**Funding: Fed. Grant/MPIC/Potatoes USA**

# 2023 POTATO VARIETY EVALUATIONS

**D.S. Douches, J. Coombs, K. Zarka, G. Steere, M. Zuehlke, K. Shaw, J. Norling, C. Long, J. Wilbur and W. Behling**

**Department of Plant, Soil, and Microbial Sciences**
**Michigan State University**
**East Lansing, MI 48824**

## INTRODUCTION

Each year, the MSU potato breeding and genetics team conducts a series of variety trials to assess advanced potato selections from the Michigan State University and other potato breeding programs at the Montcalm Research Center (MRC). In 2023, we tested over 155 varieties and breeding lines in the replicated variety trials, 134 lines in the North Central Regional trial plus over 191 lines in the National Chip Processing Trial (NCPT). The variety evaluation also includes disease testing in the scab nursery (Montcalm Research Center) and foliar late blight evaluation (MSU Campus Plant Pathology Farm). The objectives of the evaluations are to identify superior varieties for fresh or chip-processing markets (chip, round white/yellow table, specialty/red and russet). The varieties were compared in groups according to market class, tuber type, skin color, and to the advancement in selection. Each season, total and marketable yields, specific gravity, tuber appearance, incidence of external and internal defects, chip color (from the field as well as from 45°F (7.2°C) storage at 3 and 6 months), along with susceptibilities to common scab, late blight (foliar and tuber), and blackspot bruising are determined.

We would like to acknowledge the collaborative effort of the Michigan Potato Industry and research colleagues Matthew Klein and the MSU Potato Breeding Team (along with the graduate students) for helping to get the field research done.

## PROCEDURE

The field variety trials were conducted at the Montcalm Research Center in Entrican, MI. A randomized complete block design was used. The plots were 23 feet (7 m) long and spacing between plants was 10 inches (25.4 cm). Inter-row spacing was 34 inches (86.4 cm). Supplemental irrigation was applied as needed. Nutrient, weed, disease and insect management were similar to recommendations used by the commercial operations in Montcalm County. The field experiments were conducted on a sandy loam soil that has been out of potato production for 5 years. Oats were grown in 2022 on this ground. There was no serious damage from insects, diseases or weeds.

The most advanced selections were tested in the Advanced chip and tablestock trials, representing selections at a stage after the preliminary trials. The other field trials

were the Preliminary (chip-processors and tablestock), Preliminary Pigmented, the North Central Regional, NCPT and the early observational trials.

2023 was the thirteenth year of the National Chip Processing Trial (NCPT). The purpose of the trial is to evaluate early generation breeding lines from the US public breeding programs for their use in chip-processing. The NCPT has 10 trial locations (Northern sites: NY, MI, WI, ND, OR and Southern: NC, FL, CA, TX) in addition to a scab trial Wisconsin. The North Central trial was reformatted to have 15-hill plots of earlier generation selections for a total of 134 lines plus controls for the chip, russet and table markets.

In each of these trials, the yield was graded into four size classes (pick outs, Bs, As, oversize) using the new Kerian sizer on the grading line, incidence of external and internal defects in >3.25 in. (8.25 cm) diameter potatoes were recorded. Samples were taken for specific gravity, chip-processing, disease tests and bruising tests. Chip quality was assessed on composite tuber samples, taking two slices from each tuber. Chips were fried at 345°F (174°C) for 2 minutes 15 seconds or until fully cooked. The chip color was measured visually with the SFA 1-5 color chart. Stem end scores were also recorded. Tuber samples were also stored at 45°F (7.2°C) for chip-processing out of storage in January and April. The lines in the agronomic trials were assessed for common scab resistance at the nursery at the Montcalm Research Center. There has been very strong scab disease pressure at the new Montcalm Scab Disease Nursery for nine years now. The 2022 late blight trial was conducted at the MSU campus Plant Pathology Farm. The simulated blackspot bruise (from 50°F tuber temperature) results for average spots per tuber have also been incorporated into the summary sheets.

## RESULTS

### A. Agronomic trials from Montcalm Research Center

**Tables 1-7** summarize the agronomic results from the Montcalm Research Center. The scab and late blight trial results are added to the tables as well as the blackspot bruise data. The lines that we feel show promise in 2023 are highlighted in green. We based our overall assessment for agronomic production, appearance, disease resistance, maturity, bruise resistance and processing quality for the chipping lines.

### B. Potato Common Scab Evaluation (Tables 8 and 9)

Each year, a replicated field trial is conducted to assess resistance to common scab. The scab trial is now located at the Montcalm Research Center where high common scab disease pressure was observed in the previous nine years. This location is being used for the early generation observational scab trial (257 lines) and the scab variety trial (134 lines) and diploid scab trial (131). In 2023, the scab infection was a good level with the susceptible controls having some coverage of pitted scab.

We use a rating scale of 0-5 based upon a combined score for scab coverage and lesion severity. Usually examining one year's data does not indicate which varieties are resistant but it should begin to identify ones that can be classified as susceptible to scab. Our goal is to evaluate important advanced selections and varieties in the study at least three years to obtain a valid estimate of the level of resistance in each line. The 2021-2023 scab ratings are based upon the Montcalm Research Center site. **Table 8** categorizes many of the varieties and advanced selections tested in 2023 over a three-year period. The varieties and breeding lines are placed into nine categories based upon scab infection level and lesion severity. A rating of 0 indicates zero scab infection. A score of 1.0 indicates a trace amount of infection. A moderate resistance (1.2 – 1.5) correlates with <10% infection without pitting. Scores of 4.0 or greater are found on lines with >50% surface infection and severe pitted lesions.

The check varieties Red Norland, Yukon Gold, Mackinaw, Lamoka, Atlantic, and Snowden can be used as references (in bold, **Table 8**). The table is sorted in ascending order by 2023 scab rating. This year's results continue to indicate that we have been able to breed numerous lines with resistance to scab. Average scab ratings ranged from 0.5 – 3.3 for the variety trial. A total of 92 entries tested had a scab rating of 1.7 or lower in 2023. Most notable scab resistant MSU lines are found in the trial summaries **(Tables 1-7)**. Of the 257 early generation selections that were evaluated, 169 had scab resistance (scab rating of ≤ 1.5) (**Table 9**).

## C. Late Blight Trial (Table 10)

In 2023, the late blight trial was planted at the East Lansing campus Plant Pathology farm. All entries were planted in early June for late blight evaluation. These include lines tested in a replicated manner from the agronomic variety trial and entries in the early generation observation plots. The trials were inoculated two times in August with the US-23 genotype of *P. infestans*. Late blight infection was progressed well and data was collected into September. Seventeen of 107 lines were classified as late blight resistant in the replicated trial, in addition to 36 classified as moderately resistant. Many of the lines were also PVY resistant. Select early generation lines were tested for late blight resistance. Twenty-one of 87 early generation selections were classified as resistant.

## D. Blackspot Bruise Susceptibility (Table 11)

Evaluations of advanced seedlings and new varieties for their susceptibility to blackspot bruising are also important in the variety evaluation program. Based upon the results collected over the past years, the non-bruised check sample has been removed from our bruise assessment. A composite bruise sample of each line in the trials consisted of 25 tubers (a composite of 4 replications) from each line, collected at the time of grading. The 25-tuber sample was held in 50°F (10°C) storage overnight and then was placed in a hexagon plywood drum and tumbled 10 times to provide a simulated bruise. The samples were peeled in an abrasive peeler in October and individual tubers were assessed for the number of blackspot bruises on each potato. These data are shown in

**Table 11**. The bruise data are represented in two ways: percentage of bruise free potatoes and average number of bruises per tuber. A high percentage of bruise-free potatoes is the desired goal; however, the numbers of blackspot bruises per potato is also important. Cultivars which show blackspot incidence greater than Atlantic are approaching the bruise-susceptible rating. In addition, the data is grouped by trial, since the bruise levels can vary between trials. In 2023, the bruise levels were higher than previous years. There are many lines with lower blackspot bruise potential across the trials. Some of our advanced selections are similar to or less than Atlantic and Snowden in their level of bruising. A few lines will high susceptibility to bruise were identified and will be discontinued from testing. All the bruise ratings are also found in the variety trial tables (**Tables 1-7**).

**E. National Chip Processing Trial (NCPT) data available on-line**

The Potatoes USA-funded National Chip Processing Trial (NCPT) is an effort to synergize the strengths of the public breeding programs in the U.S. to identify improved chip-processing varieties for the industry. Cooperating breeding programs include the USDA (Idaho and Maryland) and land grant universities (Colorado, Maine, Michigan, Minnesota, North Carolina, North Dakota, New York, Oregon, Wisconsin and Texas). The coordinated breeding effort includes early-stage evaluation of key traits (yield, specific gravity, chip color, chip defects and shape) from coordinated trials in 10 locations. Since the inception of the trial in 2010, over 1,000 different potato entries, including reference varieties, have been evaluated. The data for all the lines tested are summarized on a searchable, centralized database housed at Medius (https://potatoesusa.medius.re). More than 40 promising new breeding lines from the trials have been fast-tracked for larger-scale commercial trials and processor evaluation. The NCPT is also a feeder for the national SNAC International trials. We are using the NCPT trials to more effectively identify promising new selections. Notable MSU lines that have been identified are MSW485-2 (Huron Chipper), MSX540-4 (Mackinaw), MSV030-4 (Petoskey), MSW474-1, and MSZ242-13 (Dundee). Our newest graduates of the NCPT are MSBB058-1 and MSAA217-3. Minituber production and/or commercial seed have been produced of the newer lines and will be tested in Michigan in 2024.

