

CHAPTER 3. WHITE-SKINNED FRESH MARKET POTATO VARIETY TRIAL, 2003

General Comments

A goal of the white-skinned fresh market variety trial is to identify a round white potato that has better quality and production characteristics than LaChipper. Identification of “specialty” potatoes that expand the marketable varieties produced in Florida is also a priority. Established varieties were included to provide a baseline for the numbered clones.

Planting Information

Planting Site	PSREU, Yelvington Farm, Hastings, FL
Planting Date	January 28, 2003
Vine Kill Date	May 1, 2003
Harvest Date	May 19, 2003
Season Length	93 days planting to vine kill; 111 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	10 (Standard: LaChipper)
Number of Clones	10
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	37 days after planting
Highest Total Yield	Eva (514 cwt/acre or 57.6 MT/ha)
Highest Marketable Yield	Eva (477 cwt/acre or 53.4 MT/ha)
Best Appearance Rating	AF1615-4 (7.7, good to excellent)

Specific Comments

LaChipper (MFX). LaChipper total and marketable tuber yields were 433 and 324 cwt/acre, respectively. Potato tuber skin color was white with a moderately smooth to smooth texture. Tuber flesh color was white to cream. Tuber shape was rated as ‘mostly round’ to ‘round to oblong’ with an eye depth of intermediate to shallow. Overall external tuber appearance was noted as 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 starting to senesce to moderately senesced. Average specific gravity for LaChipper tubers was 1.069.

Adora (HZPC). Adora total and marketable tuber yields were 360 and 248 cwt/acre, respectively. Potato tuber skin color was buff to white with a moderately smooth to smooth texture. Tuber flesh color was cream to light yellow. Tuber shape was rated as ‘mostly oblong’ to ‘oblong’ with an eye depth of 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 starting to senesce to moderately senesced. Average specific gravity for Adora tubers was 1.053. Twelve percent of tubers at harvest were rated as “misshapen”.

Eva (Cornell). Eva total and marketable tuber yields were 514 and 477 cwt/acre, respectively. Potato tuber skin color was buff to white with a slightly netted to moderately smooth texture. Tuber flesh color was white to cream. 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 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 green and vigorous. Average specific gravity for Eva tubers was 1.067.

Fabula (HZPC). Fabula total and marketable tuber yields were 449 and 416 cwt/acre, respectively. Potato tuber skin color was buff with a slightly netted to moderately smooth texture. Tuber flesh color was light yellow. Tuber shape was rated as ‘round to oblong’ to ‘mostly 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 fair to poor canopy. Plant maturity at vine kill was rated as green and vigorous. Average specific gravity for Fabula tubers was 1.056.

Kennebec (MFX). Kennebec total and marketable tuber yields were 455 and 356 cwt/acre, respectively. Potato tuber skin color was buff with a slightly netted to moderately smooth texture. Tuber flesh color was white to cream. Tuber shape was rated as ‘round to oblong’ to ‘mostly oblong’ with an eye depth of intermediate to shallow. Overall external tuber appearance was noted as fair. Early plant vigor (size) was rated as plants 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 starting to senesce to moderately senesced. Average specific gravity for Kennebec tubers was 1.061. Six percent of tubers at harvest were rated as “misshapen”.

Platina (HZPC). Platina total and marketable tuber yields were 480 and 426 cwt/acre, respectively. Potato tuber skin color was buff to white with a moderately smooth texture. Tuber flesh color was cream to light yellow. Tuber shape was rated as ‘round to oblong’ to ‘mostly oblong’ with an eye depth of intermediate to shallow. Overall external tuber appearance was noted as good. Early plant vigor (size) was rated as leaves in a rosette. Vine type at full flower was rated as upright with a fair canopy. Plant maturity at vine kill was rated as green and vigorous. Average specific gravity for Platina tubers was 1.056. Tubers were noted at harvest as “nice”.

Sebago (MFX). Sebago total and marketable tuber yields were 423 and 327 cwt/acre, respectively. Potato tuber skin color was buff to white with a moderately smooth texture. Tuber flesh color was cream to light yellow. Tuber shape was rated as ‘round to oblong’ to ‘mostly 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 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 starting to senesce to moderately senesced. Average specific gravity for Sebago tubers was 1.063.

