

## **2014 Michigan Regional Trial Location**

### **Local Coordinators:**

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Michigan State University  
East Lansing, MI

### **Cooperating Grower:**

Tim & Todd Young  
Sandyland Farms LLC  
Howard City, MI

### **Cooperating Chip Processor:**

Herr Foods, Inc.  
Nottingham, PA

### **Trial Information:**

|                      |  |
|----------------------|--|
| Planting Date:       | June 1 <sup>st</sup> , 2014                                    |
| Vine Kill Date:      | September 8 <sup>th</sup> , 2014                               |
| Harvest Date:        | October 9 <sup>th</sup> , 2014 (130 Days, Planting to Harvest) |
| Between Row & In Row |  |
| Plant Spacing:       | 34" x 10"; irrigated   |
| Plots:               | Single rows for each entry, approximately 300' long            |
| GDD, Base 40         | 2670 (99 Days, Planting to Vine Kill)                          |

### **Trial Procedure:**

Seed was mechanically cut on May 12<sup>th</sup>, 2014, and delivered to the grower's seed storage three days later. No seed treatments were applied at the time of seed cutting.

Two pre-harvest sugar profiles were taken this season. One on August 20<sup>th</sup>, and the second on September 2<sup>nd</sup>, for each variety, three weeks and one week prior to the vine kill date. The pre-harvest sugar profile protocol was as follows: obtained a minimum of 40 tubers from each variety, taking all the tubers from each hill, even if that required collecting more than 40 tubers. A canopy rating was taken for each variety as a percent rating of green foliage. Canopy uniformity was noted as a percentage of how uniform the foliage health appeared. The number of hills required to obtain 40 tubers was recorded, along with the total number of main stems harvested. From the tubers harvested, the specific gravity, a glucose value (a percent by fresh weight), a sucrose rating (a percent by fresh weight X10) and an average tuber weight (in ounces) was established.

At harvest, three plot areas of 23 feet were harvested from each entry and were used to determine trial yield averages, tuber size distribution, specific gravity and quantity of internal defects present. Two, 40 lb. storage samples were collected from each entry and were placed in the grower's commercial storage for evaluation at later dates (January and April 2015). Sixteen, 40 tuber samples were also collected for each variety at harvest. All sixteen samples were stored at the Michigan Potato Industry Commission's Cargill Demonstration Storage Facility at approximately 48°F or 54°F for a monthly sugar profile evaluation at Techmark, Inc. Eight, 40 tuber samples were stored at each temperature for evaluation, November 2014 through June 2015. The storage sugar profiles began October 9<sup>th</sup>, 2014. Two out-of-the-field

chip samples were taken for each variety at harvest. One was sent to Herr Foods, Inc. for processing and the additional sample was processed at Michigan State University.

A plant growth and vine vigor observation was made on June 30<sup>th</sup>, 2014. MSL007-B, AC01151-5W, CO03243-3W, CO02024-9W, Snowden, and CO02321-4W appeared to have the slowest rate of vine growth, whereas, A00188-3C, A01143-3C, Atlantic, W5955-1, W6609-3 and AF4157-6 were the most vigorous on this date. A vine maturity rating was taken for each variety on August 26<sup>th</sup>, 2014, approximately 13 days prior to vine kill. AF4157-6, W6609-3, Atlantic, Snowden and CO02024-9W were the most mature varieties and AC01151-5W appeared to be the most immature on this date.

### **Growing Season Weather:**

Weather conditions during the 2014 growing season were cooler and wetter than average. The time period from June 1<sup>st</sup> to October 9<sup>th</sup>, 2014, saw 13.40 inches of natural rainfall. During this same span of time only two days recorded over 35 growing degree days. No daytime high temperatures were recorded over 88 °F while sixteen nights recorded temperatures over 65 °F. Growing degree days base 40 recorded from June 1<sup>st</sup> through September 8<sup>th</sup> were 2670. This was almost 100 degree day units less than the five year average of 2766 GDD for this same time period. The tuber specific gravity, for potato production in Michigan, was above average as a result of the moderate nighttime heat stress. Commercial potato yields overall met average to above average yield projections.