**Table 1**

**MICHIGAN STATE UNIVERSITY**
**POTATO BREEDING and GENETICS**

**ADVANCED CHIP-PROCESSING TRIAL**
**MONTCALM RESEARCH CENTER**
**May 8 to September 26, 2023 (141 days)**
**DD Base 40°F 2952[9]**

| LINE | PVY Resistant | N | CWT/A US#1 | CWT/A TOTAL | PERCENT OF TOTAL[1] US#1 | Bs | As | OV | PO | SP GR | CHIP SCORE[2] | CHIP SED[3] | PERCENT (%) TUBER QUALITY[4] HH | VD | IBS | BC | SCAB[5] | MAT[6] | BRUISE[7] | LB[8] | 3-YR AVG US#1 CWT/A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MSBB630-2 | PVYR | 2 | 517 | 559 | 93 | 8 | 92 | 2 | 1 | 1.081 | 1.5 | 1.0 | 10 | 10 | 5 | 10 | 1.2 | 5.0 | 2.3 | - | 555 |
| MSFF036-1 | PVYR | 2 | 511 | 535 | 96 | 5 | 92 | 4 | 0 | 1.077 | 1.5 | 1.0 | 0 | 20 | 0 | 0 | 1.7 | 4.5 | 1.9 | - | 622* |
| MSGG409-3 | PVYR | 2 | 500 | 546 | 92 | 8 | 92 | 0 | 1 | 1.078 | 1.5 | 1.0 | 0 | 55 | 0 | 0 | 1.7 | 5.0 | 2.0 | MR | - |
| MSBB636-11 | PVYR | 2 | 498 | 516 | 97 | 2 | 92 | 5 | 1 | 1.075 | 1.5 | 0.0 | 5 | 10 | 0 | 0 | 0.7 | 4.0 | 1.6 | MS | 581* |
| MSDD376-4 | PVYR | 2 | 477 | 496 | 96 | 4 | 95 | 1 | 1 | 1.088 | 1.5 | 1.0 | 25 | 10 | 0 | 5 | 1.3 | 5.0 | 1.6 | - | 487* |
| MSDD553-1 | PVYR | 2 | 459 | 478 | 96 | 4 | 93 | 3 | 0 | 1.078 | 1.5 | 1.0 | 5 | 25 | 0 | 0 | 1.8 | 5.0 | 1.8 | MR | 542* |
| MSEE035-4 | PVYR | 2 | 446 | 485 | 92 | 8 | 91 | 2 | 0 | 1.091 | 1.5 | 2.0 | 0 | 0 | 10 | 5 | 0.5 | 4.0 | 2.6 | R | - |
| MSEE171-2 | | 2 | 425 | 448 | 95 | 5 | 93 | 2 | 0 | 1.080 | 2.0 | 1.0 | 0 | 15 | 0 | 0 | 0.8 | 5.0 | 1.7 | - | - |
| MSGG194-3 | PVYR | 2 | 416 | 448 | 93 | 7 | 93 | 0 | 1 | 1.079 | 1.5 | 2.0 | 5 | 35 | 0 | 0 | 2.2 | 4.0 | 1.8 | - | - |
| MSFF037-17 | PVYR | 2 | 412 | 451 | 91 | 9 | 91 | 1 | 1 | 1.090 | 1.0 | 0.0 | 0 | 25 | 0 | 0 | 1.7 | 4.0 | 2.0 | MS | 540* |
| MSDD372-07 | PVYR | 2 | 411 | 442 | 93 | 7 | 93 | 0 | 0 | 1.094 | 2.0 | 2.0 | 0 | 15 | 0 | 0 | 0.5 | 5.0 | 1.6 | R | 517* |
| MSFF038-3 | PVYR | 2 | 409 | 429 | 96 | 4 | 95 | 1 | 2 | 1.086 | 2.0 | 2.0 | 25 | 5 | 0 | 0 | 1.7 | 3.0 | 1.2 | MS | - |
| MSBB635-14 | PVYR | 2 | 404 | 427 | 95 | 4 | 93 | 2 | 2 | 1.077 | 1.5 | 2.0 | 0 | 50 | 0 | 0 | 1.0 | 4.5 | 1.9 | - | 478 |
| MSEE207-2 | PVYR | 2 | 398 | 423 | 94 | 6 | 94 | 1 | 1 | 1.083 | 2.0 | 1.0 | 0 | 25 | 0 | 0 | 0.3 | 5.0 | 1.8 | MR | 500* |
| MSFF007-2 | | 2 | 398 | 432 | 92 | 8 | 91 | 1 | 1 | 1.085 | 1.5 | 2.0 | 0 | 25 | 5 | 0 | 1.0 | 4.5 | 2.0 | MS | 454* |
| MSDD249-9 | PVYR | 2 | 383 | 398 | 96 | 4 | 92 | 5 | 0 | 1.087 | 1.5 | 2.0 | 20 | 5 | 0 | 0 | 1.0 | 3.0 | 1.1 | MR | 462* |
| MSAA260-3 | | 2 | 380 | 397 | 96 | 4 | 96 | 0 | 0 | 1.084 | 1.0 | 0.0 | 0 | 15 | 0 | 0 | 1.7 | 4.0 | 2.0 | MS | 436 |
| MSBB060-1 | PVYR | 2 | 376 | 391 | 96 | 5 | 94 | 2 | 0 | 1.079 | 2.0 | 2.0 | 0 | 45 | 0 | 0 | 0.7 | 5.0 | 1.8 | - | - |
| MSAA076-6 | | 2 | 369 | 439 | 84 | 15 | 84 | 0 | 1 | 1.089 | 1.0 | 0.0 | 0 | 10 | 10 | 0 | 0.8 | 2.5 | 2.4 | - | 424 |
| MSEE016-07 | | 2 | 367 | 380 | 97 | 4 | 95 | 2 | 0 | 1.094 | 1.5 | 1.0 | 5 | 10 | 0 | 0 | 0.8 | 5.0 | 1.5 | - | - |
| MSBB230-1 | | 2 | 362 | 385 | 94 | 6 | 94 | 0 | 1 | 1.085 | 2.0 | 2.0 | 0 | 20 | 0 | 0 | 1.7 | 3.0 | 1.8 | - | - |
| MSFF079-16 | PVYR | 2 | 362 | 382 | 95 | 3 | 91 | 4 | 3 | 1.083 | 2.0 | 0.0 | 5 | 10 | 10 | 0 | 0.5 | 4.0 | 2.0 | MR | 398* |
| MSAA240-5 | | 2 | 354 | 385 | 93 | 5 | 92 | 1 | 3 | 1.086 | 1.0 | 0.0 | 0 | 20 | 5 | 0 | 2.5 | 3.5 | 2.3 | MS | - |
| MSBB058-3 | PVYR | 2 | 352 | 374 | 94 | 6 | 92 | 2 | 0 | 1.085 | 1.0 | 1.0 | 5 | 20 | 0 | 0 | 1.3 | 5.0 | 1.7 | R | 389 |
| MSFF077-4 | PVYR | 2 | 350 | 361 | 97 | 3 | 96 | 2 | 0 | 1.078 | 1.5 | 1.0 | 5 | 10 | 0 | 0 | 1.7 | 3.5 | 1.6 | MS | - |
| MSBB614-15 | | 2 | 348 | 365 | 96 | 5 | 92 | 4 | 0 | 1.081 | 1.0 | 1.0 | 25 | 5 | 0 | 0 | 0.7 | 5.0 | 1.1 | R | 381 |
| MSFF097-6 | PVYR | 2 | 345 | 382 | 90 | 10 | 90 | 0 | 1 | 1.087 | 1.5 | 1.0 | 0 | 5 | 0 | 5 | 1.3 | 5.0 | 2.5 | MR | 375* |
| MSW474-1 | | 2 | 315 | 362 | 88 | 13 | 88 | 0 | 0 | 1.082 | 1.0 | 1.0 | 5 | 0 | 0 | 5 | 0.5 | 5.0 | 2.0 | MS | 385 |
| MSDD244-05 | PVYR | 2 | 308 | 337 | 92 | 6 | 90 | 2 | 4 | 1.084 | 1.5 | 1.0 | 0 | 20 | 0 | 0 | 0.7 | 3.5 | 1.8 | MS | 394* |
| MSDD247-07 | PVYR | 2 | 308 | 329 | 94 | 7 | 92 | 2 | 0 | 1.098 | 1.0 | 1.0 | 0 | 0 | 15 | 0 | 1.0 | 3.0 | 2.6 | MR | 363 |
| MSBB058-1 | | 2 | 306 | 336 | 91 | 9 | 91 | 0 | 0 | 1.095 | 2.0 | 1.0 | 0 | 0 | 0 | 0 | 1.3 | 3.5 | 1.2 | S | 418* |
| **Lamoka** | | **2** | **306** | **329** | **93** | **6** | **92** | **1** | **2** | **1.084** | **1.5** | **1.0** | **0** | **40** | **5** | **0** | **1.3** | **3.0** | **2.0** | - | **327** |
| MSEE016-10 | PVYR | 2 | 304 | 362 | 84 | 16 | 84 | 0 | 1 | 1.095 | 1.0 | 2.0 | 0 | 0 | 0 | 0 | 1.3 | 3.0 | 1.2 | - | - |
| MSEE031-3 | PVYR | 2 | 304 | 330 | 92 | 7 | 92 | 0 | 1 | 1.083 | 2.0 | 2.0 | 0 | 20 | 0 | 0 | 0.8 | 2.5 | 1.7 | MR | - |
| MSEE182-3 | PVYR | 2 | 301 | 345 | 87 | 13 | 87 | 0 | 0 | 1.077 | 2.0 | 2.0 | 0 | 0 | 0 | 0 | 0.3 | 2.5 | 0.3 | MS | - |
| MSAA217-3 | | 2 | 297 | 309 | 96 | 4 | 93 | 3 | 1 | 1.093 | 1.0 | 1.0 | 20 | 25 | 5 | 0 | 1.0 | 4.5 | 1.7 | - | - |

