

## CHAPTER 6. STATEWIDE RED-SKINNED POTATO VARIETY TRIALS, 2003

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### *General Comments*

A goal of the statewide potato variety trial is to identify advanced potato selections for Florida production. Established varieties were included to provide a baseline for comparison.

### *South Florida Planting Information*

South Florida Red Potato Trial (Tables 15 and 16).	Two Sites in Homestead (H-A and H-B) Two Sites in Immokalee (I-A and (I-B)
Planting Dates	H-A (11/27/02), H-B (11/27/02), I-A (11/20/02), I-B (12/4/02)
Harvest Dates	H-A (3/24/03), H-B (3/25/03), I-A (4/7/03), I-B (4/8/03)
Season Length	H-A (117), H-B (118), I-A (138), I-B (125)
Fertilizer Program	Grower standard practice
Irrigation Program	seepage

### *Experimental Design (4 sites x multiple clone factorial design)*

Number of Sites	4
Number of Selections	Red (5)
Within Row Spacing	8 in (20.3 cm)
Between Row Spacing	38-40 in (98-102 cm)
Replications	4 at each site
Plot Size	16 ft (4.9 m) single row

### *North Florida Planting Information*

Red Potato Trial*	PSREU – Hastings Farm, Hastings, FL (Tables 17-19) Grower Farm in Bunnell, FL (Tables 20-22)
Planting Dates	Hastings (1/29/03), Bunnell (1/23/03)
Harvest Dates	Hastings (5/20/03), Bunnell (5/28/03)
*Experiment information is similar to information presented for Red Trial (Chapter 4).	

Table 15. Analysis of variance for total yield, marketable yield, size class range, and specific gravity of red-skinned potatoes grown in south Florida.

Factor	Total yield (cwt/acre)	Marketable yield		Size class range <sup>x</sup> (%)		Specific gravity
		(cwt/acre)	% of standard	2 to 4	3 to 4	
<i>Site</i>	*** <sup>y</sup>	***	-	***	***	***
<i>Variety</i>	**	***	-	***	***	***
<i>Site x variety</i>	ns	ns	-	*	***	***
<i>Site</i>						
Homestead A	218 a <sup>z</sup>	189 a	-	86 a	14 a	1.064 b
Homestead B	83 c	61 b	-	75 ab	2 b	1.067 b
Immokalee A	202 ab	114 b	-	58 b	1 b	1.064 b
Immokalee B	128 bc	50 b	-	36 c	0 b	1.074 a
<i>Variety</i>						
LaRouge	178 a	124 a	-	70 ab	5 b	1.066 cd
Red LaSoda	182 a	126 a	102	75 a	11 a	1.064 de
B0984-1	122 b	70 c	56	58 c	1 b	1.075 a
B1145-2	129 b	83 c	67	61 c	1 b	1.062 e
B1758-3	161 a	96 bc	77	60 c	4 b	1.068 bc
B1758-4	175 a	112 ab	90	64 bc	5 b	1.070 b

<sup>x</sup>Size classes (inches): 1 = <1.88, 2 = 1.88 to 2.50, 3 = 2.50 to 3.25, 4 = 3.25 to 4.00, 5 = > 4.00.

<sup>y</sup>Significance levels: \* =  $P = 0.05$ ; \*\* =  $P = 0.01$ ; \*\*\* =  $P = 0.001$ ; ns = not significant.

<sup>z</sup>Means separated within columns using the Ryan-Einot-Gabriel-Welsch multiple range mean separation test at  $P = 0.05$ .

Table 16. Analysis of variance on external and internal tuber defects of red-skinned potatoes grown in south Florida.