## Results:

Table 1 summarizes the yield, size distribution, and specific gravity data at harvest. CO03243-3W and CO02024-9W topped the yield table in 2014, followed by a group of lines that yielded above average. These lines were: A01143-3C, Atlantic, and MSL007-B. W5955-1 had the largest percentage of recorded oversize tubers, followed closely by Atlantic and MSL007-B. AC01151-5W recorded a very low specific gravity value. Additional lines with marginal specific gravities were CO03243-3W, CO02024-9W and CO02321-4W.

| Table 1. Yield , Size Distribution*, Specific Gravity |               |            |                           |           |           |           |          |                  |
|---|---------------|------------|---------------------------|-----------|-----------|-----------|----------|------------------|
| Entry   | Yield (cwt/A) |            | Percent Size Distribution |           |           |           |          | Specific Gravity |
|   | US#1          | TOTAL      | US#1                      | Small     | Mid-Size  | Large     | Culls    |                  |
| CO03243-3W  | 478           | 535        | 89                        | 10        | 82        | 7         | 1        | 1.076            |
| CO02024-9W  | 436           | 500        | 87                        | 13        | 85        | 2         | 0        | 1.077            |
| A01143-3C   | 433           | 524        | 82                        | 10        | 80        | 2         | 8        | 1.080            |
| <b>Atlantic</b>                                       | <b>432</b>    | <b>482</b> | <b>90</b>                 | <b>6</b>  | <b>80</b> | <b>10</b> | <b>4</b> | <b>1.087</b>     |
| MSL007-B  | 389           | 412        | 95                        | 5         | 85        | 10        | 0        | 1.082            |
| W5955-1   | 348           | 417        | 84                        | 10        | 73        | 11        | 6        | 1.080            |
| A00188-3C   | 322           | 440        | 74                        | 24        | 73        | 1         | 2        | 1.084            |
| AC01151-5W  | 321           | 437        | 73                        | 25        | 72        | 1         | 2        | 1.072            |
| <b>Snowden</b>  | <b>318</b>    | <b>388</b> | <b>82</b>                 | <b>17</b> | <b>77</b> | <b>5</b>  | <b>1</b> | <b>1.079</b>     |
| CO02321-4W  | 281           | 350        | 80                        | 19        | 75        | 5         | 1        | 1.077            |
| W6609-3   | 239           | 320        | 75                        | 22        | 73        | 2         | 3        | 1.079            |
| AF4157-6  | 208           | 285        | 73                        | 24        | 73        | 0         | 3        | 1.079            |
| <b>MEAN</b>   | <b>350</b>    | <b>424</b> | <b>82</b>                 | <b>15</b> | <b>77</b> | <b>5</b>  | <b>3</b> | <b>1.079</b>     |

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

Table 2 summarizes the at-harvest tuber quality. Internal quality across the trial was generally acceptable, but the evidence of in-season environmental stress was observed in some lines. Hollow heart was present in Atlantic and to a lesser extent in CO03243-3W and AC01151-5W. AC01151-5W displayed a moderate level of internal brown spots which was at a high enough level to impact finished quality. AF4157-6, Snowden, A00188-3C and W6609-3 recorded above average amounts of vascular discoloration.

