

## **Michigan Regional Location**

### **Local Coordinators:**

Chris Long  
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### **Cooperating Grower:**

Greg Perkins  
V & G Farms  
Stanton, MI

### **Cooperating Chip Processor:**

Herr Foods, Inc.  
Nottingham, PA

### **Trial Data:**

Planting Date:	May 25, 2005
Vine Kill Date:	Unknown
Harvest Date:	October 10, 2005 (139 DAP)
Row & Plant Spacing:	34" x 10"; irrigated
Plots:	Single rows for each entry approximately 300' long

### **Trial Procedure:**

Seed was mechanically cut on May 3, 2005 and delivered to the grower's storage the following day. No seed treatments were applied at the time of seed cutting. The seed of A91814-5 contained, what appeared to be, severe infections of blackleg and dry rot in 50% of the tubers. Consequently, there was limited seed available to plant the plot, but we were able to harvest all three replications in this variety.

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 2006. Twenty-five tuber samples were also collected at harvest and stored at the Michigan Potato Industry Commission's Cargill Demonstration Storage Facility at approximately 48°F and 55°F for both a February and May evaluation. Two out of the field chip samples were taken for each variety at harvest. One was sent to Herr Foods for processing and the additional sample was processed at Michigan State University.

A plant growth and vigor observation was made on June 29<sup>th</sup>. ND5822C-7 appeared to be the most vigorous vine type followed by Megachip and A91814-5. The MSJ316-A appeared to have the slowest rate of vine growth on this date.

## Growing Season Weather:

Weather conditions during the 2005 growing season were warm and dry. September was the wettest month, receiving just 3.9" of rainfall. Total rainfall, April through September, was 15.05" averaging 2.5" per month over this same period. Rainfall for 2005 was under the 15 year average of 20.66" by approximately 5.5". Daytime temperatures were elevated June through August, with temperatures being 2 to 5 degrees higher than the 15 year average during this period. There were three days in June and one in August where daytime temperatures exceeded 90°F. Also, nighttime temperatures during the month of June were slightly higher than the 15 year average. One day in June the nighttime temperature reached 72.6°F. The average nighttime lows for June, July and August were 60°F, 58°F and 58°F, respectively.

## Results:

Table 1 summarizes the yield, size distribution, and specific gravity data at harvest. ND5822C-7 occupies the top yield spot for the third year running. This variety exhibits excellent gravity and a good marketable yield. NY132 and AF2211-9 fell below the yield expectations for this trial at 260 and 184 cwt. respectively. A91814-5, AF2211-9 and MSJ461-1 have specific gravity levels below the industry standard of 1.080.

<b>Table 1. Yield ,Size Distribution*, Specific Gravity</b>								
<b>Entry</b>	<b>Yield (cwt/A)</b>		<b>Percent Size Distribution</b>					<b>Specific Gravity</b>
	<b>US#1</b>	<b>TOTAL</b>	<b>US#1</b>	<b>Small</b>	<b>Mid-Size</b>	<b>Large</b>	<b>Culls</b>	
ND5822C-7	621	648	95	3	72	23	2	1.089
MSJ461-1	404	474	85	15	84	1	0	1.073
MSJ316-A	380	420	91	7	82	9	2	1.079
<b>Snowden</b>	<b>375</b>	<b>403</b>	<b>94</b>	<b>6</b>	<b>89</b>	<b>5</b>	<b>0</b>	<b>1.082</b>
Megachip	368	399	92	6	83	9	2	1.083
W2133-1	304	336	91	8	83	8	1	1.084
A91814-5	301	407	74	21	72	2	5	1.067
<b>Atlantic</b>	<b>275</b>	<b>318</b>	<b>87</b>	<b>9</b>	<b>85</b>	<b>2</b>	<b>4</b>	<b>1.081</b>
NY132	260	300	87	11	81	6	2	1.080
AF2211-9	184	226	83	12	75	7	5	1.070
Average	380	413	88					1.079

\*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 a higher than average incidence of hollow heart with 7 out of 30 cut showing the defect. The hollow heart that appeared in AF2211-9 appeared to be significant given the small yield and size profile of the variety. The following comments regarding scab susceptibility are observations from the field trial during grading. The ND5822C-7 variety had excellent field resistance to common scab. On the contrary, the A91814-5 and the AF2211-9 exhibited the highest level of susceptibility. These varieties contained significant surface and pitted scab.

