

CHAPTER 7. CHIPPING POTATO VARIETY TRIAL, 2002

General Comments

A goal of the Chipping Potato Variety trial is to identify a short-season processing potato variety with better production and quality characteristics than Atlantic, the current standard. Chip quality was determined by personnel at Wise Foods, Inc.

Planting Information

Planting Site	Hastings REC, Yelvington Farm, Hastings, FL
Planting Date	January 29, 2002
Harvest Date	May 20, 2002
Season Length	111 days
Fertilizer Program	preplant, 80-11-68 lb/A; sidedress (twice), 60-8-51 lb/A
Irrigation Program	seepage

Experimental Design

Number of Varieties	6 (Standard: Atlantic)
Number of Clones	12
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	43 days after planting
Highest Total Yield	B1958-85 (385 cwt/acre or 43.1 MT/ha)
Highest Marketable Yield	B1958-85 (324 cwt/acre or 36.3 MT/ha)
Highest Gravity	AF2206-7 and AF2211-14 (1.084)

Specific Comments

Atlantic (MFX). Atlantic total and marketable tuber yields were 309 and 284 cwt/acre, respectively. Potato tuber skin color was tan with a netted texture. Tuber flesh color was 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 4 to 6 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 Atlantic tubers was 1.077. Chip quality was rated as good with minimal blemishes and color variations.

Coastal Chip (USDA). Coastal Chip total and marketable tuber yields were 249 and 226 cwt/acre, respectively. Potato tuber skin color was 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 fair. 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 harvest was rated as yellow and dying to completely dead. Average specific gravity for Coastal Chip tubers was 1.065. Chip quality rating was not available.

LaChipper (MFX). LaChipper total and marketable tuber yields were 305 and 285 cwt/acre, respectively. Potato tuber skin color was white with a moderately smooth to 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 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 harvest was rated as yellow and dying to completely dead. Average specific gravity for LaChipper tubers was 1.067. Chip quality rating was not available.

Sebago (MFX). Sebago total and marketable tuber yields were 166 and 144 cwt/acre, respectively. Potato tuber skin color was buff to white with a moderately smooth to smooth texture. Tuber flesh color was white. Tuber shape was rated as ‘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 4 to 6 inches. Vine type at full flower was rated as upright with a poor canopy. Plant maturity at harvest was rated as yellow and dying to completely dead. Average specific gravity for Sebago tubers was 1.063. Chip quality rating was not available.

Snowden (MFX). Snowden total and marketable tuber yields were 343 and 319 cwt/acre, respectively. Potato tuber skin color was tan with a 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 4 to 6 inches. Vine type at full flower was rated as spreading to upright with a good canopy. Plant maturity at harvest was rated as yellow and dying to completely dead. Average specific gravity for Snowden tubers was 1.070. Chip quality was rated as very good with minimal blemishes.

Suncrisp (USDA). Suncrisp total and marketable tuber yields were 312 and 292 cwt/acre, respectively. Potato tuber skin color was buff 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. 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 harvest was rated as moderately mature to yellow and dying. Average specific gravity for Suncrisp tubers was 1.069. Chip quality was rated as very good with minimal blemishes.

AF1424-7 (UM). AF1424-7 total and marketable tuber yields were 278 and 260 cwt/acre, respectively. Potato tuber skin color was white with a 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 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 AF1424-7 tubers was 1.071. Chip quality was rated as very good with minimal blemishes.

AF2206-7 (UM). AF2206-7 total and marketable tuber yields were 200 and 186 cwt/acre, respectively. Potato tuber skin color was white with a moderately smooth texture. Tuber flesh color was white. 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 6 to 8 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 AF2206-7 tubers was 1.084. Chip quality was rated as very good with minimal blemishes.

AF2211-14 (UM). AF2211-14 total and marketable tuber yields were 200 and 186 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. 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 AF2211-14 tubers was 1.084. Chip quality was rated as very good with minimal blemishes.

AF2215-5 (UM). AF2215-5 total and marketable tuber yields were 182 and 159 cwt/acre, respectively. Potato tuber skin color was white with a slightly netted to moderately smooth 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 4 to 6 inches. Vine type at full flower was rated as upright with a poor canopy. Plant maturity at harvest was rated as yellow and dying to completely dead. Average specific gravity for AF2215-5 tubers was 1.078. Chip quality was rated as marginally acceptable with borderline color and/or defects.