| LINE | PVY Resistant | N | CWT/A US#1 | CWT/A TOTAL | PERCENT OF TOTAL[1] US#1 | Bs | As | OV | PO | SP GR | CHIP SCORE[2] | CHIP SED[3] | PERCENT (%) TUBER QUALITY[4] HH | VD | IBS | BC | SCAB[5] | MAT[6] | BRUISE[7] | LB[8] | 3-YR AVG US#1 CWT/A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MSDD247-11 | PVYR | 2 | 295 | 346 | 85 | 9 | 85 | 0 | 6 | 1.090 | 1.5 | 0.0 | 0 | 0 | 0 | 5 | 0.5 | 2.5 | 2.8 | MR | 366 |
| MSBB610-13 | PVYR | 2 | 294 | 306 | 96 | 3 | 94 | 2 | 1 | 1.082 | 1.0 | 1.0 | 0 | 10 | 5 | 0 | 1.2 | 2.5 | 2.1 | - | 396* |
| Dundee (MSZ242-13) | | 2 | 285 | 315 | 90 | 8 | 89 | 1 | 3 | 1.092 | 1.5 | 2.0 | 5 | 0 | 0 | 0 | 0.8 | 3.5 | 0.9 | MS | 355 |
| **Manistee** | | **2** | **272** | **308** | **88** | **12** | **88** | **0** | **0** | **1.077** | **1.5** | **1.0** | **10** | **10** | **0** | **0** | **2.5** | **2.0** | **1.6** | - | **251*** |
| MSDD089-2 | | 2 | 259 | 274 | 95 | 5 | 95 | 0 | 1 | 1.078 | 1.0 | 0.0 | 0 | 0 | 0 | 0 | 1.3 | 4.0 | 2.0 | - | 335* |
| MSZ025-2 | | 2 | 256 | 273 | 94 | 6 | 93 | 1 | 0 | 1.076 | 2.0 | 2.0 | 0 | 10 | 5 | 0 | 1.2 | 2.0 | 1.9 | - | - |
| MSGG263-1 | PVYR | 2 | 254 | 283 | 90 | 8 | 89 | 2 | 2 | 1.073 | 1.5 | 2.0 | 0 | 20 | 0 | 0 | 1.2 | 4.5 | 1.8 | MS | - |
| MSGG349-3 | PVYR | 2 | 243 | 279 | 87 | 11 | 87 | 0 | 2 | 1.070 | 2.0 | 1.0 | 0 | 15 | 0 | 0 | 1.2 | 2.5 | 1.8 | MR | - |
| Mackinaw | **PVYR** | **2** | **239** | **259** | **93** | **6** | **93** | **0** | **2** | **1.092** | **1.0** | **1.0** | **0** | **30** | **5** | **0** | **0.7** | **4.0** | **2.0** | **MR** | **402** |
| MSDD085-13 | PVYR | 2 | 235 | 259 | 91 | 10 | 91 | 0 | 0 | 1.081 | 1.0 | 1.0 | 0 | 20 | 0 | 0 | 0.7 | 2.0 | 1.8 | - | 263 |
| MSDD039-01 | | 2 | 231 | 265 | 88 | 13 | 88 | 0 | 1 | 1.078 | 2.0 | 2.0 | 0 | 20 | 0 | 0 | 1.2 | 3.0 | 1.7 | - | - |
| MSDD244-15 | PVYR | 2 | 230 | 241 | 96 | 4 | 96 | 0 | 1 | 1.078 | 1.0 | 0.0 | 0 | 5 | 0 | 0 | 1.2 | 4.0 | 1.9 | R | 345 |
| Petoskey | | 2 | 229 | 255 | 90 | 9 | 90 | 0 | 2 | 1.086 | 1.5 | 1.0 | 0 | 0 | 0 | 0 | 1.3 | 3.0 | 1.3 | - | 363 |
| MSDD042-01 | | 2 | 224 | 275 | 81 | 3 | 81 | 0 | 17 | 1.074 | 2.0 | 2.0 | 5 | 10 | 0 | 0 | 1.3 | 3.0 | 1.5 | - | - |
| MSEE115-1 | | 2 | 203 | 216 | 94 | 5 | 94 | 0 | 2 | 1.094 | 1.5 | 1.0 | 5 | 5 | 0 | 0 | 0.7 | 3.0 | 1.3 | - | - |
| MSGG426-2 | PVYR | 2 | 203 | 224 | 91 | 9 | 91 | 0 | 0 | 1.080 | 1.5 | 1.0 | 0 | 30 | 0 | 0 | 0.7 | 3.5 | 1.8 | MR | - |
| MSGG195-1 | PVYR | 2 | 197 | 234 | 85 | 15 | 85 | 0 | 1 | 1.075 | 1.5 | 1.0 | 0 | 5 | 0 | 0 | 1.7 | 2.5 | 1.8 | - | - |
| MSFF292-1 | | 2 | 185 | 228 | 81 | 18 | 81 | 0 | 1 | 1.086 | 1.5 | 1.0 | 0 | 5 | 0 | 0 | 1.7 | 3.0 | 1.8 | - | 279* |
| NY163 | PVYR | 2 | 154 | 197 | 79 | 21 | 79 | 0 | 0 | 1.083 | 1.0 | 1.0 | 0 | 25 | 0 | 0 | 1.7 | 2.5 | 2.0 | S | 286* |
| MSFF321-1 | | 2 | 151 | 227 | 67 | 33 | 67 | 0 | 1 | 1.087 | 1.0 | 2.0 | 0 | 0 | 5 | 0 | 0.5 | 2.5 | 1.8 | MS | - |
| **Snowden** | | **2** | **124** | **164** | **76** | **24** | **76** | **0** | **1** | **1.080** | **1.0** | **1.0** | **5** | **25** | **0** | **0** | **3.0** | **2** | **1.9** | **MS** | **285** |
| **Atlantic** | | **2** | **117** | **132** | **88** | **10** | **88** | **0** | **2** | **1.081** | **1.5** | **1.0** | **10** | **0** | **0** | **0** | **2.6** | **2.0** | **1.4** | **S** | **275** |
| MEAN | | | 321 | 351 | | | | | | 1.1 | | | | | | | 1.2 | 3.6 | 1.8 | | 376 |

[1]SIZE: B: < 2 in.; A: 2-3.25 in.; OV: > 3.25 in.; PO: Pickouts.

[2]CHIP SCORE: SNAC Scale (Out of the field); Ratings: 1-5; 1: Excellent, 5: Poor.

[3]SED: Stem End Defect, Based on Paul Bethke's (USDA/UWisconsin - Madison) 0 - 5 scale. 0 = no SED; 3 = significant SED; 5 = severe SED

[4]QUALITY: HH: Hollow Heart; BC: Brown Center; VD: Vascular Discoloration; IBS: Internal Brown Spot. Percent of 20 Oversize and/or A-size tubers cut.

[5]SCAB DISEASE RATING: MSU Scab Nursery; 0: No Infection; 1: Low Infection <5%; 3: Intermediate; 5: Highly Susceptible.

[6]MATURITY RATING: August 17, 2023; Ratings 1-5; 1: Early (vines completely dead); 5: Late (vigorous vine, some flowering).

[7]BRUISE: Simulated blackspot bruise test, average number of spots per tuber.

[8]LB Late blight (*P. infestans* US-23) foliar disease reaction. R=Resistant, MR=Moderate Resistance, MS=Moderate Susceptibility, S=Susceptible

Plant Date: 5/8/23

Vine Kill: 9/1/23

Days from planting to vine kill: 116

[9]Enviroweather: Entrican Station. Planting to vine kill

**Table 2**

**MICHIGAN STATE UNIVERSITY**
**POTATO BREEDING and GENETICS**

**NORTH CENTRAL REGIONAL TRIAL**
**MONTCALM RESEARCH CENTER**
**May 09 to September 05, 2023 (119 days)**
**DD Base 40°F 2895[8]**