Factor	External tuber defects (%)			Internal tuber defects (%)		Tuber Appearance Rating
	Growth cracks	Mis-shaped	Total culls <sup>x</sup>	Hollow-heart	Internal heat necrosis	
<i>Site</i>	*** <sup>y</sup>	***	*	**	*	-
<i>Variety</i>	**	ns	ns	***	**	-
<i>Site x variety</i>	ns	ns	ns	***	*	-
<i>Site</i>						
Homestead A	1.9 a <sup>z</sup>	0.4 b	3.8 ab	7.8 a	8.4 a	-
Homestead B	0.4 b	0.7 b	3.4 b	1.5 b	0.2 b	-
Immokalee A	0.1 b	3.0 a	6.1 a	3.5 ab	6.3 ab	-
Immokalee B	0.1 b	2.1 a	4.9 ab	1.0 b	1.0 b	-
<i>Variety</i>						
LaRouge	1.0 ab	1.2	3.9	2.2 b	6.6 a	5.3
Red LaSoda	1.4 a	0.4	4.5	0.9 b	4.7 ab	5.0
B0984-1	0.0 b	2.1	4.4	0.3 b	0.0 b	7.1
B1145-1	0.2 b	1.9	3.3	0.6 b	0.3 b	7.0
B1758-3	0.5 ab	1.9	5.5	8.1 a	6.9 a	6.9
B1758-4	0.7 ab	1.9	5.7	8.6 a	5.4 ab	6.8

<sup>x</sup>Total culls is the sum of growth cracks, misshaped, sunburned, and rotten categories.

<sup>y</sup>Significance levels: \* =  $P = 0.05$ ; \*\* =  $P = 0.01$ ; \*\*\* =  $P = 0.001$ ; ns = not significant.

<sup>z</sup>Means separated within columns using the Ryan-Einot-Gabriel-Welsch multiple range mean separation test at  $P = 0.05$ .

Table 17. Production statistics for Statewide Red-Skinned potato selections at the PSREU - Hastings Farm.

Clone	Total	Marketable Yield <sup>1</sup>		Size						Size Class		Specific Gravity
	Yield (cwt/A)	(cwt/A)	% of standard	Distribution by Class (%) <sup>2</sup>						Range (%)		
				C	B	A1	A2	A3	A4	A1 to A3	A2 to A3	
Red LaSoda	435	358	100	7	4	36	37	15	0	88	52	1.064
Red LaSoda 10	423	361	101	5	3	32	33	28	0	92	61	1.061
Red LaSoda 13	468	373	104	5	2	34	27	32	0	92	59	1.063
Larouge	448	361	101	6	6	45	33	10	0	88	43	1.063
B1145-2	323	234	65	13	8	60	16	3	0	79	19	1.057
B1758-4	484	399	112	8	6	46	29	12	0	87	41	1.063
NY129	421	364	102	4	5	61	25	4	0	90	29	1.053
<i>MSD</i> <sup>3</sup>	57	73		6	3	10	10	9	ns	8	16	ns
<i>P Value</i>	0.0005	0.0037		0.0378	0.0077	0.0001	0.0063	0.0001	-	0.0127	0.0003	0.1606

<sup>1</sup>Marketable Yield: size classes 2 to 4

<sup>2</sup>Size 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"

<sup>3</sup>Means separated within columns by Waller-Duncan's k-ratio t test.

Table 18. Plant growth and tuber characteristics of Statewide Red-Skinned potato selections and the PSREU - Hastings Farm

Clone	Plant Growth Characteristics				Tuber Characteristics <sup>1</sup>					
	% Stand	Early Vigor	Vine Type	Vine Maturity	IFC	SC	ST	TS	ED	APP
Red LaSoda	98	5.5	6-9	5.0	1.3	2.0	7.0	3.3	4.7	6.0
Red LaSoda 10	95	4.3	6-9	5.3	1.3	2.0	7.3	3.0	3.7	5.3
Red LaSoda 13	100	5.0	6-9	5.8	1.7	2.0	7.0	3.0	4.7	5.3
Larouge	98	6.0	6-9	5.0	1.3	2.0	7.3	2.7	4.7	5.3
B1145-2	98	6.0	8-5	3.0	1.0	2.0	7.0	1.7	5.3	6.7
B1758-4	97	5.3	8	5.8	1.3	2.0	7.0	1.7	6.0	7.3
NY129	92	4.5	8	5.8	1.3	2.0	7.0	1.7	5.7	6.7

<sup>1</sup> - See rating system outlined Tables 1 and 2 (pages 8 and 9).

Table 19. External and internal tuber defects of Statewide Red-Skinned potato selections at the PSREU - Hastings Farm.