Snowden (MFX). Snowden total and marketable tuber yields were 468 and 421 cwt/acre, respectively. Potato tuber skin color was tan with a netted to slightly netted texture. Tuber flesh color was white to cream. Tuber shape was rated as ‘mostly round’ 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 4 to 6 inches. Vine type at full flower was rated as upright with a good canopy. Plant maturity at vine kill was rated as starting to senesce to moderately senesced. Average specific gravity for Snowden tubers was 1.077.

Vivaldi (HZPC). Vivaldi total and marketable tuber yields were 457 and 377 cwt/acre, respectively. Potato tuber skin color was buff to white with a moderately smooth to smooth texture. Tuber flesh color was light to medium yellow. Tuber shape was rated as ‘mostly oblong’ with an eye depth of 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 fair canopy. Plant maturity at vine kill was rated as green and vigorous to starting to senesce. Average specific gravity for Vivaldi tubers was 1.059.

Yukon Gold (MFX). Yukon Gold total and marketable tuber yields were 407 and 356 cwt/acre, respectively. Potato tuber skin color was tan to buff with a slightly netted to moderately smooth texture. Tuber flesh color was light to medium yellow. Tuber shape was rated as ‘round to oblong’ to ‘mostly 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 2 to 4 inches. Vine type at full flower was rated as upright with a fair canopy. Plant maturity at vine kill was rated as starting to senesce to moderately senesced. Average specific gravity for Yukon Gold tubers was 1.074.

AF1615-1 (UM). AF1615-1 total and marketable tuber yields were 463 and 394 cwt/acre, respectively. Potato tuber skin color was buff to white with a slightly netted to moderately smooth texture. Tuber flesh color was white to cream. Tuber shape was rated as ‘mostly round’ to ‘round to oblong’ with an eye depth of shallow. Overall external tuber appearance was noted as fair to good. Early plant vigor (size) was rated as plants 4 to 6 inches. Vine type at full flower was rated as upright with a fair to good canopy. Plant maturity at vine kill was rated as starting to senesce to moderately senesced. Average specific gravity for AF1615-1 tubers was 1.065.

AF1615-4 (UM). AF1615-4 total and marketable tuber yields were 440 and 372 cwt/acre, respectively. Potato tuber skin color was buff to white with a slightly netted to moderately smooth texture. Tuber flesh color was white to cream. Tuber shape was rated as ‘mostly round’ to ‘round to oblong’ with an eye depth of intermediate to shallow. Overall external tuber appearance was noted as good to excellent. Early plant vigor (size) was rated as plants 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 starting to senesce to moderately senesced. Average specific gravity for AF1615-4 tubers was 1.063. Tuber skin color was noted at harvest as “bright”.

AF2314-2 (UM). AF2314-2 total and marketable tuber yields were 437 and 378 cwt/acre, respectively. Potato tuber skin color was tan to buff with a netted to slightly netted 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 plants 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 starting to senesce to moderately senesced. Average specific gravity for AF2314-2 tubers was 1.069.

AF2322-1 (UM). AF2322-1 total and marketable tuber yields were 396 and 320 cwt/acre, respectively. Potato tuber skin color was white with a netted to slightly netted texture. Tuber flesh color was white to cream. Tuber shape was rated as ‘round’ to ‘mostly round’ 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 plants 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 starting to senesce to moderately senesced. Average specific gravity for AF2322-1 tubers was 1.061.

AF2326-1 (UM). AF2326-1 total and marketable tuber yields were 418 and 359 cwt/acre, respectively. Potato tuber skin color was buff to white with a slightly netted texture. Tuber flesh color was white. Tuber shape was rated as ‘mostly round’ to ‘round 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 plants 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

starting to senesce to moderately senesced. Average specific gravity for AF2326-1 tubers was 1.071. Five percent of tubers at harvest had hollow heart.

AF2353-1 (UM). AF2353-1 total and marketable tuber yields were 472 and 433 cwt/acre, respectively. Potato tuber skin color was buff with a slightly netted texture. Tuber flesh color was light to medium yellow. Tuber shape was rated as ‘mostly round’ to ‘round 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 plants 4 to 6 inches. Vine type at full flower was rated as upright with a fair to good canopy. Plant maturity at vine kill was rated as green and vigorous to starting to senesce. Average specific gravity for AF2353-1 tubers was 1.067. Tubers were noted at harvest as “flat”.