| | | | CWT/A | | PERCENT OF TOTAL[1] | | | | | | | | PERCENT (%) TUBER QUALITY[4] | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LINE | PVY RESISTANT | N | US#1 | TOTAL | US#1 | Bs | As | OV | PO | SP GR | CHIP SCORE[2] | OTF SED[3] | HH | VD | IBS | BC | SCAB[5] | MAT[6] |
| ***Chip*** | | | | | | | | | | | | | | | | | | |
| W19ND1810Y-10 | | 1 | 488 | 577 | 84 | 10 | 84 | 0 | 6 | 1.077 | - | - | 0 | 0 | 0 | 0 | 4.0 | 4.0 |
| MSHH119-1 | | 1 | 482 | 498 | 97 | 3 | 97 | 0 | 0 | 1.086 | 1.0 | 0.0 | 0 | 20 | 0 | 10 | 0.5 | 3.0 |
| MN20ND1810Y-297A | | 1 | 464 | 516 | 90 | 10 | 90 | 0 | 0 | 1.068 | 1.0 | 1.0 | 0 | 0 | 0 | 0 | 5.0 | 3.0 |
| MSHH004-2 | PVYR | 1 | 462 | 511 | 90 | 10 | 90 | 0 | 0 | 1.081 | 2.0 | 2.0 | 0 | 20 | 0 | 10 | 1.5 | 3.0 |
| ND1845B-1Y | | 1 | 455 | 536 | 85 | 7 | 85 | 0 | 8 | 1.076 | 1.0 | 1.0 | 30 | 0 | 0 | 0 | 4.0 | 4.0 |
| MSHH018-4 | PVYR | 1 | 444 | 487 | 91 | 9 | 91 | 0 | 0 | 1.089 | 1.0 | 1.0 | 0 | 0 | 0 | 0 | 1.5 | 5.0 |
| MSHH048-4 | PVYR | 1 | 429 | 478 | 90 | 10 | 87 | 3 | 0 | 1.081 | 1.0 | 1.0 | 0 | 0 | 0 | 0 | 3.0 | 4.0 |
| MSHH069-3 | PVYR | 1 | 424 | 442 | 96 | 4 | 96 | 0 | 0 | 1.073 | 1.0 | 3.0 | 0 | 0 | 20 | 0 | 1.5 | 3.0 |
| W19023-17 | | 1 | 423 | 445 | 95 | 5 | 95 | 0 | 0 | 1.080 | 2.0 | 2.0 | 0 | 30 | 0 | 0 | 2.5 | 5.0 |
| MSHH018-3 | PVYR | 1 | 414 | 436 | 95 | 5 | 95 | 0 | 0 | 1.086 | - | - | 0 | 0 | 0 | 0 | 2.0 | 3.0 |
| MSHH063-2 | PVYR | 1 | 413 | 462 | 89 | 11 | 89 | 0 | 0 | 1.083 | 1.0 | 1.0 | 0 | 30 | 0 | 0 | 3.0 | 4.0 |
| MN20W19022-005 | | 1 | 392 | 418 | 94 | 4 | 94 | 0 | 2 | 1.076 | 1.0 | 1.0 | 0 | 0 | 30 | 0 | 1.0 | 3.0 |
| MSHH066-6 | PVYR | 1 | 392 | 407 | 96 | 4 | 96 | 0 | 0 | 1.087 | 1.0 | 0.0 | 10 | 10 | 10 | 0 | 1.5 | 4.0 |
| MSHH043-03 | PVYR | 1 | 391 | 493 | 79 | 21 | 79 | 0 | 0 | 1.080 | 1.0 | 1.0 | 0 | 0 | 0 | 0 | 0.5 | 5.0 |
| MN20AF7174-001 | | 1 | 390 | 433 | 90 | 9 | 90 | 0 | 1 | 1.074 | 2.0 | 2.0 | 10 | 0 | 0 | 0 | 2.0 | 2.0 |
| W19007-4 | | 1 | 388 | 467 | 83 | 8 | 83 | 0 | 9 | 1.082 | 1.0 | 2.0 | 20 | 0 | 10 | 0 | 3.0 | 5.0 |
| MSHH130-1 | PVYR | 1 | 380 | 429 | 89 | 10 | 89 | 0 | 1 | 1.087 | 1.0 | 1.0 | 0 | 0 | 0 | 0 | 2.0 | 3.0 |
| MN20TX015-001 | | 1 | 379 | 409 | 93 | 7 | 93 | 0 | 0 | 1.081 | 1.0 | 0.0 | 0 | 20 | 10 | 0 | 2.0 | 5.0 |
| MSHH206-11 | PVYR | 1 | 364 | 423 | 86 | 14 | 86 | 0 | 0 | 1.066 | - | - | 0 | 10 | 0 | 0 | 3.5 | 2.0 |
| W19027-4 | | 1 | 356 | 386 | 92 | 7 | 92 | 0 | 1 | 1.083 | 1.0 | 1.0 | 0 | 20 | 0 | 0 | 1.0 | 3.0 |
| ND1852-10 | | 1 | 347 | 393 | 88 | 9 | 88 | 0 | 2 | 1.088 | 2.0 | 0.0 | 0 | 10 | 0 | 0 | 2.0 | 3.0 |
| MN20ND184Y-121 | | 1 | 335 | 356 | 94 | 6 | 94 | 0 | 0 | 1.065 | 2.0 | 1.0 | 0 | 30 | 0 | 0 | 2.5 | 3.0 |
| W19016-5 | | 1 | 334 | 442 | 76 | 24 | 76 | 0 | 0 | 1.078 | 2.0 | 0.0 | 0 | 90 | 0 | 0 | 2.0 | 2.0 |
| MSHH015-5 | PVYR | 1 | 316 | 339 | 93 | 7 | 93 | 0 | 0 | 1.088 | 1.0 | 0.0 | 0 | 30 | 0 | 0 | 1.0 | 3.0 |
| MSHH043-10 | | 1 | 306 | 340 | 90 | 10 | 87 | 3 | 0 | 1.089 | 1.0 | 1.0 | 0 | 20 | 0 | 10 | 2.0 | 5.0 |
| **Lamoka** | | **2** | **279** | **297** | **94** | **6** | **94** | **0** | **0** | **1.083** | **2.0** | **0.0** | **0** | **30** | **0** | **0** | **2.0** | **3.0** |
| MSHH056-19 | PVYR | 1 | 260 | 303 | 86 | 14 | 86 | 0 | 0 | 1.075 | 1.0 | 1.0 | 0 | 0 | 0 | 0 | 0.5 | 4.0 |
| ND1848-1 | | 1 | 257 | 282 | 91 | 9 | 91 | 0 | 0 | 1.068 | 2.0 | 1.0 | 10 | 50 | 0 | 0 | 1.5 | 2.0 |
| W19013-4 | | 1 | 254 | 283 | 90 | 10 | 90 | 0 | 0 | 1.085 | 1.0 | 1.0 | 10 | 0 | 10 | 0 | 0.5 | 5.0 |
| W19024-18 | | 1 | 250 | 310 | 81 | 19 | 81 | 0 | 0 | 1.087 | 1.0 | 1.0 | 0 | 40 | 0 | 0 | 3.0 | 2.0 |
| MSHH137-1 | PVYR | 1 | 249 | 294 | 85 | 15 | 85 | 0 | 0 | 1.083 | 1.0 | 1.0 | 0 | 20 | 0 | 0 | 0.5 | 2.0 |
| MN19AF6869-021 | | 1 | 245 | 271 | 90 | 8 | 90 | 0 | 2 | 1.074 | 1.0 | 1.0 | 0 | 0 | 0 | 0 | 2.0 | 2.0 |
| MSHH113-06 | PVYR | 1 | 245 | 306 | 80 | 20 | 80 | 0 | 0 | 1.080 | 1.0 | 1.0 | 0 | 0 | 0 | 0 | 1.0 | 3.0 |
| MN20ND184Y-020 | | 1 | 233 | 287 | 81 | 15 | 81 | 0 | 4 | 1.071 | 2.0 | 1.0 | 0 | 30 | 0 | 0 | 3.0 | 3.0 |
| ND2032-2 | | 1 | 227 | 276 | 82 | 18 | 82 | 0 | 0 | 1.071 | 1.0 | 1.0 | 0 | 0 | 0 | 0 | 3.0 | 3.0 |
| ND20178-3 | | 1 | 227 | 289 | 79 | 8 | 79 | 0 | 13 | 1.067 | 1.0 | 0.0 | 0 | 60 | 0 | 0 | 2.5 | 3.0 |
| W19012-30 | | 1 | 227 | 304 | 75 | 24 | 75 | 0 | 2 | 1.096 | 1.0 | 0.0 | 0 | 0 | 0 | 0 | 2.5 | 3.0 |
| MN20ND184Y-120 | | 1 | 225 | 276 | 82 | 15 | 82 | 0 | 3 | 1.064 | - | - | 0 | 0 | 0 | 0 | 2.5 | 3.0 |
| **Snowden** | | **2** | **217** | **303** | **72** | **28** | **72** | **0** | **0** | **1.081** | **1.0** | **1.0** | **0** | **70** | **0** | **0** | **3.0** | **1.0** |
| ND1853-24 | | 1 | 191 | 241 | 79 | 17 | 79 | 0 | 4 | 1.089 | 2.0 | 2.0 | 0 | 50 | 0 | 0 | 1.0 | 3.0 |
| MN20AF7131-002 | | 1 | 189 | 302 | 63 | 27 | 63 | 0 | 11 | 1.079 | 1.0 | 1.0 | 0 | 0 | 20 | 0 | 3.0 | 3.0 |
| W19012-12 | | 1 | 175 | 306 | 57 | 43 | 57 | 0 | 0 | 1.094 | 2.0 | 0.0 | 0 | 0 | 0 | 0 | 1.0 | 3.0 |
| W19028-23 | | 1 | 163 | 185 | 88 | 12 | 88 | 0 | 0 | 1.098 | 1.0 | 1.0 | 0 | 20 | 0 | 0 | 1.0 | 5.0 |
| MN19AF6866-004 | | 1 | 162 | 240 | 68 | 25 | 68 | 0 | 7 | 1.075 | 1.0 | 2.0 | 0 | 30 | 10 | 0 | 2.0 | 3.0 |

