

CHAPTER 6. RUSSET-SKINNED FRESH MARKET POTATO VARIETY TRIAL, 2002

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	Hastings REC, Yelvington Farm, Hastings, FL
Planting Date	January 29, 2002
Vine Kill Date	May 10, 2002
Harvest Date	May 16, 2002
Season Length	101 days
Fertilizer Program	preplant, 80-11-68 lb/A; sidedress (twice), 60-8-51 lb/A
Irrigation Program	seepage

Experimental Design

Number of Varieties	5 (Standard: Russet Norkotah)
Number of Clones	4
Within Row Spacing	12 in (30.5 cm)
Between Row Spacing	40 in (102 cm)
Replications	4
Plot Size	20 ft (6.1 m)

Production Statistics

Early Vigor Ratings	44 days after planting
Highest Total Yield	AF1753-16 (376 cwt/acre or 42.1 MT/ha)
Highest Marketable Yield	AF1753-16 (315 cwt/acre or 37.8 MT/ha)
Best Appearance Rating	Russet Norkotah, Belrus, B1933-3 (6.5, fair to good)

Specific Comments

Russet Norkotah (MFX). Russet Norkotah total and marketable tuber yields were 224 and 191 cwt/acre, respectively. Potato tuber skin color was brown with a moderate russet texture. Tuber flesh color was 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 4 to 6 inches. Vine type at full flower was rated as spreading to upright with a fair canopy. Plant maturity at harvest was rated as yellow and dying to completely dead. Average specific gravity for Russet Norkotah tubers was 1.059.

Russet Norkotah 3 (MFX). Russet Norkotah 3 total and marketable tuber yields were 289 and 250 cwt/acre, respectively. Potato tuber skin color was dark brown to brown with a moderate russet texture. Tuber flesh color was 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 2 to 4 inches. Vine type at full flower was rated as spreading to upright with a good canopy. Plant maturity at harvest was rated as moderately mature to yellow and dying. Average specific gravity for Russet Norkotah 3 tubers was 1.058.

Amey (USDA). Amey total and marketable tuber yields were 262 and 207 cwt/acre, respectively. Potato tuber skin color was dark brown with a heavy russet texture. Tuber flesh color was white. Tuber shape was rated as 'round to oblong' to 'mostly 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 fair canopy. Plant maturity at harvest was rated as yellow and dying. Average specific gravity for Russet Norkotah tubers was 1.071.

Belrus (USDA). Belrus total and marketable tuber yields were 159 and 135 cwt/acre, respectively. Potato tuber skin color was dark brown with a heavy russet texture. Tuber flesh color was white. Tuber shape was rated as 'round to oblong' to 'mostly 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 upright with a poor to fair canopy. Plant maturity at harvest was rated as yellow and dying to completely dead. Average specific gravity for Belrus tubers was 1.075.

Gem Russet (USDA). Gem Russet total and marketable tuber yields were 198 and 155 cwt/acre, respectively. Potato tuber skin color was dark brown to brown with a moderate russet to light russet texture. Tuber flesh color was white. Tuber shape was rated as '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 plants less than 2 inches. Vine type at full flower was rated as upright with a poor to fair canopy. Plant maturity at harvest was rated as starting to mature to green and vigorous. Average specific gravity for Gem Russet tubers was 1.063.

AF1753-16 (UM). AF1753-16 total and marketable tuber yields were 376 and 315 cwt/acre, respectively. Potato tuber skin color was dark brown to brown with a light russet texture. Tuber flesh color was white. Tuber shape was rated as '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 6 to 8 inches. Vine type at full flower was rated as upright fair canopy. Plant maturity at harvest was rated as moderately mature to yellow and dying. Average specific gravity for AF1753-16 tubers was 1.067.

AF1808-18 (UM). AF1753-16 total and marketable tuber yields were 212 and 181 cwt/acre, respectively. Potato tuber skin color was dark brown with a moderate russet texture. Tuber flesh color was white. 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 spreading to upright fair canopy. Plant maturity at harvest was rated as yellow and dying to completely dead. Average specific gravity for AF1808-18 tubers was 1.070.

B1933-3 (USDA). B1933-3 total and marketable tuber yields were 212 and 182 cwt/acre, respectively. Potato tuber skin color was dark brown to brown with a heavy to moderate russet texture. Tuber flesh color was 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 4 to 6 inches. Vine type at full

flower was rated as spreading to upright good canopy. Plant maturity at harvest was rated as yellow and dying to completely dead. Average specific gravity for B1933-3 tubers was 1.075.

