity at vine kill was rated as yellow and dying. Average specific gravity for B1956-86 tubers was 1.069.

Table 12. Production statistics for Russet-skinned potato selections.

Clone	Total	Marketable Yield ¹		Size						Size Class		Specific Gravity
	Yield (cwt/A)	(cwt/A)	% of standard	Distribution by Class (%) ²						Range (%)		
				C	B	A1	A2	A3	A4	A1 to A3	A2 to A3	
Russet Norkotah	289	108	100	38	18	41	3	0	0	44	3	1.061
Amey	340	205	191	17	12	58	13	0	0	71	13	1.071
Belrus	297	147	137	28	17	48	7	0	0	56	7	1.071
Gem Russet	247	139	129	22	16	50	11	1	0	62	12	1.060
Russet Burbank	354	104	97	30	24	46	0	0	0	46	0	1.066
AF1753-16	527	245	228	12	13	57	18	1	0	76	19	1.069
AF1808-18	369	174	162	22	22	51	6	0	0	57	6	1.067
AF2285-5	356	154	143	25	23	50	2	0	0	52	2	1.060
B1933-3	342	178	165	28	16	52	5	0	0	57	5	1.068
B1956-86	492	266	247	16	24	58	2	0	0	60	2	1.069
<i>LSD</i> ³	59	64		11	ns	ns	ns	ns	ns	12	ns	0.004
<i>P Value</i>	0.0001	0.0001		0.0025	0.0700	0.1123	0.1232	0.5985	-	0.0002	0.1480	0.0001

¹Marketable Yield: size classes A1 to A3.

²Size classes: C = .5 to 1.5" , B = 1.5 to 1 7/8", A1 = 1 7/8 to 2.5", A2 = 2.5 to 3.25", A3 = 3.25 to 4", A4 = >4"

³Means separated within columns by the LSD means separation test.

Table 13. Plant growth and tuber characteristics of Russet-skinned potato selections.

Clone	Plant Growth Characteristics				Tuber Characteristics ¹					
	% Stand	Early Vigor	Vine Type	Vine Maturity	IFC	SC	ST	TS	ED	APP
Russet Norkotah	96	3.8	9	2.5	1.5	5.0	3.0	5.5	6.5	5.5
Amey	85	4.5	9-6	2.8	1.5	4.0	2.0	5.0	7.5	6.0
Belrus	96	3.5	9-6	2.3	2.0	4.0	2.0	4.5	6.5	6.0
Gem Russet	66	1.5	7-8	8.0	2.0	5.0	2.5	4.5	6.5	6.0
Russet Burbank	88	3.5	8-5	2.8	2.0	5.0	3.0	4.5	6.0	5.5
AF1753-16	99	5.3	8-5	3.3	1.5	6.0	4.0	5.5	7.0	6.0
AF1808-18	98	5.3	8	2.0	1.5	4.0	2.5	6.0	7.0	6.0
AF2285-5	80	2.0	8-9	2.8	1.0	4.0	2.0	5.0	8.0	5.5
B1933-3	99	6.3	9-6	1.5	1.5	4.0	2.5	5.0	8.0	6.5
B1956-86	98	4.8	9-6	3.0	2.0	5.0	2.5	5.5	7.5	6.5

¹ - See rating system outlined Tables 1 and 2 (pages 8 and 9).

Table 14. External and internal tuber defects of Russet-skinned potato selections.

Clone	% External Tuber Defects					% Internal Defects ²			
	Growth Cracks	Mis-shapen	Sun-burned	Rotten & misc.	Total Culls ¹	HH	BR	CRS	IHN
Russet Norkotah	0	17	0	4	20	0	0	0	1
Amey	6	11	0	1	18	10	0	0	0
Belrus	0	9	1	2	12	0	0	0	1
Gem Russet	0	6	1	3	10	5	0	0	0
Russet Burbank	0	36	0	0	37	1	0	0	3
AF1753-16	0	36	3	2	41	3	0	0	0
AF1808-18	0	15	4	1	20	0	0	0	1
AF2285-5	0	12	4	3	19	0	0	0	1
B1933-3	0	8	1	2	10	1	0	0	1
B1956-86	0	4	3	2	10	0	0	0	0
<i>LSD</i> ³	2	8	3	ns	8	5	ns	ns	ns
<i>P Value</i>	0.0001	0.0001	0.0116	0.0876	0.0001	0.0020	-	-	0.7140

¹Percent of Total Yield. Total culls include the sum of growth cracks, mishapen, sunburned and rotten/misc.

²Percent tubers; HH, hollow heart; BR, brown rot; CRS, corky ring spot; IHN, internal heat necrosis.

³Means separated within columns by the LSD means separation test.