Entry	Internal Defects <sup>1</sup>				Total Cut	Scab <sup>2</sup> Tolerance
	HH	VD	IBS	BC		
ND5822C-7	7	0	0	0	30	0.5
MSJ461-1	1	0	0	0	30	2.0
MSJ316-A	2	0	0	0	30	1.5
<b>Snowden</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>30</b>	<b>3.5</b>
Megachip	4	1	0	0	30	2.0
W2133-1	2	0	0	0	30	3.0
A91814-5	0	0	0	0	30	3.5
<b>Atlantic</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>30</b>	<b>3.5</b>
NY132	2	0	0	0	30	1.5
AF2211-9	5	0	0	0	30	3.5

<sup>1</sup>Internal Defects. HH = hollow heart, VD = vascular discoloration, IBS = internal brown spot, BC = brown center.  
<sup>2</sup>Scab reading October 10, 2005. 0 = no infection, 1 = low infection < 5%, 3 = intermediate, 5 = highly susceptible.

Table 3 shows the post harvest chip quality based on samples collected at harvest on October 10th and processed at Herr Foods Inc. on October 18<sup>th</sup>, 9 days after harvest. Chip colors were generally good, with Megachip, ND5822C-7, W2133-1 and MSJ461-1 having the best overall appearance. Some varieties had a significant amount of total chip defects primarily A91814-5, AF2211-7 and MSJ316-A.

Entry	Agron Color	SFA <sup>2</sup> Color	Specific Gravity	Percent Chip Defects <sup>3</sup>		
				Internal	External	Total
ND5822C-7	64.1	2.0	1.085	21	1	22
MSJ461-1	61.7	2.0	1.063	19	17	36
MSJ316-A	59.5	3.0	1.079	50	2	52
<b>Snowden</b>	<b>67.8</b>	<b>2.0</b>	<b>1.075</b>	<b>14</b>	<b>22</b>	<b>36</b>
Megachip	61.7	2.0	1.078	32	12	44
W2133-1	59.1	2.0	1.076	23	10	33
A91814-5	58.2	4.0	1.073	28	37	65
<b>Atlantic</b>	<b>63.1</b>	<b>3.0</b>	<b>1.075</b>	<b>20</b>	<b>27</b>	<b>47</b>
NY132	64.1	3.0	1.075	28	12	40
AF2211-9	57.2	4.0	1.066	37	16	53

<sup>1</sup> Samples collected at harvest October 10th and processed by Herr Foods Inc., Nottingham, PA on October 18, 2005 (9 days).  
 Chip defects are included in Agron and SFA samples.  
<sup>2</sup> SFA Color: 1 = lightest, 5 = darkest  
<sup>3</sup> 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 50°F, then placed in a 6 sided plywood drum and rotated 10 times to produce a simulated bruise. Two to three weeks 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 NY132 and W2133-1.

Among the “Simulated Bruise” samples, the best entries were Megachip, MSJ316-A and A91814-5. NY132, Snowden and AF2211-9 showed the lowest percent bruise free.

Table 4. Black spot Bruise Test																		
Entry	A. Check Samples <sup>1</sup>										B. Simulated Bruise Samples <sup>2</sup>							
						Total Tubers	Percent Bruise	Average Bruises Per						Total Tubers	Percent Bruise	Average Bruises Per		
	0	1	2	3	4		5	Free	Tuber	0	1	2	3		4	5	Free	Tuber
ND5822C-7	24	1					25	96	0.0	17	5	2	1			25	68	0.5
MSJ461-1	25						25	100	0.0	15	9	1				25	60	0.4
MSJ316-A	25						25	100	0.0	19	5		1			25	76	0.3
<b>Snowden</b>	25						25	100	0.0	<b>10</b>	<b>12</b>	<b>2</b>	<b>1</b>			<b>25</b>	<b>40</b>	<b>0.8</b>
Megachip	25						25	100	0.0	19	6					25	76	0.2
W2133-1	20	5					25	80	0.2	16	5	2	1		1	25	64	0.7
A91814-5	25						25	100	0.0	20	3	1	1			25	80	0.3
<b>Atlantic</b>	25						25	100	0.0	<b>17</b>	<b>8</b>					<b>25</b>	<b>68</b>	<b>0.3</b>
NY132	22	3					25	88	0.1	5	11	1	5	3		25	20	1.6
AF2211-9	25						25	100	0.0	12	12	1				25	48	0.6

