

# CHAPTER 10. SNACK FOOD ASSOCIATION POTATO VARIETY TRIAL, 2003

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## *General Comments*

A goal of the Snack Food Association 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	PSREU, Yelvington Farm, Hastings, FL
Planting Date	January 30, 2003
Harvest Date	May 13, 2003
Season Length	103 days
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	2 (Standard: Atlantic and Snowden)
Number of Clones	10
Within Row Spacing	8 in (20.3 cm)
Between Row Spacing	40 in (102 cm)
Replications	1
Plot Size	Single 250 ft row (76.2 m) planted for each variety. Four, 20 ft (6.1 m) plots harvested from each row to determine production and quality statistics.

## *Production Statistics*

Early Vigor Ratings	39 days after planting
Highest Total Yield	Atlantic (421 cwt/acre or 47.2 MT/ha)
Highest Marketable Yield	Atlantic (376 cwt/acre or 42.1 MT/ha)
Highest Gravity	Snowden and W1201 (1.079)

## *Specific Comments*

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**Atlantic (SFA).** Atlantic total and marketable tuber yields were 421 and 376 cwt/acre, respectively. Potato tuber skin color was tan with a 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 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. Average specific gravity for Atlantic tubers was 1.070. Hollow heart was noted in 8% of tubers at harvest.

**Snowden (SFA).** Snowden total and marketable tuber yields were 380 and 345 cwt/acre, respectively. Potato tuber skin color was tan with a netted texture. Tuber flesh color was white. Tuber shape was rated as '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. Average specific gravity for Snowden tubers was 1.079.

**A91790-13 (SFA).** A91790-13 total and marketable tuber yields were 399 and 346 cwt/acre, respectively. Potato tuber skin color was buff with a netted to 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 8 to 10 inches. Vine type at full flower was rated as spreading to upright with a good canopy. Plant maturity at harvest was rated as moderately senescing to yellow and dying. Average specific gravity for A91790-13 tubers was 1.072.

**AF1424-7 (SFA).** AF1424-7 total and marketable tuber yields were 285 and 169 cwt/acre, respectively. Potato tuber skin color was buff 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. 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 with a good canopy. Plant maturity at harvest was rated as yellow and dying. Average specific gravity for AF1424-7 tubers was 1.069. Seven percent of tubers at harvest were rated as misshaped.

**MSF099-3 (SFA).** MSF099-3 total and marketable tuber yields were 289 and 230 cwt/acre, respectively. Potato tuber skin color was white to buff with a netted to slightly 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 8 to 10 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 MSF099-3 tubers was 1.073. Hollow heart was noted in 5% of tubers at harvest.

**MSG227-2 (SFA).** MSG227-2 total and marketable tuber yields were 379 and 308 cwt/acre, respectively. Potato tuber skin color was brown to tan with a netted 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 fair to good. Early plant vigor (size) was rated as 4 to 6 inches. Vine type at full flower was rated as spreading with a good canopy. Plant maturity at harvest was rated as yellow and dying. Average specific gravity for MSG227-2 tubers was 1.069. Internal heat necrosis was noted in 5% of tubers at harvest.

**MSH095-4 (SFA).** MSH095-4 total and marketable tuber yields were 338 and 263 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 '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 8 to 10 inches. Vine type at full flower was rated as spreading with a good canopy. Plant maturity at harvest was rated as yellow and dying. Average specific gravity for MSH095-4 tubers was 1.073.

**ND247D-27 (SFA).** ND247D-27 total and marketable tuber yields were 198 and 138 cwt/acre, respectively. Potato tuber skin color was tan to 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 to good. Early plant vigor (size) was rated as 8 to 10 inches. Vine type at full flower was rated as spreading with a good canopy. Plant maturity at harvest was rated as yellow and dying. Average specific gravity for ND247D-27 tubers was 1.071.

**ND5822C-7 (SFA).** ND5822C-7 total and marketable tuber yields were 293 and 188 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 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 harvest was rated as yellow and dying. Average specific gravity for ND5822C-7 tubers was 1.063. Seven percent of tubers at harvest were rated as misshapen. Seven percent of tubers at harvest were rated as misshaped. Hollow heart was noted in 13% of tubers at harvest.

**NDTX4930-5W (SFA).** NDTX4930-5W total and marketable tuber yields were 329 and 215 cwt/acre, respectively. Potato tuber skin color was tan to buff 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 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 harvest was rated as yellow and dying. Seven percent of tubers at harvest were rated as misshaped. Hollow heart was noted in 5% of tubers at harvest. Average specific gravity for NDTX4930-5W tubers was 1.066.