Clone	% External Tuber Defects					% Internal Defects <sup>2</sup>			
	Growth Cracks	Mis- shapen	Sun- burned	Rotten & misc.	Total Culls <sup>1</sup>	HH	BR	CRS	IHN
Red LaSoda	1	4	0	3	8	1	0	0	0
Red LaSoda 10	1	3	1	2	8	1	0	0	0
Red LaSoda 13	3	10	1	2	14	3	0	0	1
Larouge	0	5	1	2	9	1	0	0	0
B1145-2	0	1	1	6	8	1	0	0	0
B1758-4	0	1	1	3	5	2	2	0	0
NY129	0	0	1	3	4	0	0	0	0
<i>MSD</i> <sup>3</sup>	2	3	ns	2	5	ns	ns	ns	ns
<i>P Value</i>	0.0148	0.0003	0.5621	0.0091	0.0103	0.8263	0.2650	-	0.4897

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

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

<sup>3</sup>Means separated within columns by the LSD means separation test.

Table 20. Production statistics for Statewide Red-Skinned potato selections at the grower farm in Bunnell.

Clone	Total	Marketable Yield <sup>1</sup>		Size						Size Class		Specific Gravity
	Yield (cwt/A)	(cwt/A)	% of standard	Distribution by Class (%) <sup>2</sup>						Range (%)		
				C	B	A1	A2	A3	A4	A1 to A3	A2 to A3	
Red LaSoda	375	306	100	7	5	60	25	3	0	88	28	1.067
Red LaSoda 10	410	372	121	3	3	51	34	9	0	94	43	1.074
Red LaSoda 13	410	352	115	4	5	59	25	5	0	90	31	1.070
Larouge	410	346	113	5	6	67	21	1	0	89	22	1.069
B1145-2	268	139	45	26	21	49	3	0	0	52	3	1.069
B1758-4	361	170	55	27	25	47	1	0	0	49	1	1.071
NY129	307	230	75	12	11	67	9	2	0	77	10	1.066
<i>MSD</i> <sup>3</sup>	61	69		10	6	19	9	5	ns	13	12	ns
<i>P Value</i>	0.0001	0.0001		0.0001	0.0001	0.0087	0.0001	0.0002	-	0.0001	0.0001	0.6099

<sup>1</sup>Marketable Yield: size classes A1 to A3.

<sup>2</sup>Size 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"

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

Table 21. Plant growth and tuber characteristics of Statewide Red-Skinned potato selections at the grower farm in Bunnell.

Clone	Plant Growth Characteristics				Tuber Characteristics <sup>1</sup>					
	% Stand	Early Vigor	Vine Type	Vine Maturity	IFC	SC	ST	TS	ED	APP
Red LaSoda	90	7.3	9-6	1.8	2.0	3.0	7.0	3.0	5.0	5.0
Red LaSoda 10	91	6.0	9-6	2.0	1.0	2.5	7.0	3.0	5.0	6.0
Red LaSoda 13	99	7.5	9-6	1.8	1.0	3.0	7.0	3.0	5.0	6.0
Larouge	95	8.0	9-6	2.0	2.0	3.0	7.0	2.5	4.0	6.0
B1145-2	100	7.5	8-5	1.0	1.0	2.5	6.0	2.0	6.0	7.0
B1758-4	97	7.3	8	2.0	2.0	2.0	6.0	3.0	6.0	7.0
NY129	95	6.3	8-7	2.0	2.0	2.0	6.0	2.5	6.0	6.5

<sup>1</sup> - See rating system outlined Tables 1 and 2 (pages 8 and 9).

Table 22. External and internal tuber defects of Statewide Red-Skinned potato selections at the grower farm in Bunnell.

Clone	% External Tuber Defects					% Internal Defects <sup>2</sup>			
	Growth Cracks	Mis- shapen	Sun- burned	Rotten & misc.	Total Culls <sup>1</sup>	HH	BR	CRS	IHN
Red LaSoda	0	2	1	4	7	25	0	0	0
Red LaSoda 10	0	1	1	2	3	13	0	0	0
Red LaSoda 13	1	2	1	1	5	15	0	0	0
Larouge	0	1	1	2	5	24	0	0	0
B1145-2	0	0	0	1	1	6	0	0	0
B1758-4	0	1	2	2	5	4	0	0	25
NY129	0	0	1	2	3	1	0	0	0
<i>MSD</i> <sup>3</sup>	1	ns	ns	ns	5	19	ns	ns	17
<i>P Value</i>	0.0123	0.3233	0.3958	0.2177	0.0352	0.0021	-	-	0.0009

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

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

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

