Michigan Regional Location

Local Coordinators:

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East Lansing, MI

Cooperating Grower:

Greg Perkins
V & G Farms
Stanton, MI

Cooperating Chip Processor:

Herr Foods, Inc.
Nottingham, PA

Trial Data:

Planting Date:	April 30, 2004
Vine Kill Dates:	None applied
Harvest Date:	October 4, 2004 (154 DAP)
Row & Plant Spacing:	34″ x 9″; irrigated
Plots:	Single rows for each entry approximately 300′ long

Trial Procedure:

Seed was mechanically cut on April 21, 2004 and delivered to the grower's storage the following day. No specific seed issues were noted at the time of seed cutting. No seed treatments were applied at the time of seed cutting.

At harvest, three plot areas of 23 feet were harvested from each entry and were used to determine yields, size distribution, specific gravity and internal defects. A 40 lb. storage sample was collected from each entry and was placed in the grower's commercial storage for evaluation in spring 2005. Twenty-five tuber samples were also collected at harvest and stored at Michigan State University at 45ºF and 50ºF for both a February and May evaluation. An out of the field chip sample was taken for each variety at harvest and sent to Herr Foods for processing.

A plant growth and vigor observation was made on June 17th.

Growing Season Weather:

Weather conditions were generally cool with heavy rainfall in May. May was the wettest month, receiving just under 8.2" of rainfall. Total rainfall, April through October, was 20.12" averaging 2.87" per month over this same period. Rainfall for 2004 was slightly under the 15 year average of 21.32. Daytime temperatures were moderate throughout the growing season following the 15 year average. There was no recorded temperature over 89ºF in this region in 2004. In addition, nighttime temperatures remained cool throughout the region. One day in June the nighttime temperature reached 68ºF. The average nighttime lows for July, August and September were 57ºF, 53ºF and 49ºF, respectively.

Results:

Table 1 summarizes the yield, size distribution, and specific gravity data. Overall, US#1 yields were good with ND5822C-7 having an exceptional yield for the second year in a row. ND2470-27 and MSJ461-1 exhibited a marginal specific gravity for processing.

Table 1. Yield ,Size Distribution*, Specific Gravity

	Yield (cwt/A)		Percent Size Distribution					
Entry	US#1	TOTAL	US#1	Small	Mid-Size	Large	Culls	Specific Gravity
ND5822C-7	673	705	95	3	70	25	2	1.085
A91790-13	490	543	90	9	85	5	1	1.090
W1201	488	504	97	3	80	17	0	1.091
B01240-1	487	526	93	3	64	28	5	1.084
MSJ461-1	441	484	91	8	84	7	1	1.079
SNOWDEN	**416**	**438**	**95**	**4**	**80**	**15**	**1**	**1.087**
ATLANTIC	**415**	**431**	**96**	**3**	**88**	**8**	**0**	**1.093**
ND2470-27	408	426	96	3	61	35	1	1.078
MSF099-3	391	431	91	3	82	9	6	1.083
W1773-7	384	421	91	9	82	9	0	1.087
NY132	353	361	98	2	75	23	0	1.089
AF2211-9	324	360	90	9	89	1	1	1.085
Average	439	469	94					1.086

*small <1 7/8"; mid-size 1 7/8"-3 1/4"; large >3 1/4"

Table 2 summarizes the at-harvest tuber quality. ND5822C-7 had an elevated incidence of hollow heart with 14 out of 30 cut showing the defect. In addition, this variety had 12 brown centers indicating the total incidence of hollow heart could have been even higher. The following comments regarding scab susceptibility are observations from the field trial during grading. The entries showing the greatest susceptibility to scab were A91790-13, B01240-1 and MSF099-3. These varieties contained moderate surface and slight pitted scab. In most other entries, the incidence of scab was minimal to none.

Table 2. At Harvest Tuber Quality. V & G Farm, Michigan.

	Internal Defects[1]					
Entry	HH	VD	IBS	BC	Total Cut	Scab[2] Rating
ND5822C-7	14	1	0	12	30	nd
A91790-13	0	3	1	0	30	nd
W1201	0	7	0	0	30	nd
B01240-1	2	3	0	1	30	nd
MSJ461-1	2	1	2	0	30	1.8
SNOWDEN	**2**	**11**	**0**	**0**	**30**	**1.9**
ATLANTIC	**2**	**3**	**0**	**0**	**30**	**2.1**
ND2470-27	3	12	1	1	30	nd
MSF099-3	8	1	0	1	30	2.5
W1773-7	6	0	0	0	30	1.8
NY132	4	1	0	0	30	1.5
AF2211-9	0	8	0	0	30	2.3

[1] Internal Defects. HH = hollow heart, VD = vascular discoloration, IBS = internal brown spot, BC = brown center.