**W1201 (SFA).** W1201 total and marketable tuber yields were 340 and 278 cwt/acre, respectively. Potato tuber skin color was buff to white 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 shallow. Overall external tuber appearance was noted as good. Early plant vigor (size) was rated as 8 to 10 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 W1201 tubers was 1.079. Five percent of tubers were rated as misshaped at harvest. Hollow heart was noted in 5% of tubers at harvest.

**W1355-1 (SFA).** W1355-1 total and marketable tuber yields were 35 and 13 cwt/acre, respectively. Internal and external tuber quality ratings were not available due to low yield. Early plant vigor (size) was rated as 6 to 8 inches. Plants were very sensitive to Sencor.

Table 32. Production statistics for Snack Food Association Chipping potato selections.

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	
Atlantic	421	376	100	5	4	33	33	25	0	91	58	1.070
Snowden	380	345	92	3	2	35	45	16	0	95	60	1.079
A91790-13	399	346	92	7	5	50	30	9	0	88	38	1.072
AF1424-7	285	169	45	24	11	50	13	4	0	66	16	1.069
MSF099-3	289	230	61	8	8	57	24	2	1	83	26	1.073
MSG227-2	379	308	82	8	8	65	16	3	0	84	19	1.069
MSH095-4	338	263	70	11	9	51	21	9	0	80	29	1.073
ND247D-27	198	138	37	14	10	44	26	6	0	76	32	1.071
ND5822C-7	293	188	50	15	9	39	28	9	0	76	37	1.063
NDTX4930-5W	329	215	57	11	8	56	23	2	0	81	25	1.066
W1201	340	278	74	8	5	39	38	10	0	87	48	1.079
W1355-1 <sup>3</sup>	35	13	3	36	36	28	0	0	0	28	0	na
Average	332	259		10	7	47	27	9	0	83	35	1.071

<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>Entry not used in Average calculations.

Table 33. Plant growth and tuber characteristics of Snack Food Association Chipping potato selections.

Clone	Plant Growth Characteristics				Tuber Characteristics <sup>1</sup>						Chip Rating <sup>2</sup>
	% Stand	Early Vigor	Vine Type	Vine Maturity	IFC	SC	ST	TS	ED	APP	
Atlantic	83	6.0	9-6	3.0	1.3	6.0	5.0	2.3	6.5	6.0	3
Snowden	77	5.0	9-6	3.0	1.0	6.0	5.0	3.0	6.5	5.5	2
A91790-13	68	6.5	6-9	4.0	1.3	7.0	5.7	2.7	6.5	6.5	4
AF1424-7	63	5.8	9	3.0	1.3	7.0	5.7	1.7	7.0	6.5	3
MSF099-3	67	7.0	9-6	3.0	1.0	6.7	5.7	4.3	7.0	6.5	3
MSG227-2	83	5.3	6	3.0	1.3	5.3	5.0	3.7	7.5	6.0	2
MSH095-4	71	7.0	6	3.0	1.3	6.0	5.3	3.0	6.5	5.5	3
ND247D-27	48	6.5	6	3.0	1.0	6.3	6.0	2.3	6.5	5.5	3
ND5822C-7	57	5.3	8	3.0	1.3	6.7	6.0	2.7	7.0	6.0	4
NDTX4930-5W	67	5.5	6-9	3.0	2.0	6.3	5.7	2.7	6.5	6.5	2
W1201	78	6.5	9-6	3.0	1.0	6.7	6.3	2.7	7.0	7.0	3
W1355-1	65	5.8	<i>na</i>	<i>na</i>	<i>na</i>	<i>na</i>	<i>na</i>	<i>na</i>	<i>na</i>	<i>na</i>	<i>na</i>

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

Table 34. External and internal tuber defects of Snack Food Association Chipping potato selections.

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
Atlantic	0	1	1	0	2	8	0	0	3
Snowden	0	1	3	0	4	1	0	0	3
A91790-13	0	0	1	1	2	1	0	0	1
AF1424-7	0	7	2	2	10	4	0	0	0
MSF099-3	0	1	1	2	5	5	0	0	0
MSG227-2	0	1	0	3	3	1	0	0	5
MSH095-4	0	0	1	1	3	0	0	0	1
ND247D-27	0	0	3	6	9	0	0	0	1
ND5822C-7	3	7	3	3	15	13	0	0	4
NDTX4930-5W	1	7	3	9	19	5	0	0	4
W1201	0	5	1	1	7	5	0	0	0
W1355-1	0	0	0	0	0	0	0	0	0

<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.