| LINE | PVY RESISTANT | N | CWT/A | | PERCENT OF TOTAL[1] | | | | | SP GR | CHIP SCORE[2] | OTF SED[3] | PERCENT (%) TUBER QUALITY[4] | | | | SCAB[5] | MAT[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | US#1 | TOTAL | US#1 | Bs | As | OV | PO | | | | HH | VD | IBS | BC | | |
| W19027-40 | | 1 | 152 | 283 | 54 | 46 | 54 | 0 | 0 | 1.082 | 1.0 | 2.0 | 0 | 10 | 10 | 0 | 2.0 | 2.0 |
| MN20ND1810Y-128 | | 1 | 138 | 182 | 76 | 16 | 76 | 0 | 9 | 1.071 | 1.0 | 2.0 | 0 | 0 | 0 | 0 | 3.5 | 3.0 |
| MSHH185-04 | PVYR | 1 | 133 | 160 | 83 | 17 | 83 | 0 | 0 | 1.069 | - | - | 0 | 0 | 0 | 0 | 2.0 | 3.0 |
| MN18AF6648-010 | | 1 | 114 | 247 | 46 | 54 | 46 | 0 | 0 | 1.076 | 1.0 | 1.0 | 0 | 0 | 0 | 0 | 2.0 | 3.0 |
| W19018-3 | | 1 | 114 | 171 | 67 | 28 | 67 | 0 | 6 | 1.078 | 1.0 | 0.0 | 10 | 0 | 0 | 0 | 2.5 | 2.0 |
| ND1848-2 | | 1 | 106 | 138 | 77 | 15 | 77 | 0 | 8 | 1.083 | 1.0 | 3.0 | 10 | 20 | 50 | 0 | 1.0 | 4.0 |
| ND1846-6 | | 1 | 88 | 132 | 67 | 33 | 67 | 0 | 0 | 1.077 | 1.0 | 2.0 | 0 | 30 | 0 | 0 | 3.5 | 3.0 |
| MN20ND184Y-070 | | 1 | 87 | 141 | 62 | 38 | 62 | 0 | 0 | 1.066 | 1.0 | 2.0 | 20 | 40 | 0 | 0 | 1.0 | 2.0 |
| MN20W19027-074 | | 1 | 69 | 126 | 55 | 45 | 55 | 0 | 0 | 1.071 | 1.0 | 1.0 | 0 | 20 | 0 | 0 | 1.0 | 1.0 |
| MN20AF7145-002 | | 1 | 62 | 144 | 43 | 43 | 43 | 0 | 14 | 1.065 | 1.0 | 0.0 | 0 | 30 | 10 | 0 | 2.0 | 1.0 |
| W19012-9 | | 1 | 48 | 81 | 59 | 41 | 59 | 0 | 0 | 1.073 | 1.0 | 1.0 | 0 | 30 | 0 | 0 | 4.5 | 2.0 |
| ND2029-1 | | 1 | 25 | 51 | 48 | 52 | 48 | 0 | 0 | 1.063 | 1.0 | 2.0 | 0 | 0 | 0 | 0 | 2.0 | 4.0 |
| MEAN | | | 275 | 327 | | | | | | 1.079 | | | | | | | 2.1 | 3.1 |
| ***Russet*** | | | | | | | | | | | | | | | | | | |
| W19036-5rus | | 1 | 375 | 507 | 74 | 17 | 74 | 0 | 9 | 1.083 | - | - | 0 | 20 | 10 | 0 | 3.0 | 4.0 |
| W19035-17rus | | 1 | 373 | 436 | 85 | 10 | 85 | 0 | 5 | 1.072 | - | - | 10 | 0 | 0 | 0 | 2.5 | 2.0 |
| MN20ND1833B-001 | | 1 | 364 | 439 | 83 | 17 | 83 | 0 | 0 | 1.073 | - | - | 30 | 0 | 0 | 0 | 4.5 | 4.0 |
| W19037-1rus | | 1 | 317 | 374 | 85 | 13 | 85 | 0 | 2 | 1.083 | - | - | 0 | 0 | 0 | 0 | 4.0 | 4.0 |
| W19035-14rus | | 1 | 289 | 360 | 80 | 17 | 80 | 0 | 3 | 1.071 | - | - | 0 | 10 | 0 | 0 | 3.0 | 2.0 |
| W19034-41rus | | 1 | 286 | 387 | 74 | 20 | 74 | 0 | 6 | 1.072 | - | - | 0 | 20 | 0 | 0 | 2.0 | 3.0 |
| W19035-18rus | | 1 | 285 | 356 | 80 | 15 | 80 | 0 | 5 | 1.070 | - | - | 0 | 20 | 10 | 0 | 5.0 | 3.0 |
| **Gold Rush Russet** | | **2** | **274** | **331** | **83** | **13** | **83** | **0** | **4** | **1.063** | **-** | **-** | **0** | **20** | **0** | **0** | **0.5** | **1.0** |
| W19035-10rus | | 1 | 248 | 344 | 72 | 24 | 72 | 0 | 4 | 1.061 | - | - | 0 | 40 | 0 | 0 | 1.5 | 2.0 |
| W19034-30rus | | 1 | 247 | 347 | 71 | 23 | 71 | 0 | 6 | 1.074 | - | - | 0 | 20 | 0 | 0 | 1.0 | 3.0 |
| W19035-1rus | | 1 | 247 | 360 | 69 | 28 | 69 | 0 | 3 | 1.070 | - | - | 0 | 0 | 0 | 0 | 2.5 | 2.0 |
| W19034-33rus | | 1 | 241 | 325 | 74 | 24 | 74 | 0 | 2 | 1.069 | - | - | 0 | 20 | 0 | 0 | 3.0 | 2.0 |
| MN19AOR16034-002 | | 1 | 232 | 336 | 69 | 24 | 69 | 0 | 7 | 1.072 | - | - | 0 | 0 | 0 | 0 | 2.0 | 2.0 |
| W19037-11rus | | 1 | 206 | 353 | 59 | 35 | 59 | 0 | 6 | 1.068 | - | - | 0 | 0 | 0 | 0 | 1.0 | 2.0 |
| MN20ND17105-001 | | 1 | 195 | 337 | 58 | 42 | 58 | 0 | 0 | 1.079 | 1.0 | 1.0 | 10 | 10 | 0 | 0 | 1.0 | 2.0 |
| W19039-6rus | | 1 | 189 | 235 | 80 | 20 | 80 | 0 | 0 | 1.065 | - | - | 0 | 0 | 0 | 0 | 0.5 | 2.0 |
| **Russet Norkotah** | | **2** | **187** | **292** | **64** | **27** | **64** | **0** | **9** | **1.071** | **-** | **-** | **20** | **0** | **0** | **0** | **3.0** | **3.0** |
| W19034-15rus | | 1 | 187 | 311 | 60 | 40 | 60 | 0 | 0 | 1.075 | - | - | 0 | 0 | 0 | 0 | 2.0 | 2.0 |
| W19033-9rus | | 1 | 184 | 345 | 53 | 39 | 53 | 0 | 8 | 1.071 | - | - | 0 | 0 | 0 | 0 | 3.0 | 2.0 |
| W19034-21rus | | 1 | 161 | 265 | 61 | 39 | 61 | 0 | 0 | 1.077 | - | - | 0 | 0 | 0 | 0 | 2.0 | 1.0 |
| W19039-3Rus | | 1 | 150 | 178 | 84 | 16 | 84 | 0 | 0 | 1.057 | - | - | 0 | 10 | 0 | 0 | 1.5 | 1.0 |
| MN20ND17100-001 | | 1 | 137 | 220 | 62 | 28 | 62 | 0 | 10 | 1.070 | - | - | 0 | 20 | 0 | 0 | 4.0 | 4.0 |
| W19038-3rus | | 1 | 102 | 168 | 60 | 36 | 60 | 0 | 4 | 1.073 | - | - | 0 | 50 | 0 | 0 | 1.5 | 2.0 |
| ND195-3Russ | | 1 | 101 | 184 | 55 | 23 | 55 | 0 | 22 | 1.068 | - | - | 10 | 50 | 0 | 0 | 3.0 | 1.0 |
| W19038-4rus | | 1 | 58 | 230 | 25 | 71 | 25 | 0 | 4 | 1.071 | - | - | 0 | 10 | 0 | 0 | 3.5 | 5.0 |
| MN20CO17085-003 | | 1 | 48 | 216 | 22 | 73 | 22 | 0 | 4 | 1.070 | - | - | 0 | 0 | 0 | 0 | 0.5 | 2.0 |
| MEAN | | | 219 | 317 | | | | | | 1.071 | | | | | | | 2.3 | 2.4 |

| LINE | PVY RESISTANT | N | CWT/A US#1 | CWT/A TOTAL | PERCENT OF TOTAL[1] US#1 | Bs | As | OV | PO | SP GR | CHIP SCORE[2] | OTF SED[3] | PERCENT (%) TUBER QUALITY[4] HH | VD | IBS | BC | SCAB[5] | MAT[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Red*** | | | | | | | | | | | | | | | | | | |
| MSHH157-4RR | PVYR | 1 | 400 | 450 | 89 | 11 | 89 | 0 | 0 | 1.056 | 1.0 | 1.0 | 0 | 0 | 0 | 0 | 2.0 | 2.0 |
| MN19ND1759-001 | | 1 | 389 | 430 | 90 | 9 | 90 | 0 | 1 | 1.067 | - | - | 0 | 10 | 60 | 0 | 2.0 | 3.0 |
| MSHH172-3PP | PVYR | 1 | 382 | 417 | 92 | 8 | 92 | 0 | 0 | 1.068 | 2.0 | 1.0 | 0 | 0 | 0 | 0 | 2.0 | 2.0 |
| MSHH160-05R | PVYR | 1 | 377 | 411 | 92 | 8 | 92 | 0 | 0 | 1.086 | - | - | 0 | 0 | 0 | 0 | 2.5 | 5.0 |
| MSHH149-17R | PVYR | 1 | 357 | 395 | 90 | 10 | 90 | 0 | 0 | 1.071 | - | - | 0 | 0 | 0 | 0 | 2.5 | 4.0 |
| MSHH155-6RY | PVYR | 1 | 356 | 471 | 76 | 24 | 76 | 0 | 0 | 1.083 | - | - | 0 | 0 | 0 | 0 | 2.5 | 3.0 |
| MSHH170-5RR | PVYR | 1 | 332 | 428 | 78 | 22 | 78 | 0 | 1 | 1.069 | 3.0 | 2.0 | 0 | 0 | 0 | 0 | 1.0 | 3.0 |
| MSHH164-03RY | PVYR | 1 | 309 | 315 | 98 | 2 | 98 | 0 | 0 | 1.086 | - | - | 0 | 10 | 0 | 0 | 0.5 | 3.0 |
| MSHH176-2R | PVYR | 1 | 308 | 355 | 87 | 12 | 87 | 0 | 1 | 1.072 | - | - | 0 | 0 | 0 | 0 | 2.0 | 2.0 |
| MSHH161-06R | PVYR | 1 | 301 | 310 | 97 | 3 | 97 | 0 | 0 | 1.067 | - | - | 0 | 0 | 0 | 20 | 2.0 | 5.0 |
| ND1870-3R | | 1 | 299 | 357 | 84 | 11 | 84 | 0 | 5 | 1.061 | - | - | 0 | 30 | 0 | 0 | 3.5 | 3.0 |
| ND1940-1R | | 1 | 237 | 286 | 83 | 17 | 83 | 0 | 0 | 1.075 | - | - | 0 | 20 | 0 | 0 | 2.5 | 3.0 |
| **Dark Red Norland** | | **2** | **222** | **269** | **83** | **17** | **83** | **0** | **0** | **1.053** | - | - | **0** | **0** | **0** | **0** | **1.5** | **1.0** |
| ND1858Y-4R | | 1 | 218 | 284 | 77 | 23 | 77 | 0 | 0 | 1.069 | - | - | 30 | 50 | 10 | 0 | 3.0 | 2.0 |
| MN19TX17751-005 | | 1 | 208 | 238 | 88 | 12 | 88 | 0 | 1 | 1.077 | 2.0 | 2.0 | 0 | 20 | 0 | 0 | 2.0 | 2.0 |
| ND1966-1pY | | 1 | 191 | 295 | 65 | 34 | 65 | 0 | 1 | 1.063 | - | - | 0 | 20 | 0 | 0 | 2.5 | 1.0 |
| MSHH228-3PP | PVYR | 1 | 176 | 196 | 90 | 10 | 90 | 0 | 0 | 1.063 | 2.0 | 2.0 | 0 | 0 | 0 | 0 | 2.0 | 5.0 |
| MSHH161-04RY | PVYR | 1 | 155 | 180 | 86 | 11 | 86 | 0 | 3 | 1.063 | - | - | 0 | 10 | 0 | 0 | 2.5 | 4.0 |
| ND1979-1RR | | 1 | 145 | 166 | 88 | 12 | 88 | 0 | 0 | 1.066 | 1.0 | 1.0 | 0 | 0 | 10 | 0 | 3.0 | 2.0 |
| MN19ND1759-002 | | 1 | 134 | 194 | 69 | 24 | 69 | 0 | 7 | 1.059 | - | - | 0 | 0 | 0 | 0 | 1.5 | 2.0 |
| ND1979-2Rp | | 1 | 115 | 197 | 58 | 42 | 58 | 0 | 0 | 1.068 | - | - | 0 | 0 | 0 | 0 | 3.5 | 3.0 |
| ND2013-3R | | 1 | 106 | 123 | 86 | 9 | 86 | 0 | 5 | 1.060 | - | - | 0 | 0 | 0 | 0 | 3.0 | 1.0 |
| ND2039-3R | | 1 | 93 | 132 | 70 | 30 | 70 | 0 | 0 | 1.060 | - | - | 10 | 0 | 0 | 0 | 3.5 | 1.0 |
| ND2037-2R | | 1 | 88 | 106 | 83 | 17 | 83 | 0 | 0 | 1.058 | - | - | 0 | 10 | 0 | 0 | 1.0 | 2.0 |
| ND2036-1R | | 1 | 77 | 261 | 30 | 70 | 30 | 0 | 0 | 1.054 | - | - | 0 | 0 | 0 | 0 | 2.5 | 1.0 |
| ND1979-3Rp | | 1 | 73 | 146 | 50 | 46 | 50 | 0 | 4 | 1.068 | 2.0 | 1.0 | 0 | 50 | 0 | 0 | 3.0 | 2.0 |
| ND1915-3R | | 1 | 67 | 71 | 93 | 7 | 93 | 0 | 0 | 1.068 | - | - | 0 | 10 | 0 | 0 | 4.0 | 2.0 |
| ND1915-2R | | 1 | 66 | 140 | 47 | 8 | 47 | 0 | 44 | 1.072 | - | - | 0 | 0 | 0 | 0 | 4.0 | 3.0 |
| MSHH180-04R | | 1 | 49 | 139 | 35 | 65 | 35 | 0 | 0 | 1.069 | - | - | 0 | 0 | 0 | 0 | 3.0 | 2.0 |
| ND2037-3R | | 1 | 48 | 63 | 75 | 25 | 75 | 0 | 0 | 1.060 | - | - | 0 | 0 | 0 | 0 | 2.0 | 1.0 |
| ND2056-11pY | | 1 | 37 | 100 | 37 | 63 | 37 | 0 | 0 | 1.045 | - | - | 0 | 0 | 0 | 0 | 3.5 | 1.0 |
| ND2035-1R | | 1 | 27 | 99 | 27 | 55 | 27 | 0 | 18 | 1.056 | - | - | 0 | 20 | 0 | 0 | 3.0 | 1.0 |
| ND1913-1R | | 1 | 24 | 50 | 47 | 53 | 47 | 0 | 0 | 1.071 | - | - | 0 | 0 | 0 | 0 | 1.5 | 1.0 |
| MEAN | | | 193 | 245 | | | | | | 1.066 | | | | | | | 2.4 | 2.4 |