[2]Scab tolerance data from MSU scab trial. 0 = no infection, 1 = low infection < 5%, 3 = intermediate, 5 = highly susceptible, nd = no data

Table 3 shows the post harvest chip quality based on samples collected at harvest on October 4 and processed at Herr Foods Inc. on October 14th, 11 days after harvest. Chip colors were all good, with A91790-13 having exceptionally nice color. Some varieties had a significant amount of total chip defects primarily W1773-7, ND2470-27, B01240-1 and MSF099-3.

Table 3. 2004 Post-Harvest Chip Quality[1].

	Agtron	SFA[2]	Specific	Percent Chip Defects[3]		
Entry	Color	Color	Gravity	Internal	External	Total
ND5822C-7	65.4	1.0	1.082	5	4	9
ATLANTIC	**61.8**	**1.5**	**1.085**	**9**	**2**	**11**
MSJ461-1	66.1	1.5	1.073	5	7	12
A91790-13	63.8	1.0	1.085	7	5	12
SNOWDEN	**62.6**	**1.0**	**1.082**	**3**	**12**	**15**
W1201	61.7	1.0	1.089	11	8	19
NY132	67.7	1.0	1.088	9	15	24
AF2211-9	68.3	1.0	1.083	10	15	25
MSF099-3	62.0	1.5	1.079	26	0	26
B01240-1	62.2	1.5	1.080	19	9	28
ND2470-27	63.0	1.0	1.077	23	10	33
W1773-7	62.1	1.5	1.082	33	3	36

[1]Samples collected at harvest October 4 and processed by Herr Foods Inc., Nottingham, PA on October 14, 2004 (11 days).

[2]SFA Color: 1 = lightest, 5 = darkest

[3]Percent Chip Defects: are a percentage, by weight, of the total sample comprised of undesirable color, greening, internal defects and external defects.

Table 4 summarizes the results of the samples collected for black spot bruise. Two-25 tuber samples were collected at harvest. One sample served as a check and the second sample was stored for at least 12 hours at 50ºF, then placed in a 6 sided plywood drum and rotated 10 times to produce a simulated bruise. Later, all samples were abrasively peeled and scored for black spot bruise. All entries had a high percentage of bruise free potatoes among the check samples except Atlantic and ND5822C-7.

Among the "Simulated Bruise" samples, the best entries were MSJ461-1, MSF099-3 and A91790-13. ND2470-27 and B01240-1 showed the lowest percent bruise free.

Table 4. Black spot Bruise Test

	A. Check Samples[1]									B. Simulated Bruise Samples[2]								
Entry	0	1	2	3	4	5+	Total Tubers	Percent Bruise Free	Average Bruises Per Tuber	0	1	2	3	4	5+	Total Tubers	Percent Bruise Free	Average Bruises Per Tuber
A91790-13	24	1					25	96	0.0	16	7	1		1		25	64	0.5
MSJ461-1	25						25	100	0.0	17	5	2	1			25	68	0.5
MSF099-3	24	1					25	96	0.0	13	8	4				25	52	0.6
ND5822C-7	19	6					25	76	0.2	8	15	1	1			25	32	0.8
ATLANTIC	**18**	**6**	**1**				**25**	**72**	**0.3**	**10**	**11**	**3**	**1**			**25**	**40**	**0.8**
W1773-7	23	2					25	92	0.1	9	12	4				25	36	0.8
SNOWDEN	**24**	**1**					**25**	**96**	**0.0**	**10**	**5**	**9**	**1**			**25**	**40**	**1.0**
AF2211-9	21	4					25	84	0.2	6	9	8	2			25	24	1.2
W1201	23	2					25	92	0.1	7	7	7	4			25	28	1.3
NY132	21	4					25	84	0.2	15	1		2	5	2	25	60	1.5
ND2470-27	21	4					25	84	0.2	4	6	10	2	3		25	16	1.8
B01240-1	22	3					25	88	0.1	3	8	4	7			22	14	2.0

[1]Tuber samples collected at harvest and held at room temperature for later abrasive peeling and scoring.