AF2242-10 (UM). AF2242-10 total and marketable tuber yields were 272 and 240 cwt/acre, respectively. Potato tuber skin color was tan to buff with a slightly netted texture. Tuber flesh color was 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 6 to 8 inches. Vine type at full flower was rated as spreading with a good canopy. Plant maturity at harvest was rated as yellow and dying to completely dead. Average specific gravity for AF2242-10 tubers was 1.075. Chip quality was rated as very good with minimal blemishes.

B0564-8 (USDA). B0564-8 total and marketable tuber yields were 256 and 235 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 'mostly round' with an eye depth of intermediate to shallow. Overall external tuber appearance was noted as 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 B0564-8 tubers was 1.076. Chip quality was rated as very good with minimal blemishes.

B0766-3 (USDA). B0766-3 total and marketable tuber yields were 240 and 211 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' with an eye depth of intermediate to shallow. 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 with a fair canopy. Plant maturity at harvest was rated as yellow and dying to completely dead. Average specific gravity for B0766-3 tubers was 1.070. Chip quality was rated as very good with minimal blemishes.

B1884-9 (USDA). B1884-9 total and marketable tuber yields were 326 and 298 cwt/acre, respectively. Potato tuber skin color was tan 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 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 moderately mature to yellow and dying.

Average specific gravity for B1884-9 tubers was 1.066. Chip quality was rated as very good with minimal blemishes.

B1958-85 (USDA). B1958-85 total and marketable tuber yields were 365 and 324 cwt/acre, respectively. Potato tuber skin color was brown to tan with a light russet to netted texture. Tuber flesh color was white. 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 4 to 6 inches. Vine type at full flower was rated as spreading to upright with a good canopy. Plant maturity at harvest was rated as yellow and dying to completely dead. Average specific gravity for B1958-85 tubers was 1.061. Chip quality was rated as very good with minimal blemishes.

B1992-177 (USDA). B1992-177 total and marketable tuber yields were 243 and 218 cwt/acre, respectively. Potato tuber skin color was tan with a netted to slightly netted texture. Tuber flesh color was 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 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 B1992-177 tubers was 1.066. Chip quality was rated as very good with minimal blemishes.

B2001-186 (USDA). B2001-186 total and marketable tuber yields were 327 and 201 cwt/acre, respectively. Potato tuber skin color was white with a slightly netted to moderately mature 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 4 to 6 inches. Vine type at full flower was rated as spreading to upright with a good canopy. Plant maturity at harvest was rated as yellow and dying. Average specific gravity for B2001-186 tubers was 1.071. Chip quality was rated as very good with minimal blemishes.

NY120 (Cornell). NY120 total and marketable tuber yields were 264 and 237 cwt/acre, respectively. Potato tuber skin color was tan with a netted to slightly netted texture. Tuber flesh color was white. Tuber shape was rated as ‘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 6 to 8 inches. Vine type at full flower was rated as spreading to upright with a good canopy. Plant maturity at harvest was rated as yellow and dying to completely dead. Average specific gravity for NY120 tubers was 1.075. Chip quality was rated as very good with minimal blemishes.

Table 18. Production statistics for Chipping 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	
Atlantic	309	284	100	6	47	33	14	0	94	47	1.077
Coastal Chip	249	226	79	8	48	31	13	1	92	44	1.065
LaChipper	305	285	100	4	42	39	15	0	95	54	1.067
Sebago	166	144	51	5	64	28	2	0	94	30	1.063
Snowden	343	319	112	4	53	36	6	0	95	42	1.070
Suncrisp	312	292	103	3	52	32	13	0	97	45	1.069
AF1424-7	278	260	91	4	38	43	16	0	97	59	1.071
AF2206-7	200	186	66	2	53	39	6	0	98	45	1.084
AF2211-14	175	129	45	28	69	3	0	0	72	3	1.084
AF2215-5	182	159	56	4	52	30	14	0	96	44	1.078
AF2242-10	272	240	85	8	76	17	0	0	93	17	1.075
B0564-8	256	235	83	7	55	32	7	0	94	39	1.076
B0766-3	240	211	74	4	47	38	12	0	97	50	1.070
B1884-9	326	298	105	3	41	42	14	0	97	56	1.066
B1958-85	365	324	114	6	50	37	8	0	95	45	1.061
B1992-177	243	218	77	7	52	34	8	0	94	42	1.066
B2001-186	327	301	106	3	61	35	1	0	96	36	1.071
NY120	264	237	84	10	51	28	11	0	90	39	1.075
<i>LSD</i> ³	110	110		8.8	ns	18.1	9.3	ns	8.8	24.7	0.004
<i>P Value</i>	0.0091	0.0101		0.0003	0.0856	0.0157	0.0038	0.4736	0.0002	0.0092	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 the *LSD* means separation test.