| <b>Table 2. At-Harvest Tuber Quality. Sandyland Farms, Howard City, Michigan.</b>  |                                     |           |            |           |                  |
|--|-------------------------------------|-----------|------------|-----------|------------------|
| <b>Entry</b>   | <b>Internal Defects<sup>1</sup></b> |           |            |           | <b>Total Cut</b> |
|  | <b>HH</b>                           | <b>VD</b> | <b>IBS</b> | <b>BC</b> |                  |
| CO03243-3W   | 5                                   | 0         | 0          | 1         | 30               |
| CO02024-9W   | 0                                   | 3         | 2          | 0         | 30               |
| A01143-3C  | 0                                   | 6         | 0          | 0         | 30               |
| <b>Atlantic</b>  | <b>14</b>                           | <b>3</b>  | <b>0</b>   | <b>1</b>  | <b>30</b>        |
| MSL007-B   | 0                                   | 6         | 0          | 0         | 30               |
| W5955-1  | 0                                   | 6         | 0          | 3         | 30               |
| A00188-3C  | 1                                   | 9         | 0          | 1         | 30               |
| AC01151-5W   | 2                                   | 1         | 5          | 2         | 30               |
| <b>Snowden</b>   | <b>0</b>                            | <b>10</b> | <b>0</b>   | <b>0</b>  | <b>30</b>        |
| CO02321-4W   | 0                                   | 6         | 0          | 0         | 30               |
| W6609-3  | 0                                   | 8         | 0          | 1         | 30               |
| AF4157-6   | 0                                   | 11        | 0          | 0         | 30               |
| <sup>1</sup> Internal Defects. HH = hollow heart, VD = vascular discoloration, IBS = internal brown spot, BC = brown center. |                                     |           |            |           |                  |

Table 3 shows the post-harvest chip quality based on samples collected on October 9<sup>th</sup>, 2014, and processed at Herr Foods, Inc. on October 13<sup>th</sup>. Chip color was generally acceptable across the trial, with A00188-3C having the highest Agtron score of the trial at 66.6. The varieties, listed in ranked order based on quality observations from Herr Foods, Inc. are as follows: W5955-1, CO02321-4W, AF4157-6, A01143-3C, W6609-3, A00188-3C, CO02024-9W, Snowden, MSL007-B, AC01151-5W, CO03243-3W and lastly Atlantic.

| <b>Table 3. 2014 Post-Harvest Chip Quality<sup>1</sup></b> |                     |                              |                         |   |                 |              |
|--|---------------------|------------------------------|-------------------------|---|-----------------|--------------|
| <b>Entry</b>   | <b>Agtron Color</b> | <b>SFA<sup>2</sup> Color</b> | <b>Specific Gravity</b> | <b>Percent Chip Defects<sup>3</sup></b> |                 |              |
|  |                     |                              |                         | <b>Internal</b>                         | <b>External</b> | <b>Total</b> |
| CO03243-3W   | 62.8                | 4.0                          | 1.077                   | 22.0                                    | 11.0            | 33.0         |
| CO02024-9W   | 56.7                | 4.0                          | 1.077                   | 32.0                                    | 2.8             | 34.8         |
| A01143-3C  | 56.9                | 3.0                          | 1.085                   | 14.0                                    | 12.0            | 26.0         |
| <b>Atlantic</b>  | <b>58.2</b>         | <b>4.0</b>                   | <b>1.090</b>            | <b>38.0</b>                             | <b>14.0</b>     | <b>52.0</b>  |
| MSL007-B   | 58.7                | 3.0                          | 1.081                   | 34.0                                    | 5.0             | 39.0         |
| W5955-1  | 64.9                | 3.0                          | 1.086                   | 21.0                                    | 4.0             | 25.0         |
| A00188-3C  | 66.6                | 4.0                          | 1.083                   | 20.0                                    | 8.0             | 28.0         |
| AC01151-5W   | 57.6                | 4.0                          | 1.078                   | 33.0                                    | 7.0             | 40.0         |
| <b>Snowden</b>   | <b>58.1</b>         | <b>4.0</b>                   | <b>1.084</b>            | <b>29.0</b>                             | <b>12.0</b>     | <b>41.0</b>  |
| CO02321-4W   | 63.9                | 3.0                          | 1.082                   | 16.0                                    | 9.0             | 25.0         |
| W6609-3  | 62.4                | 3.0                          | 1.087                   | 27.0                                    | 9.0             | 36.0         |
| AF4157-6   | 65.0                | 3.0                          | 1.078                   | 9.0                                     | 19.0            | 28.0         |

<sup>1</sup>Samples collected October 9th and processed by Herr Foods, Inc., Nottingham, PA on October 13, 2014.