[2]Tuber samples collected at harvest, held at 50F for at least 12 hours, then placed in a 6 sided plywood drum and rotated 10 times to produce simulated bruising. They were then held at room temperature for later abrasive peeling and scoring.

Variety Comments:

ND8522C-7: This clone continues to have tremendous plant vigor with very large vines. Tuber type was nice, but hollow heart and brown center continue to be found in over 20% of cut oversize tubers. Scab tolerance seems to be good. Chip color was nice with an Agtron score of 65.4. Concerns still remain in regard to elevated total glycoalkoloides in this variety. This variety exhibited a slight susceptibility to black spot bruise.

A91790-13: Emergence and plant vigor were noted as above average. Yields were very nice as US#1's reached 490 cwt/A. Specific gravity was the third highest at 1.090. Scab levels for this variety were lower than last year, but still present in moderate amounts. Chip color was excellent, with lower total defects overall. Susceptibility to black spot was slight.

W1201: This variety was seen to have good plant vigor on June 17th and produced a good yield. A consistently strong specific gravity continues to be noted in this variety around 1.090. No hollow heart was noted in the oversize with 7 of 30 tubers having vascular discoloration. W1201 seems to be a later maturing variety that bulks early. Chip quality was good, but susceptible to black spot bruise at 1.3 bruises per tuber.

B01240-1: A poor stand was noted on June 17th mostly due to seed piece decay. In spite of the poor stand, this variety had an above average US#1 yield at 487 cwt/A. It had the second largest number of culls in the trial at 5%. Specific gravity was acceptable, but below average for the trial. Internal defects were moderate with only 2 hollow heart in 30 cut tubers. Scab susceptibility was noted in the plot at harvest with moderate surface and slight pit scab present. The Agtron score was good, but the total chip defects were high, mostly due to pitted scab and stem end color. Black spot bruise susceptibility was the highest in the trial at 2.0 bruises per tuber.

MSJ461-1: This variety exhibited an average yield of uniform round tubers. Internal defects in the tubers were low. The number of "B" sized tubers was higher than average at 8%. The Agtron score was excellent at 66.1 with below average chip defects. The recorded specific gravities at harvest and at Herr Foods, Inc. were below the minimum processing stand of 1.080. This variety was one of the least susceptible to black spot bruise in this trial.

Snowden: Average yield and an average specific gravity of 1.087.

Atlantic: Average yield with the highest specific gravity in the trial at 1.093.

ND2470-27: This variety yielded below average, but produced the largest amount of recorded oversize tubers for this trial at 35%. It also produced the lowest specific gravity of the trial. A large amount of vascular discoloration was noted. Chip color was good, but a large amount of vascular and stem end discoloration was present. Black spot bruise susceptibility was the second highest for the trial at 1.8 bruises per tuber.

MSF099-3: It had a below average yield with the largest number of culls in the trial at 6%. Specific gravity was below average at 1.083. Hollow heart was recorded at 8 tubers in 30 cut, which was the second highest recorded entry in the trial. Chip quality was poor with 26% internal color, mostly due to stem end discoloration. The specific gravity was marginal at 1.079. Black spot bruise susceptibility was low at 0.6 bruises per tuber.

W1773-7: Emergence and plant vigor were average. US#1 yield was below average at 384 cwt/A. Specific gravity was good at 1.087. This variety had the third largest amount of hollow heart in the trial at 6 per 30 cut tubers. Chip color was poor with 33% of the chips exhibiting some discoloration. Black spot bruise susceptibility was slight to moderate.

NY132: On June 17th, NY132 was reported to have an uneven stand due to variability in plant height and growth rate. This variety had a strong marketable profile with 98% of the tubers in the US#1 category. 23% of the US#1 yield was oversize. Four out of 30 cut tubers were hollow. The Agtron score on the chips was 67.7, the second highest in the trial with a 1.088 specific gravity. Nine percent internal defects were recorded due to stem end discoloration in the chips. Overall, this variety was very susceptible to black spot bruise at 1.5 bruises per tuber. It appeared to have a lower number of tubers that were bruised, but those that were bruised were severe.

AF2211-9: This variety recorded the lowest yield in this year's trial with a large percent of "B" size tubers. The specific gravity was acceptable at 1.085. Eight vascular discolorations were noted at harvest which was higher than average. The chips recorded a 68.3 Agtron score, the highest in the trial. Black spot bruise susceptibility was quite high at 1.2 bruises per tuber.