<sup>1</sup>Tuber samples collected at harvest and held at room temperature for later abrasive peeling and scoring.

<sup>2</sup>Tuber samples collected at harvest, held at 50°F 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:** Emergence and plant vigor were noted as above average. This clone has tremendous plant vigor with very large vines. Tuber type was nice, but hollow heart continues to be a factor in the cut oversize tubers. Scab tolerance seems to be strong. Chip color was nice with an Agtron score of 64.1. Concerns still remain in regard to elevated total glycoalkaloids in this variety, as well as masking of PVY symptoms. This variety exhibited a slight susceptibility to black spot bruise.

**MSJ461-1:** This variety exhibited an above average yield of uniform round tubers. Internal defects in the tubers were low. The number of “B” sized tubers was higher than average at 15%. The Agtron score was excellent at 61.7. 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.

**MSJ316-A:** US#1’s yield was above average at 380 cwt/A. Specific gravity was acceptable given the growing season. Internal defects were low and the scab rating was acceptable. The variety emerged slowly after planting and appeared to be later maturing than the other varieties. Chip color was below average, with the highest percent of internal defects overall. The internal defects were the result of poor internal color. Susceptibility to black spot was slight.

Snowden: An above average yield at 375 cwt/A and an average specific gravity of 1.082. Snowden posted the highest Agtron score of 67.8 with a lower percent of total defects on average than many of the other varieties. The percent of bruise free potatoes were below average at 40%. Surface and pitted scab was moderate at harvest.

Megachip (W1201): This variety was seen to have good plant vigor on June 29<sup>th</sup> and produced a strong yield of good size potatoes. A consistent, strong specific gravity continues to be noted in this variety, generally in the 1.083 to 1.089 range. A slight amount of hollow heart was noted in the oversize tubers. Megachip appears to be a later maturing variety that bulks early with some scab tolerance. Chip quality was excellent, with only a trace of black spot bruise this year.

W2133-1: The US#1 yield for this variety was average at 304 cwt/A. The specific gravity was above average at 1.084. Internal quality was good, with moderate susceptibility to pitted scab noted. Chip quality was very good overall, placing W2133-1 with the top chip performers in this trial. Susceptibility to black spot was medium.

A91814-5: Yield was below average at 301 cwt/A. This variety recorded the highest percent of “small” potatoes at 21% with an unacceptable specific gravity. The tubers appeared to be very susceptible to surface and pitted scab. Chip quality was poor recording the highest level of total chip defects at 65%. Black spot bruise susceptibility was slight.

Atlantic: Below average yield for this trial with a moderate specific gravity at 1.081. The variety exhibited a high level of susceptibility to common scab. Chip quality was average.

NY132: This variety had a marginal yield at 260cwt/A. The specific gravity was acceptable at 1.080. Internal quality was good with moderate scab tolerance. Overall, chip quality was good with an Agtron reading of 64.1 and a moderate total chip defect score of 40%. This variety appeared to be very susceptible to black spot bruise at 1.6 bruises per tuber.

AF2211-9: This variety recorded the lowest yield in this year’s trial again with a large percent of “small” size tubers. The specific gravity was unacceptable at 1.070. Five tubers exhibited hollow out of the thirty cut. Given the smaller size profile of this variety this level of hollow heart is significant. This variety also appears to be very susceptible to common scab. The chips recorded a 57.2 Agtron score, the lowest in the trial. Black spot bruise susceptibility was slight to moderate this season.