Chip defects are included in Agtron 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 weeks later, after holding the samples at room temperature, all samples were abrasively peeled and scored for the presence of black spot bruise. Among the “Simulated Bruise” samples, the best entries were AF4157-6, W5955-1, A01143-3C, A00188-3C, CO02321-4W, AC01151-5W and CO03243-3W. Snowden, W6609-3, Atlantic, CO02024-9W and MSL007-B showed the lowest percent bruise free.

| A. Check Samples <sup>1</sup> |                        |    |    |   |   |   |              |                     |                           | B. Simulated Bruise Samples <sup>2</sup> |    |    |   |   |   |              |                     |                           |
|-------------------------------|------------------------|----|----|---|---|---|--------------|---------------------|---------------------------|--|----|----|---|---|---|--------------|---------------------|---------------------------|
| Entry                         | # of Bruises Per Tuber |    |    |   |   |   | Total Tubers | Percent Bruise Free | Average Bruises Per Tuber | # of Bruises Per Tuber                   |    |    |   |   |   | Total Tubers | Percent Bruise Free | Average Bruises Per Tuber |
|                               | 0                      | 1  | 2  | 3 | 4 | 5 |              |                     |                           | 0  | 1  | 2  | 3 | 4 | 5 |              |                     |                           |
| CO03243-3W                    | 6                      | 11 | 5  | 2 | 1 |   | 25           | 24                  | 1.2                       | 9  | 5  | 6  | 2 | 2 |   | 24           | 38                  | 1.3                       |
| CO02024-9W                    | 1                      | 7  | 12 | 4 |   | 1 | 25           | 4                   | 1.9                       | 4  | 3  | 10 | 2 | 5 | 1 | 25           | 16                  | 2.2                       |
| A01143-3C                     | 12                     | 12 | 2  |   |   |   | 26           | 46                  | 0.6                       | 11                                       | 10 | 3  |   | 1 |   | 25           | 44                  | 0.8                       |
| Atlantic                      | 4                      | 10 | 8  | 2 | 1 |   | 25           | 16                  | 1.4                       | 1  | 7  | 9  | 4 | 4 |   | 25           | 4                   | 2.1                       |
| MSL007-B                      | 3                      | 5  | 10 | 3 | 3 | 1 | 25           | 12                  | 2.0                       | 3  | 4  | 7  | 7 | 1 | 3 | 25           | 12                  | 2.3                       |
| W5955-1                       | 15                     | 7  | 2  |   |   |   | 24           | 63                  | 0.5                       | 10                                       | 12 | 3  |   |   |   | 25           | 40                  | 0.7                       |
| A00188-3C                     | 10                     | 10 | 5  |   |   |   | 25           | 40                  | 0.8                       | 9  | 11 | 6  |   |   |   | 26           | 35                  | 0.9                       |
| AC01151-5W                    | 13                     | 10 | 2  |   |   |   | 25           | 52                  | 0.6                       | 8  | 8  | 8  | 1 |   |   | 25           | 32                  | 1.1                       |
| Snowden                       | 5                      | 7  | 8  | 5 |   |   | 25           | 20                  | 1.5                       | 4  | 7  | 8  | 6 |   |   | 25           | 16                  | 1.6                       |
| CO02321-4W                    | 7                      | 12 | 5  | 2 |   |   | 26           | 27                  | 1.1                       | 7  | 11 | 7  |   |   |   | 25           | 28                  | 1.0                       |
| W6609-3                       | 4                      | 12 | 8  | 1 | 1 |   | 26           | 15                  | 1.3                       | 3  | 10 | 7  | 3 | 2 |   | 25           | 12                  | 1.6                       |
| AF4157-6                      | 15                     | 9  | 1  |   |   |   | 25           | 60                  | 0.4                       | 13                                       | 7  | 5  |   |   |   | 25           | 52                  | 0.7                       |

<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.