AF2360-2 (UM). AF2360-2 total and marketable tuber yields were 456 and 376 cwt/acre, respectively. Potato tuber skin color was tan to buff with a slightly netted to moderately smooth texture. Tuber flesh color was white. Tuber shape was rated as ‘mostly round’ to ‘round 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 plants 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 green and vigorous to starting to senesce. Average specific gravity for AF2360-2 tubers was 1.062.

AF2363-11 (UM). AF2363-11 total and marketable tuber yields were 302 and 279 cwt/acre, respectively. Potato tuber skin color was tan to buff with a slightly netted texture. Tuber flesh color was white to cream. Tuber shape was rated as ‘mostly round’ to ‘round 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 plants 2 to 4 inches. Vine type at full flower was rated as upright with a fair canopy. Plant maturity at vine kill was rated as green and vigorous to starting to senesce. Average specific gravity for AF2363-11 tubers was 1.083.

B1870-3 (USDA). B1870-3 total and marketable tuber yields were 463 and 364 cwt/acre, respectively. Potato tuber skin color was buff to white with a slightly netted texture. Tuber flesh color was white to cream. Tuber shape was rated as ‘mostly round’ with an eye depth of shallow. Overall external tuber appearance was noted as fair to good. Early plant vigor (size) was rated as plants 8 to 10 inches. Vine type at full flower was rated as spreading to upright with a good canopy. Plant maturity at vine kill was rated as starting to senesce to moderately senesced. Average specific gravity for B1870-3 tubers was 1.056. Tubers at harvest were noted as having “dark lenticels”.

RZ-91-2313 (HZPC). RZ-91-2313 total and marketable tuber yields were 475 and 255 cwt/acre, respectively. Potato tuber skin color was white with a moderately smooth texture. Tuber flesh color was light to medium yellow. Tuber shape was rated as ‘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 plants 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 starting to senesce to moderately senesced. Average specific gravity for RZ-91-2313 tubers was 1.063.

Table 6. Production statistics for White-Skinned Fresh Market 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	
LaChipper	443	324	100	15	10	54	16	5	0	75	21	1.069
Adora	360	248	77	6	9	75	9	1	0	85	10	1.053
Eva	514	477	147	1	1	24	50	24	0	97	74	1.067
Fabula	449	416	128	2	2	34	37	25	0	96	62	1.056
Kennebec	455	356	110	7	5	50	29	8	0	88	37	1.061
Platina	480	426	131	4	5	39	39	14	0	91	53	1.056
Sebago	423	327	101	10	7	51	27	6	0	84	33	1.063
Snowden	468	421	130	3	5	54	30	8	0	92	38	1.077
Vivaldi	457	377	116	7	7	63	19	3	0	85	22	1.059
Yukon Gold	407	356	110	4	4	39	40	13	0	92	53	1.074
AF1615-1	463	394	122	5	6	58	29	2	0	89	31	1.065
AF1615-4	440	372	115	5	7	63	22	2	0	88	24	1.063
AF2314-2	437	378	117	2	3	49	39	7	0	95	46	1.069
AF2322-1	396	320	99	8	8	60	18	5	0	83	23	1.061
AF2326-1	418	359	111	5	4	54	34	4	0	91	37	1.071
AF2353-1	472	433	134	3	3	34	37	22	1	93	59	1.067
AF2360-2	456	376	116	4	4	39	33	21	0	92	54	1.062
AF2363-11	302	279	86	3	1	50	38	7	0	95	45	1.083
B1870-3	463	364	112	9	8	56	19	8	1	83	27	1.056
RZ912313	475	255	79	18	24	54	3	0	0	57	3	1.063
<i>MSD</i> ³	107	121		5	6	19	18	12	ns	9	22	0.009
<i>P Value</i>	0.0001	0.0001		0.0001	0.0001	0.0001	0.0001	0.0001	0.5488	0.0001	0.0001	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 Tukey's Studentized Range (HSD) Test.