| LINE | PVY RESISTANT | N | CWT/A US#1 | CWT/A TOTAL | PERCENT OF TOTAL[1] US#1 | Bs | As | OV | PO | SP GR | CHIP SCORE[2] | OTF SED[3] | PERCENT (%) TUBER QUALITY[4] HH | VD | IBS | BC | SCAB[5] | MAT[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Table/Speciality*** | | | | | | | | | | | | | | | | | | |
| MN20CO18192-001 | | 1 | 449 | 544 | 83 | 15 | 83 | 0 | 2 | 1.084 | 2.0 | 1.0 | 10 | 10 | 0 | 0 | 3.5 | 4.0 |
| MN19TX18280-002 | | 1 | 434 | 490 | 89 | 10 | 89 | 0 | 2 | 1.077 | 3.0 | 3.0 | 10 | 0 | 0 | 0 | 4.0 | 4.0 |
| MSHH179-04Y | PVYR | 1 | 409 | 427 | 96 | 4 | 92 | 4 | 0 | 1.074 | - | - | 0 | 10 | 0 | 0 | 3.0 | 4.0 |
| ND1837B-3Y | | 1 | 347 | 413 | 84 | 16 | 84 | 0 | 0 | 1.075 | - | - | 40 | 20 | 0 | 0 | 4.0 | 4.0 |
| MSHH224-4Y | nd | 1 | 300 | 424 | 71 | 28 | 71 | 0 | 1 | 1.058 | - | - | 0 | 0 | 0 | 0 | 1.5 | 3.0 |
| ND1840B-1R | | 1 | 263 | 317 | 83 | 17 | 83 | 0 | 0 | 1.067 | - | - | 0 | 0 | 0 | 0 | 2.5 | 3.0 |
| MN20TX478-001 | | 1 | 258 | 278 | 93 | 7 | 91 | 1 | 0 | 1.058 | - | - | 0 | 0 | 0 | 0 | 4.0 | 2.0 |
| MN20ND1824Y-001 | | 1 | 247 | 269 | 92 | 8 | 92 | 0 | 0 | 1.063 | - | - | 0 | 30 | 10 | 0 | 2.5 | 3.0 |
| **Columba** | | **1** | **223** | **316** | **71** | **27** | **71** | **0** | **2** | **1.051** | - | - | **0** | **20** | **0** | **0** | **1.0** | **1.0** |
| MN19TX18171-003 | | 1 | 216 | 254 | 85 | 10 | 85 | 0 | 5 | 1.072 | 1.0 | 1.0 | 0 | 20 | 0 | 0 | 1.0 | 3.0 |
| MN190011-002 | | 1 | 174 | 271 | 64 | 16 | 64 | 0 | 20 | 1.061 | - | - | 0 | 0 | 0 | 0 | 2.5 | 3.0 |
| MN18W17026-004 | | 1 | 29 | 142 | 20 | 37 | 20 | 0 | 42 | 1.060 | - | - | 0 | 0 | 0 | 0 | 2.0 | 1.0 |
| MEAN | | | 279 | 346 | | | | | | 1.067 | | | | | | | 2.6 | 2.9 |

[1]SIZE: B: < 2 in.; A: 2-3.25 in.; OV: > 3.25 in.; PO: Pickouts.

[2]CHIP SCORE: SNAC Scale (Out of the field); Ratings: 1-5; 1: Excellent, 5: Poor.

[3]SED: Stem End Defect, Based on Paul Bethke's (USDA/UWisconsin - Madison) 0 - 5 scale. 0 = no SED; 3 = significant SED; 5 = severe SED

[4]QUALITY: HH: Hollow Heart; BC: Brown Center; VD: Vascular Discoloration; IBS: Internal Brown Spot. Percent of 10 Oversize and/or A-size tubers cut.

[5]MATURITY RATING: August 17, 2023; Ratings 1-5; 1: Early (vines completely dead); 5: Late (vigorous vine, some flowering).

[6]SCAB DISEASE RATING: MSU Scab Nursery; 0: No Infection; 1: Low Infection <5%; 3: Intermediate; 5: Highly Susceptible.

Plant Date: 5/9/23

Vine Kill: 8/30/23

Days from planting to vine kill: 113

**Table 3**

**MICHIGAN STATE UNIVERSITY**
**POTATO BREEDING and GENETICS**

**ADAPTATION TRIAL, TABLESTOCK LINES**
**MONTCALM RESEARCH CENTER**
**May 9 to September 12, 2023 (126 days)**
**DD Base 40°F 2935[7]**