Tables 5A-B summarize the results of the pre-harvest panel data. A00188-3C exhibited elevated sucrose and glucose values at both sample dates. Glucose dropped substantially from August to September, but even with the canopy rating declining across this period, the sucrose value remained elevated. This variety appeared to be chemically and physically immature on these evaluation dates. A00188-3C had the largest number of stems per hill and appeared to have a small overall tuber size profile (Tables 5A-B). At Herr Foods, on October 13<sup>th</sup>, 2014, this same line ranked highest for recorded AGTRON score from the trial (Table 3). Herr Foods ranked A00188-3C, 6<sup>th</sup> overall for chip quality performance on October 13<sup>th</sup>, 2014 (Table 3). Atlantic and A01143-3C exhibited the largest average tuber size recorded on September 2<sup>nd</sup>, 2014 (Table 5B).

**Table 5A. Pre-Harvest Panel 8/20/14**

| Entry           | Specific Gravity | Glucose <sup>1</sup><br>% | Sucrose <sup>2</sup><br>Rating | Canopy              |                       | Number of |           | Average <sup>5</sup><br>Tuber Weight |
|-----------------|------------------|---------------------------|--------------------------------|---------------------|-----------------------|-----------|-----------|--------------------------------------|
|                 |                  |                           |                                | Rating <sup>3</sup> | Uniform. <sup>4</sup> | Hills     | Stems     |                                      |
| CO03243-3W      | 1.083            | 0.002                     | 0.636                          | 85                  | 85                    | 3         | 12        | 3.02                                 |
| CO02024-9W      | 1.077            | 0.004                     | 0.716                          | 90                  | 90                    | 3         | 15        | 2.47                                 |
| A01143-3C       | 1.076            | 0.005                     | 1.357                          | 90                  | 85                    | 3         | 18        | 2.81                                 |
| <b>Atlantic</b> | <b>1.054</b>     | <b>0.003</b>              | <b>0.750</b>                   | <b>85</b>           | <b>85</b>             | <b>5</b>  | <b>15</b> | <b>5.66</b>                          |
| MSL007-B        | 1.080            | 0.004                     | 0.555                          | 95                  | 90                    | 5         | 15        | 3.41                                 |
| W5955-1         | 1.072            | 0.005                     | 1.077                          | 95                  | 85                    | 4         | 12        | 3.62                                 |
| A00188-3C       | 1.079            | 0.016                     | 1.249                          | 90                  | 90                    | 3         | 24        | 2.73                                 |
| AC01151-5W      | 1.072            | 0.006                     | 0.832                          | 95                  | 85                    | 3         | 13        | 2.43                                 |
| <b>Snowden</b>  | <b>1.080</b>     | <b>0.003</b>              | <b>0.830</b>                   | <b>90</b>           | <b>85</b>             | <b>3</b>  | <b>15</b> | <b>3.97</b>                          |
| CO02321-4W      | 1.100            | 0.004                     | 0.604                          | 85                  | 90                    | 3         | 15        | 3.06                                 |
| W6609-3         | 1.073            | 0.004                     | 1.036                          | 85                  | 90                    | 4         | 12        | 2.27                                 |
| AF4157-6        | 1.077            | 0.002                     | 0.817                          | 65                  | 85                    | 4         | 17        | 2.70                                 |