Table 7. Plant growth and tuber characteristics of White-Skinned Fresh Market potato selections.

Clone	Plant Growth Characteristics				Tuber Characteristics ¹					
	% Stand	Early Vigor	Vine Type	Vine Maturity	IFC	SC	ST	TS	ED	APP
LaChipper	100	5.8	6-9	5.3	1.3	8.0	7.3	2.3	6.3	7.0
Adora	91	4.0	8-5	5.8	2.7	7.7	7.7	4.7	7.0	6.0
Eva	97	3.5	9	8.8	1.3	7.7	6.7	3.3	7.3	7.0
Fabula	86	2.0	7-8	9.0	3.0	7.0	6.7	3.7	6.7	5.7
Kennebec	98	4.8	9-6	6.8	1.3	7.0	6.3	4.3	5.3	5.0
Platina	80	1.8	8	9.0	2.7	7.7	7.0	3.7	6.0	7.0
Sebago	98	5.8	6-9	6.5	1.3	7.3	7.0	3.7	6.3	5.7
Snowden	100	5.0	9	6.8	1.7	6.0	5.3	2.0	5.3	5.3
Vivaldi	99	3.0	8	7.8	3.3	7.7	7.3	4.0	7.0	6.3
Yukon Gold	97	3.5	8	6.5	3.3	6.7	6.3	3.3	6.7	5.7
AF1615-1	97	4.8	6-9	6.3	1.7	7.3	6.3	2.3	7.0	6.3
AF1615-4	98	5.0	6-9	6.5	1.3	7.7	6.7	2.7	6.7	7.7
AF2314-2	99	4.8	6-9	6.0	1.3	6.7	5.3	5.3	7.0	5.7
AF2322-1	97	4.3	6-9	5.8	1.3	8.0	5.7	1.7	7.3	6.7
AF2326-1	95	4.8	9-6	6.8	1.0	7.7	6.0	2.3	6.7	6.0
AF2353-1	98	2.0	8-9	8.8	3.7	7.0	6.0	2.7	6.0	5.7
AF2360-2	100	4.0	9	8.0	1.0	6.7	6.3	2.7	6.0	5.3
AF2363-11	94	4.3	8	7.8	1.3	6.7	6.0	2.3	6.0	5.3
B1870-3	99	7.0	6-9	6.3	1.3	7.7	6.0	2.0	7.0	6.3
RZ912313	99	5.8	6-9	6.3	3.3	8.0	7.0	6.0	7.3	6.0

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

Table 8. External and internal tuber defects of White-Skinned Fresh Market potato selections.

Clone	% External Tuber Defects					% Internal Defects ²			
	Growth Cracks	Mis-shapen	Sun-burned	Rotten & misc.	Total Culls ¹	HH	BR	CRS	IHN
LaChipper	0	1	0	0	2	0	0	0	0
Adora	5	12	1	1	18	0	0	0	0
Eva	0	2	2	1	5	0	3	0	0
Fabula	1	0	1	2	4	0	0	0	0
Kennebec	1	6	4	0	11	0	0	0	0
Platina	3	0	0	0	4	0	0	0	0
Sebago	0	1	2	4	7	1	0	0	1
Snowden	0	0	2	0	3	1	0	0	0
Vivaldi	1	1	1	2	4	0	0	0	0
Yukon Gold	1	2	1	2	5	0	0	0	1
AF1615-1	0	0	2	2	4	0	0	0	0
AF1615-4	0	0	1	3	4	0	0	0	0
AF2314-2	0	0	2	7	9	0	0	0	0
AF2322-1	0	0	1	2	3	0	0	0	0
AF2326-1	0	0	3	2	5	5	1	0	0
AF2353-1	0	0	1	0	2	4	0	0	0
AF2360-2	2	4	2	2	10	0	1	0	0
AF2363-11	1	0	1	1	3	3	0	0	0
B1870-3	1	0	2	3	5	0	0	0	0
RZ912313	0	3	1	3	7	3	1	0	0
<i>MSD</i> ³	ns	7	3	4	8	ns	ns	ns	ns
<i>P Value</i>	0.1031	0.0001	0.0004	0.0001	0.0001	0.0665	0.0908	-	0.5499

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 Tukey's Studentized Range (HSD) Test.