| LINE | PVY RESISTANT | N | CWT/A | | PERCENT OF TOTAL[1] | | | | | SP GR | PERCENT (%) TUBER QUALITY[2] | | | | SCAB[3] | MAT[4] | BRUISE[5] | LB[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | US#1 | TOTAL | US#1 | Bs | As | OV | PO | | HH | VD | IBS | BC | | | | |
| MSCC282-2PP | | 2 | 690 | 733 | 94 | 5 | 92 | 3 | 1 | 1.071 | 0 | 0 | 0 | 0 | 1.8 | 4.0 | - | - |
| MSFF353-1R | | 2 | 584 | 613 | 95 | 5 | 94 | 1 | 1 | 1.078 | 0 | 10 | 0 | 0 | 2.0 | 4.5 | 0.9 | R |
| MSGG127-3R | PVYR | 2 | 577 | 628 | 92 | 8 | 92 | 1 | 0 | 1.081 | 0 | 0 | 0 | 0 | 1.8 | 3.5 | 0.9 | - |
| MSDD088-1 | | 2 | 523 | 547 | 96 | 4 | 94 | 2 | 1 | 1.073 | 5 | 0 | 0 | 0 | 0.8 | 4.0 | 0.4 | S |
| Blackberry | | 2 | 506 | 582 | 86 | 14 | 86 | 1 | 1 | 1.066 | 0 | 0 | 0 | 0 | 1.0 | 4.0 | 0.3 | MS |
| MSGG039-08 | PVYR | 2 | 505 | 690 | 73 | 23 | 73 | 0 | 4 | 1.071 | 0 | 30 | 5 | 0 | 2.0 | 3.0 | 0.5 | MS |
| MSGG135-1R | PVYR | 2 | 478 | 660 | 73 | 27 | 72 | 1 | 1 | 1.076 | 0 | 0 | 0 | 0 | 1.0 | 3.5 | 0.4 | MR |
| MSZ109-8PP | | 2 | 459 | 511 | 90 | 9 | 90 | 0 | 2 | 1.066 | 0 | 0 | 0 | 0 | 0.5 | 4.0 | 0.1 | - |
| MSFF031-6 | PVYR | 2 | 454 | 482 | 94 | 6 | 94 | 0 | 0 | 1.067 | 0 | 0 | 0 | 0 | 0.8 | 3.5 | 1.6 | MS |
| MSGG137-1R | PVYR | 2 | 439 | 475 | 93 | 8 | 91 | 2 | 0 | 1.070 | 10 | 0 | 0 | 0 | 2.0 | 4.0 | 0.8 | R |
| MSGG863-A2 | | 2 | 436 | 471 | 93 | 6 | 90 | 3 | 2 | 1.086 | 5 | 5 | 0 | 10 | 1.0 | 4.0 | - | - |
| **Reba** | | **2** | **424** | **445** | **95** | **3** | **94** | **1** | **2** | **1.071** | **30** | **0** | **0** | **0** | **1.5** | **3.0** | **0.8** | **S** |
| MSFF182-1R | PVYR | 2 | 416 | 523 | 80 | 21 | 80 | 0 | 0 | 1.086 | 35 | 0 | 0 | 5 | 0.8 | 4.0 | 0.9 | R |
| MSCC553-1R | PVYR | 2 | 407 | 454 | 90 | 7 | 90 | 0 | 4 | 1.074 | 0 | 0 | 0 | 0 | 1.0 | 4.0 | 0.1 | MR |
| MSGG084-1 | PVYR | 2 | 397 | 436 | 91 | 8 | 91 | 0 | 1 | 1.070 | 5 | 35 | 0 | 0 | 1.0 | 3.0 | 0.5 | MS |
| MSFF211-2 | PVYR | 2 | 392 | 444 | 88 | 4 | 87 | 2 | 8 | 1.064 | 0 | 15 | 0 | 20 | 1.8 | 4.0 | - | R |
| MSFF120-2Y | | 2 | 388 | 421 | 92 | 8 | 91 | 2 | 1 | 1.070 | 0 | 0 | 5 | 0 | 1.3 | 3.0 | 0.8 | S |
| MSFF335-2RR | | 2 | 379 | 445 | 85 | 15 | 85 | 0 | 1 | 1.066 | 0 | 5 | 0 | 0 | 0.5 | 5.0 | 1.9 | MR |
| MSFF230-1 | | 2 | 377 | 493 | 77 | 15 | 77 | 0 | 9 | 1.082 | 55 | 5 | 5 | 0 | 1.0 | 4.0 | 1.3 | R |
| MSGG039-11 | PVYR | 2 | 374 | 436 | 86 | 9 | 84 | 2 | 7 | 1.071 | 0 | 0 | 0 | 0 | 1.3 | 3.0 | 0.3 | MS |
| MSZ416-8RY | | 2 | 374 | 427 | 88 | 8 | 85 | 3 | 5 | 1.060 | 0 | 25 | 0 | 0 | 1.5 | 3.5 | 0.3 | MS |
| Becca Rose | | 2 | 371 | 485 | 76 | 14 | 76 | 0 | 11 | 1.064 | 0 | 15 | 0 | 0 | 1.3 | 4.0 | 0.3 | MS |
| MSAA182-3R | | 2 | 354 | 423 | 84 | 16 | 82 | 2 | 1 | 1.078 | 5 | 15 | 0 | 0 | 1.5 | 3.5 | 0.8 | - |
| MSFF305-1RY | PVYR | 2 | 348 | 403 | 86 | 14 | 86 | 0 | 0 | 1.071 | 0 | 15 | 0 | 0 | 1.3 | 5.0 | 0.2 | R |
| MSAA101-01RR | | 2 | 347 | 395 | 88 | 12 | 88 | 0 | 0 | 1.077 | 30 | 10 | 0 | 0 | 0.5 | 3.0 | 1.2 | S |
| MSAA174-1 | PVYR | 2 | 323 | 338 | 96 | 5 | 96 | 0 | 0 | 1.058 | 0 | 20 | 5 | 0 | 1.5 | 3.0 | 0.7 | MR |
| **Dark Red Norland** | | **2** | **321** | **356** | **90** | **9** | **87** | **3** | **2** | **1.057** | **10** | **0** | **5** | **5** | **1.5** | **3.0** | **0.3** | **S** |
| MSFF142-1P | | 2 | 318 | 420 | 76 | 25 | 76 | 0 | 0 | 1.071 | 0 | 5 | 0 | 0 | 1.3 | 5.0 | 0.3 | MR |
| MSBB371-1YSPL | | 2 | 312 | 363 | 86 | 15 | 86 | 0 | 0 | 1.073 | 0 | 20 | 0 | 0 | 0.5 | 4.0 | 0.5 | - |
| MSGG158-11PP | PVYR | 2 | 281 | 383 | 74 | 26 | 74 | 0 | 1 | 1.062 | 0 | 0 | 0 | 0 | 1.0 | 3.5 | - | - |
| Golden Globe | | 2 | 275 | 365 | 76 | 15 | 76 | 0 | 10 | 1.065 | 0 | 5 | 0 | 0 | 1.0 | 2.5 | 0.2 | S |
| MSFF138-04R | | 2 | 264 | 303 | 87 | 12 | 84 | 3 | 1 | 1.077 | 0 | 5 | 5 | 0 | 1.5 | 4.0 | 1.8 | R |
| MSFF134-1PP | | 2 | 263 | 318 | 83 | 12 | 83 | 0 | 6 | 1.070 | 0 | 0 | 0 | 0 | 1.5 | 3.5 | - | MS |
| **Yukon Gold** | | **2** | **253** | **287** | **88** | **12** | **88** | **0** | **1** | **1.071** | **40** | **10** | **5** | **10** | **2.0** | **2.5** | **0.9** | **S** |

| | PVY | | CWT/A | | PERCENT OF TOTAL[1] | | | | | | PERCENT (%) TUBER QUALITY[2] | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LINE | RESISTANT | N | US#1 | TOTAL | US#1 | Bs | As | OV | PO | SP GR | HH | VD | IBS | BC | SCAB[3] | MAT[4] | BRUISE[5] | LB[6] |
| Colomba | | 2 | 246 | 303 | 79 | 21 | 79 | 0 | 1 | 1.051 | 0 | 10 | 0 | 0 | 0.8 | 3.5 | 0.1 | MS |
| Jacqueline Lee | | 2 | 243 | 401 | 61 | 39 | 61 | 0 | 1 | 1.079 | 0 | 0 | 0 | 0 | 2.3 | 3.5 | 1.3 | S |
| MSFF230-2PY | | 2 | 213 | 271 | 79 | 17 | 79 | 0 | 5 | 1.080 | 5 | 10 | 0 | 0 | 1.3 | 5.0 | 0.5 | R |
| MSFF145-2R | | 2 | 190 | 324 | 59 | 41 | 59 | 0 | 1 | 1.066 | 0 | 0 | 0 | 0 | 0.8 | 1.5 | 0.0 | S |
| MEAN | | 2 | 381 | 449 | | | | | | 1.071 | | | | | 1.2 | 3.6 | 0.7 | |

[1]SIZE: B: < 2 in.; A: 2-3.25 in.; OV: > 3.25 in.; PO: Pickouts.

[2]QUALITY: HH: Hollow Heart; BC: Brown Center; VD: Vascular Discoloration; IBS: Internal Brown Spot. Percent of 20 Oversize and/or A-size tubers cut.

[3]SCAB DISEASE RATING: MSU Scab Nursery; 0: No Infection; 1: Low Infection <5%; 3: Intermediate; 5: Highly Susceptible.

[4]MATURITY RATING: August 17, 2023; Ratings 1-5; 1: Early (vines completely dead); 5: Late (vigorous vine, some flowering).

[5]BRUISE: Simulated blackspot bruise test average number of spots per tuber.

[6]LB: Late blight (*P. infestans* US-23) foliar disease reaction. R=Resistant, MR=Moderate Resistance, MS=Moderate Susceptibility, S=Susceptible

Plant Date: 5/9/23

Vine Kill: 9/1/23

Days from planting to vine kill: 115

[7]Enviroweather: Entrican Station. Planting to vine kill

**Table 4**

**MICHIGAN STATE UNIVERSITY**
**POTATO BREEDING and GENETICS**

**PRELIMINARY TRIAL, CHIP-PROCESSING LINES**
**MONTCALM RESEARCH CENTER**
**May 9 to September 14, 2023 (128 days)**
**DD Base 40°F 2935[7]**