1 Percent Glucose is the percent of glucose by weight in a given amount of fresh tuber tissue.

2 Sucrose Rating is the percent of sucrose by weight in a given amount of fresh tuber tissue X10.

3 The Canopy Rating is a percent rating of green foliage (0 is all brown, dead foliage; 100 is green, vigorous foliage).

4 The Canopy Uniformity is a percentage of how uniform the foliage health is at the date of observation.

5 The Average Tuber Weight is the total tuber weight collected, divided by the number of tubers, reported in ounces.

**Table 5B. Pre-Harvest Panel, 9/2/14**

| Entry           | Specific Gravity | Glucose <sup>1</sup><br>% | Sucrose <sup>2</sup><br>Rating | Canopy              |                       | Number of |           | Average <sup>5</sup><br>Tuber Weight |
|-----------------|------------------|---------------------------|--------------------------------|---------------------|-----------------------|-----------|-----------|--------------------------------------|
|                 |                  |                           |                                | Rating <sup>3</sup> | Uniform. <sup>4</sup> | Hills     | Stems     |                                      |
| CO03243-3W      | 1.077            | 0.003                     | 0.428                          | 40                  | 80                    | 3         | 13        | 4.23                                 |
| CO02024-9W      | 1.078            | 0.004                     | 0.608                          | 70                  | 90                    | 3         | 21        | 2.98                                 |
| A01143-3C       | 1.078            | 0.005                     | 0.942                          | 70                  | 85                    | 3         | 15        | 4.78                                 |
| <b>Atlantic</b> | <b>1.083</b>     | <b>0.003</b>              | <b>0.675</b>                   | <b>50</b>           | <b>90</b>             | <b>4</b>  | <b>18</b> | <b>5.77</b>                          |
| MSL007-B        | 1.081            | 0.004                     | 0.701                          | 40                  | 70                    | 4         | 8         | 4.17                                 |
| W5955-1         | 1.076            | 0.005                     | 0.918                          | 40                  | 90                    | 4         | 14        | 4.69                                 |
| A00188-3C       | 1.080            | 0.005                     | 1.249                          | 60                  | 90                    | 3         | 26        | 3.16                                 |
| AC01151-5W      | 1.075            | 0.007                     | 0.716                          | 40                  | 70                    | 2         | 10        | 3.36                                 |
| <b>Snowden</b>  | <b>1.081</b>     | <b>0.004</b>              | <b>0.886</b>                   | <b>20</b>           | <b>80</b>             | <b>3</b>  | <b>19</b> | <b>3.80</b>                          |
| CO02321-4W      | 1.076            | 0.003                     | 0.720                          | 30                  | 80                    | 4         | 16        | 3.38                                 |
| W6609-3         | 1.076            | 0.003                     | 0.860                          | 40                  | 90                    | 4         | 16        | 2.89                                 |
| AF4157-6        | 1.073            | 0.003                     | 0.750                          | 30                  | 90                    | 3         | 14        | 3.02                                 |

1 Percent Glucose is the percent of glucose by weight in a given amount of fresh tuber tissue.

2 Sucrose Rating is the percent of sucrose by weight in a given amount of fresh tuber tissue X10.

3 The Canopy Rating is a percent rating of green foliage (0 is all brown, dead foliage, 100 is green, vigorous foliage).

4 The Canopy Uniformity is a percentage of how uniform the foliage health is at the date of observation.

5 The Average Tuber Weight is the total tuber weight collected, divided by the number of tubers reported in ounces.

## Variety Comments:

**CO03243-3W:** This variety recorded the top overall yield in the 2014 trial with a 478 cwt./A US#1 yield. The specific gravity was below the trial average at 1.076 (Table 1). Raw internal tuber quality was ok, but an above average amount of hollow heart was observed (Table 2). Chip quality at Herr Foods was below average, ranking 11th of 12 for overall appearance. An above average amount of black spot bruise was observed for CO03243-3W, recording 1.3 bruises per tuber on average (Table 4). The tubers appeared to have been physically and chemically mature at the time of harvest (Tables 5A-B).