Table 19. Plant growth and tuber characteristics of Chipping potato selections.

Clone	Plant Growth Characteristics ¹				Tuber Characteristics ¹						
	% Stand	Early Vigor	Vine Type	Vine Maturity	IFC	SC	ST	TS	ED	APP	Chip Rating ²
Atlantic	100	4.8	6-9	3.3	2.0	6.0	5.0	2.5	6.5	5.5	3
Coastal Chip	100	5.3	6-9	2.0	1.5	8.0	6.5	2.5	5.5	5.0	na
LaChipper	100	5.0	6-9	2.5	1.0	8.0	7.5	2.5	6.0	7.0	na
Sebago	83	4.5	7	2.0	1.0	7.5	7.5	3.0	7.0	5.5	na
Snowden	100	5.3	6-9	2.8	1.0	6.0	5.0	2.5	6.0	5.5	2
Suncrisp	96	5.0	6-9	3.3	1.0	7.0	6.0	2.5	6.5	5.0	2
AF1424-7	95	4.5	5-8	2.8	1.5	8.0	7.0	2.5	7.0	6.0	2
AF2206-7	100	5.8	5-8	2.0	1.0	8.0	7.0	2.5	7.0	6.0	2
AF2211-14	100	5.3	5-8	1.8	1.5	7.5	6.5	2.5	7.0	5.0	2
AF2215-5	96	4.5	7	2.5	1.5	8.0	6.5	2.0	7.0	5.5	4
AF2242-10	100	6.0	6	2.3	2.0	6.5	6.0	2.5	7.0	6.5	2
B0564-8	99	5.0	5-8	1.5	1.5	6.5	5.8	2.0	6.5	7.0	2
B0766-3	99	5.3	5-8	2.0	1.5	6.5	6.0	2.5	6.5	5.0	2
B1884-9	99	5.0	5-8	3.4	1.5	6.0	6.0	2.5	7.0	6.0	2
B1958-85	100	5.0	6-9	2.3	1.0	5.5	4.8	4.5	7.0	5.5	2
B1992-177	96	4.5	5-8	2.5	2.0	6.0	5.5	2.5	7.0	6.5	2
B2001-186	94	4.8	6-9	3.0	1.5	8.0	6.8	3.5	7.5	6.0	2
NY120	100	6.0	6-9	2.3	1.0	6.0	5.8	2.0	7.5	6.0	2

¹See rating system outlined in Tables 1 and 2.

²For descriptions, see general potato variety production information.

Table 20. External and internal defects of Chipping 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
Atlantic	1	1	6	4	12	0	0	1	4
Coastal Chip	0	2	1	5	8	0	0	1	0
LaChipper	0	2	3	4	8	0	0	0	1
Sebago	2	1	4	8	14	0	0	1	4
Snowden	0	0	7	3	10	0	0	0	3
Suncrisp	0	0	3	7	11	0	0	3	0
AF1424-7	1	0	6	0	7	0	0	0	0
AF2206-7	0	0	3	7	9	0	0	0	0
AF2211-14	1	0	1	9	11	0	0	0	3
AF2215-5	3	0	12	2	17	0	0	0	0
AF2242-10	0	1	0	12	13	0	0	6	0
B0564-8	0	0	6	2	8	0	0	0	1
B0766-3	1	0	9	12	22	0	0	1	0
B1884-9	6	1	10	2	19	0	0	4	0
B1958-85	1	2	13	7	24	0	0	3	0
B1992-177	2	0	4	6	12	0	0	0	0
B2001-186	0	0	10	7	17	0	0	8	0
NY120	0	0	3	6	8	0	0	3	0
<i>LSD</i> ³	3	ns	6	ns	ns	ns	ns	ns	ns
<i>P Value</i>	0.0099	0.3823	0.0003	0.9223	0.5522	-	-	0.4542	0.1340

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 the *LSD* means separation test.