B1956-86 (USDA). B1956-86 total and marketable tuber yields were 194 and 143 cwt/acre, respectively. Potato tuber skin color was dark brown to brown with a heavy to moderate russet texture. Tuber flesh color was white. Tuber shape was rated as ‘mostly oblong’ to ‘oblong’ with an eye depth of intermediate. Overall external tuber appearance was noted as fair. Early plant vigor (size) was rated as 4 to 6 inches. Vine type at full flower was rated as spreading to upright good canopy. Plant maturity at harvest was rated as yellow and dying to completely dead. Average specific gravity for B1956-86 tubers was 1.068.

Table 15. Production statistics for Russet-skinned potato selections.

Clone	Total Yield (cwt/A)	Marketable Yield ¹		Size Distribution by Class (%) ²					Size Class Range (%)		Specific Gravity
		(cwt/A)	% of standard	1	2	3	4	5	2 to 4	3 to 4	
Russet Norkotah	224	191	100	15	76	9	0	0	85	9	1.059
Russet Norkotah 3	289	250	131	8	61	31	0	0	92	31	1.058
Amey	262	207	108	2	46	49	3	0	98	52	1.071
Belrus	159	135	70	18	78	4	0	0	82	4	1.075
Gem Russet	198	155	81	19	72	8	0	0	80	8	1.063
AF1753-16	376	315	165	3	74	23	0	0	97	23	1.067
AF1808-18	212	181	95	16	71	13	0	0	84	13	1.070
B1933-3	212	182	95	14	73	14	0	0	87	14	1.075
B1956-86	194	143	75	30	67	4	0	0	71	4	1.068
<i>LSD</i> ³	155	151		24.8	29.8	31.3	<i>ns</i>	<i>ns</i>	24.8	32	0.006
<i>P Value</i>	0.0037	0.0115		0.0269	0.0387	0.0008	0.4613	-	0.0269	0.0006	0.0001

¹Marketable Yield: size classes 2 to 4

²Size classes: 1 = <1 7/8", 2 = 1 7/8 to 2.5", 3 = 2.5 to 3.25", 4 = 3.25 to 4", 5 = >4"

³Means separated within columns by Tukey's Studentized Range (HSD) Test.

Table 16. Plant growth and tuber characteristics of Russet-skinned potato selections.

Clone	Plant Growth Characteristics ¹				Tuber Characteristics ¹					
	% Stand	Early Vigor	Vine Type	Vine Maturity	IFC	SC	ST	TS	ED	APP
Russet Norkotah	99	4.5	8-5	2.3	1.0	5.0	3.0	5.0	7.5	6.5
Russet Norkotah 3	96	4.0	9-6	3.5	1.0	4.5	3.0	5.0	7.5	5.5
Amey	99	5.0	5-8	3.0	1.0	4.0	2.0	3.5	7.5	6.0
Belrus	100	4.5	7-8	2.0	1.0	4.0	2.0	3.5	7.5	6.5
Gem Russet	71	2.8	7-8	7.3	1.0	4.5	3.5	5.0	6.5	5.5
AF1753-16	100	5.5	8	4.5	1.0	4.5	4.0	6.0	6.5	5.5
AF1808-18	99	5.3	5-8	1.5	1.0	4.0	3.0	6.0	7.0	6.0
B1933-3	100	4.8	6-9	2.0	1.0	4.5	2.5	5.0	7.5	6.5
B1956-86	100	5.3	6-9	2.3	1.0	4.5	2.5	4.5	7.5	5.0

¹See rating system outlined in Tables 1 and 2.

Table 17. External and internal defects of Russet-skinned potato selections.

Clone	External Tuber Defects (cwt/A)					% Internals Tuber Defects ²			
	Growth Cracks	Mis-shapen	Sun-burned	Rotten & misc.	Total Culls ¹	HH	BR	CRS	IHN
Russet Norkotah	0	1	0	4	5	0	0	0	0
Russet Norkotah 3	0	3	1	14	18	0	0	0	4
Amey	48	1	0	1	50	0	0	0	0
Belrus	0	0	0	1	2	0	0	0	0
Gem Russet	0	3	1	5	9	0	0	0	5
AF1753-16	2	40	4	6	51	0	0	0	0
AF1808-18	0	3	4	1	8	0	0	0	0
B1933-3	0	0	0	2	2	0	0	0	0
B1956-86	0	2	0	2	3	0	0	0	0
<i>LSD</i> ³	25	22	<i>ns</i>	<i>ns</i>	34	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>
<i>P Value</i>	0.0001	0.0001	0.1384	0.2369	0.0001	-	-	-	0.5726

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

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

³Means separated within columns by Tukey's Studentized Range (HSD) Test.