**CO02024-9W:** This variety was the second highest yielding line in the 2014 trial. The US#1 yield was 436 cwt./A, with a below average specific gravity (Table 1). The tuber size distribution consisted of 85 percent mid-size and 13 percent undersize tubers. Three tubers with vascular discoloration and two tubers with internal brown spot were observed (Table 2). CO02024-9W ranked 7th of 12 lines tested at Herr Foods for overall chip quality and appearance on October 13<sup>th</sup>. In addition, this variety had the lowest AGTRON score of the trial at 56.7 (Table 3). CO02024-9W appears to be susceptible to black spot bruise (Table 4). This line was potentially, moderately physically and chemically immature when the pre-harvest panels were collected on September 2<sup>nd</sup> (Table 5B). The slightly elevated glucose levels at harvest could potentially explain the marginal chip quality performance at Herr Foods on October 13<sup>th</sup>.

**A01143-3C:** This variety had an average yield of 433 cwt./A US#1 with a specific gravity of 1.080 (Table 1). It was the third highest yielding line in the 2014 variety trial. Raw internal tuber quality was good with only six tubers expressing vascular discoloration (Table 2). A01143-3C ranked 4th of 12 varieties at Herr's for chip quality out-of-the-field. The variety exhibited a below average susceptibility to black spot bruise, with only 0.8 black spot bruises being recorded for



each tuber observed (Table 4). This variety was very chemically immature on August 20<sup>th</sup>, with a 0.005 glucose and a 1.357 sucrose value recorded (Table 5A). The vines appeared quite green on this date. At the second pre-harvest panel evaluation, A01143-3C was only slightly more chemically stable, having a 0.005 glucose and a 0.942 sucrose rating (Table 5B). This variety was one of the more immature on this evaluation date. The chip quality ranking for A01143-3C from Herr's did not reflect as much of this chemical immaturity as would have been expected.

Atlantic: This variety had an above average yield performance in the 2014 trial, yielding 432 cwt./A US#1. The specific gravity was the highest in the trial at 1.087 (Table 1). This variety had ten percent oversize tubers, of which 47 percent of them were hollow. Herr's ranked Atlantic least desirable for the out-of-the-field chip quality evaluation on October 13<sup>th</sup>, 2014. From the 2014 black spot bruise test, Atlantic appeared among the most susceptible varieties, recording 2.1 bruises per tuber (Table 4). Pre-harvest panel data showed Atlantic to be both chemically and physically mature prior to harvest.

MSL007-B: The yield for MSL007-B was above the trial average at 389 cwt./A US#1 with 10 percent of the total yield being oversize potatoes (Table 1). The specific gravity was above the trial average at 1.082. Internal tuber quality was acceptable, with 6 tubers out of thirty cut exhibiting vascular discoloration (Table 2). This variety ranked ninth for overall chip quality at Herr Foods on October 13<sup>th</sup> (Table 3). MSL007-B scored poorly in tolerance to black spot bruise, with an average of 2.3 bruises per tuber reported (Table 4). This variety exhibited the most black spot bruise susceptibility in the trial. Pre-harvest panel data appeared stable on both dates (Tables 5A-B).

W5955-1: This variety yielded just under the trial average, recording 348 cwt./A US#1 with a specific gravity of 1.080 (Table 1). The tuber size distribution consisted of 84 percent US#1 size tubers, 10 percent undersize and 6 percent cull tubers. This variety had the largest recorded amount of oversize in this year's trial at 11 percent. Raw internal tuber quality was acceptable with three tubers expressing brown center and six tubers with vascular discoloration (Table 2). W5955-1 ranked 1<sup>st</sup> of the twelve varieties tested at Herr's for chip quality on October 13<sup>th</sup>. The variety exhibited a tolerance to black spot bruise, with only 0.7 black spot bruises being recorded for each tuber evaluated (Table 4). This variety appeared immature at the August 20<sup>th</sup> pre-harvest panel evaluation (Table 5A), but was more chemically stable at the second evaluation date (Table 5B).

A00188-3C: A00188-3C yielded slightly below the trial average at 322 cwt./A US#1. Specific gravity was above the trial average at 1.084. The total yield for this variety was above the trial average (Table 1). The tuber size distribution consisted of 74 percent US#1 size tubers and 24 percent undersize tubers. The variety had nine tubers with vascular discoloration, ranking it among the highest in the trial (Table 2). Herr's ranked this variety 6 of 12 in chip performance out-of-the-field (Table 3). A00188-3C appeared to have a low susceptibility to black spot bruising (Table 4). The tubers of this variety were very chemically immature on August 20<sup>th</sup>, recording a percent glucose of 0.016 and a sucrose rating of 1.249 (Table 5A). Sucrose levels remained high through September 2<sup>nd</sup>, 2014 (Table 5B). This sugar immaturity may have been the basis for the average ranking at Herr Foods.

AC01151-5W: This variety recorded the fifth lowest yield in this year's trial (Table 1). AC01151-5W had the lowest specific gravity of the trial at 1.072. The tuber size distribution consisted of 73 percent US#1 size tubers and 25 percent undersize tubers. This was the largest percent of

undersize in the trial. Internal tuber quality was poor with two tubers expressing hollow heart, five tubers expressing internal brown spots and two tubers with brown center (Table 2). This clone ranked 10<sup>th</sup> at Herr's for chip quality and appearance on October 13<sup>th</sup>, 2014 (Table 3). AC01151-5W appeared to have an average level of tolerance to black spot bruise (Table 4). This clone was maturing acceptably at both pre-harvest panel dates (Tables 5A-B).

Snowden: Snowden was a below average yielding variety in the 2014 variety trial with a 318 cwt./A US#1 yield and an average specific gravity of 1.079 (Table 1). Internal raw tuber quality was moderate at harvest with 33 percent vascular discoloration observed (Table 2). This variety was average in chip performance at Herr Foods out-of-the-field fry test, ranking eighth in the trial overall. Snowden had an above average susceptibility to black spot bruise (Table 4). Pre-harvest panel data for this line appeared acceptable on both sampling dates (Tables 5A-B).

CO02321-4W: This variety had a below average yield of US#1 tubers at 281 cwt./A and a tuber size distribution that consisted of 80 percent US#1 and 19 percent undersize tubers (Table 1). The specific gravity was below the trial average at 1.077. Raw internal tuber quality was generally good (Table 2). The at-harvest chip fry test ranked this variety 2<sup>nd</sup> out of the 12 varieties for overall appearance (Table 3). This variety exhibited average black spot bruise tolerance in the 2014 trial (Table 4). The vine and tuber maturity appeared to be adequate for this variety to deliver good chip quality (Tables 5A-B).

W6609-3: The yield on W6609-3 was the second lowest in the 2014 trial at 239 cwt./A US#1. The specific gravity was recorded at 1.079 (Table 1). Raw internal tuber quality was acceptable with eight tubers with vascular discoloration and one with brown center being observed (Table 2). Herr's ranked this variety fifth in overall chip quality appearance. Black spot bruise tolerance was slightly below average at 1.6 bruises per tuber (Table 4).

AF4157-6: This variety recorded the lowest US#1 tuber yield of the trial at 208 cwt./A and a tuber size distribution that consisted of 73 percent US#1 size tubers and 24 percent undersize tubers (Table 1). The specific gravity was at the trial average of 1.079. AF4157-6 had eleven tubers with vascular discoloration which was the highest in the trial for this tuber defect (Table 2). The at-harvest chip fry test ranked this variety 3<sup>rd</sup> out of 12 varieties for overall appearance (Table 3). This variety expressed below average susceptibility to black spot bruise, averaging only 0.7 bruises per tuber (Table 4). The plant vines appeared to be physiologically maturing on August 20<sup>th</sup> (Table 5A).