| | | | | | | | | | | | | | PERCENT (%) TUBER QUALITY[2] | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PVY | | CWT/A | | PERCENT OF TOTAL[1] | | | | | | OTF | OTF | | | | | | | | |
| LINE | RESISTANT | N | US#1 | TOTAL | US#1 | Bs | As | OV | PO | SP GR | SFA | SED | HH | VD | IBS | BC | SCAB[3] | MAT[4] | BRUISE[5] | LB[6] |
| MSBB626-11 | PVYR | 1 | 604 | 629 | 96 | 4 | 93 | 3 | 0 | nd | nd | nd | 0 | 0 | 0 | 0 | nd | 4.0 | nd | MR |
| MSGG302-1 | PVYR | 1 | 511 | 516 | 99 | 1 | 88 | 11 | 0 | 1.090 | 1.0 | 2.0 | 10 | 0 | 0 | 0 | 0.5 | 5.0 | 2.3 | MR |
| MSGG190-1 | PVYR | 1 | 478 | 508 | 94 | 6 | 93 | 1 | 0 | 1.078 | 1.0 | 1.0 | 0 | 0 | 0 | 0 | 0.5 | 3.0 | 1.0 | MS |
| MSDD084-19 | PVYR | 1 | 469 | 509 | 92 | 6 | 92 | 0 | 2 | 1.080 | 1.0 | 0.0 | 0 | 0 | 0 | 0 | 1.5 | 4.0 | 0.7 | MR |
| Mackinaw | **PVYR** | **1** | **433** | **469** | **92** | **6** | **92** | **0** | **1** | **1.091** | **1.0** | **0.0** | **0** | **10** | **0** | **0** | **1.5** | **4.0** | **1.8** | **MR** |
| MSEE149-2 | | 1 | 409 | 419 | 98 | 2 | 87 | 10 | 0 | 1.084 | 1.0 | 0.0 | 0 | 0 | 0 | 0 | 1.5 | 5.0 | 2.5 | - |
| MSGG242-1 | PVYR | 1 | 407 | 472 | 86 | 14 | 86 | 0 | 0 | 1.088 | 1.0 | 0.0 | 0 | 0 | 50 | 10 | 0.5 | 4.0 | 2.0 | MR |
| MSFF029-10 | PVYR | 1 | 396 | 468 | 85 | 15 | 85 | 0 | 0 | 1.087 | 1.0 | 1.0 | 0 | 0 | 10 | 10 | 1.5 | 3.0 | 0.2 | - |
| MSFF022-2 | | 1 | 376 | 407 | 92 | 8 | 92 | 0 | 0 | 1.076 | 1.0 | 2.0 | 0 | 0 | 0 | 0 | 1.5 | 3.0 | 0.8 | MS |
| Mystere | | 1 | 350 | 439 | 80 | 20 | 80 | 0 | 1 | 1.076 | 1.0 | 0.0 | 0 | 10 | 0 | 0 | 2.0 | 3.0 | 0.7 | S |
| MSDD050-B | | 1 | 340 | 376 | 91 | 8 | 84 | 6 | 2 | 1.069 | 2.0 | 2.0 | 0 | 0 | 0 | 0 | 0.5 | 3.0 | 1.0 | MR |
| MSFF088-1 | | 1 | 337 | 362 | 93 | 7 | 93 | 0 | 0 | 1.083 | 1.0 | 0.0 | 0 | 0 | 0 | 0 | 0.5 | 3.0 | 2.6 | MR |
| MSFF035-2 | PVYR | 1 | 329 | 365 | 90 | 3 | 88 | 2 | 7 | 1.080 | 1.0 | 0.0 | 10 | 0 | 0 | 0 | 1.0 | 3.0 | 1.4 | - |
| MSEE025-1 | PVYR | 1 | 304 | 307 | 99 | 1 | 99 | 0 | 0 | 1.077 | 1.0 | 1.0 | 0 | 0 | 0 | 0 | 0.5 | 3.0 | 0.1 | MR |
| Petoskey | | 1 | 298 | 331 | 90 | 9 | 90 | 0 | 1 | 1.095 | 2.0 | 1.0 | 0 | 0 | 0 | 0 | 2.0 | 3.0 | 2.4 | - |
| MSFF008-1 | | 1 | 297 | 327 | 91 | 9 | 91 | 0 | 0 | 1.078 | 2.0 | 1.0 | 10 | 0 | 0 | 0 | 1.0 | 5.0 | 1.4 | - |
| MSEE052-5 | | 1 | 293 | 379 | 77 | 6 | 76 | 1 | 17 | 1.076 | 1.0 | 0.0 | 0 | 10 | 10 | 0 | 1.0 | 4.0 | 0.4 | MR |
| MSEE149-1 | | 1 | 230 | 237 | 97 | 3 | 95 | 2 | 0 | 1.079 | 3.0 | 2.0 | 0 | 0 | 0 | 0 | 0.5 | 5.0 | 2.4 | - |
| MSFF191-1Y | PVYR | 1 | 221 | 253 | 88 | 9 | 88 | 0 | 3 | 1.064 | 1.0 | 2.0 | 0 | 0 | 0 | 0 | 1.5 | 3.0 | 0.1 | MR |
| **Snowden** | | **1** | **204** | **271** | **75** | **24** | **75** | **0** | **1** | **1.085** | **1.0** | **0.0** | **0** | **0** | **0** | **0** | **2.5** | **2.0** | **1.7** | **MS** |
| MSGG169-2 | PVYR | 1 | 173 | 177 | 98 | 2 | 91 | 7 | 0 | 1.068 | 1.0 | 1.0 | 0 | 0 | 0 | 0 | 1.0 | 3.0 | 0.2 | S |
| MSEE063-6 | PVYR | 1 | 158 | 172 | 92 | 7 | 92 | 0 | 1 | 1.080 | 1.0 | 2.0 | 20 | 10 | 0 | 0 | 1.0 | 5.0 | 1.0 | R |
| **Atlantic** | | **1** | **131** | **150** | **87** | **10** | **87** | **0** | **3** | **1.083** | **1.0** | **2.0** | **20** | **10** | **20** | **10** | **3.0** | **2.0** | **1.5** | **S** |
| MEAN | | | 337 | 371 | | | | | | 1.080 | | | | | | | 1.2 | 3.6 | 1.3 | |

[1]SIZE: B: < 2 in.; A: 2-3.25 in.; OV: > 3.25 in.; PO: Pickouts.

[2]QUALITY: HH: Hollow Heart; BC: Brown Center; VD: Vascular Discoloration; IBS: Internal Brown Spot. Percent of 10 Oversize and/or A-size tubers cut.

[3]SCAB DISEASE RATING: MSU Scab Nursery; 0: No Infection; 1: Low Infection <5%; 3: Intermediate; 5: Highly Susceptible.

[4]MATURITY RATING: August 17, 2023; Ratings 1-5; 1: Early (vines completely dead); 5: Late (vigorous vine, some flowering).

[5]BRUISE: Simulated blackspot bruise test average number of spots per tuber.

[6]LB: Late blight (*P. infestans* US-23) foliar disease reaction. R=Resistant, MR=Moderate Resistance, MS=Moderate Susceptibility, S=Susceptible

Plant Date: 5/9/23
Vine Kill: 9/1/23
Days from planting to vine kill: 115

[7]Enviroweather: Entrican Station. Planting to vine kill

**Table 5**

**MICHIGAN STATE UNIVERSITY**
**POTATO BREEDING and GENETICS**

**PRELIMINARY TRIAL, TABLESTOCK LINES**
**MONTCALM RESEARCH CENTER**
**May 9 to September 14, 2023 (128 days)**
**DD Base 40°F 2935[7]**

| | | | | | PERCENT OF TOTAL[1] | | | | | | PERCENT (%) TUBER QUALITY[2] | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LINE | PVY RESISTANT | N | CWT/A US#1 | CWT/A TOTAL | US#1 | Bs | As | OV | PO | SP GR | HH | VD | IBS | BC | SCAB[3] | MAT[4] | BRUISE[5] | LB[6] |
| Allison | | 1 | 524 | 616 | 85 | 12 | 85 | 0 | 3 | 1.070 | 10 | 10 | 0 | 0 | 1.0 | 5.0 | 0.8 | MS |
| MSFF301-3SPL | | 1 | 380 | 413 | 92 | 6 | 92 | 0 | 1 | 1.079 | 0 | 10 | 0 | 0 | 0.5 | 3.0 | 1.3 | MR |
| MSFF149-01 | | 1 | 321 | 357 | 90 | 7 | 90 | 0 | 4 | 1.081 | 0 | 30 | 0 | 0 | 1.0 | 3.0 | 1.5 | MR |
| Sifra | | 1 | 278 | 398 | 70 | 30 | 70 | 0 | 1 | 1.061 | 0 | 20 | 10 | 0 | 3.0 | 2.0 | 0.2 | MS |
| MSGG030-3Y | | 1 | 277 | 344 | 81 | 13 | 81 | 0 | 7 | 1.066 | 0 | 0 | 0 | 0 | 1.0 | 3.0 | 1.2 | S |
| Jelly | | 1 | 270 | 297 | 91 | 6 | 91 | 0 | 3 | 1.074 | 20 | 50 | 0 | 0 | 1.0 | 4.0 | 0.4 | MR |
| Spartan Splash | | 1 | 265 | 300 | 88 | 11 | 88 | 0 | 1 | 1.070 | 0 | 10 | 0 | 0 | 0.5 | 3.0 | 1.0 | - |
| MSFF050-1 | | 1 | 218 | 234 | 93 | 6 | 93 | 0 | 1 | 1.069 | 10 | 0 | 0 | 0 | 1.0 | 3.0 | 1.0 | - |
| **Dark Red Norland** | | **1** | **205** | **237** | **86** | **12** | **86** | **0** | **2** | **1.056** | **0** | **0** | **0** | **0** | **1.0** | **2.0** | **0.3** | **S** |
| MSAA127-01PP | | 1 | 200 | 252 | 79 | 19 | 79 | 0 | 2 | 1.059 | 0 | 0 | 0 | 0 | 0.5 | 4.0 | 0.9 | MS |
| Camelia | | 1 | 184 | 244 | 75 | 19 | 75 | 0 | 6 | 1.060 | 0 | 20 | 0 | 0 | 2.0 | 2.0 | 0.2 | MR |
| MEAN | | | 284 | 336 | | | | | | 1.068 | | | | | 1.1 | 3.1 | 0.8 | |

[1]SIZE: B: < 2 in.; A: 2-3.25 in.; OV: > 3.25 in.; PO: Pickouts.

[2]QUALITY: HH: Hollow Heart; BC: Brown Center; VD: Vascular Discoloration; IBS: Internal Brown Spot. Percent of 10 Oversize and/or A-size tubers cut.

[3]SCAB DISEASE RATING: MSU Scab Nursery; 0: No Infection; 1: Low Infection <5%; 3: Intermediate; 5: Highly Susceptible.

[4]MATURITY RATING: August 17, 2023; Ratings 1-5; 1: Early (vines completely dead); 5: Late (vigorous vine, some flowering).

[5]BRUISE: Simulated blackspot bruise test average number of spots per tuber.

[6]LB: Late blight (*P. infestans* US-23) foliar disease reaction. R=Resistant, MR=Moderate Resistance, MS=Moderate Susceptibility, S=Susceptible

Plant Date: 5/9/23
Vine Kill: 9/1/23
Days from planting to vine kill: 115

[7]Enviroweather: Entrican Station. Planting to vine kill

**Table 6**

**MICHIGAN STATE UNIVERSITY**
**POTATO BREEDING and GENETICS**

**PRELIMINARY TRIAL, PIGMENTED LINES**
**MONTCALM RESEARCH CENTER**
**May 9 to September 14, 2023 (128 days)**
**DD Base 40°F 2935[7]**

| | | | CWT/A | | PERCENT OF TOTAL[1] | | | | | | PERCENT (%) TUBER QUALITY[2] | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LINE | PVY RESISTANT | N | US#1 | TOTAL | US#1 | Bs | As | OV | PO | SP GR | HH | VD | IBS | BC | SCAB[3] | MAT[4] | Bruise[5] | LB[6] |
| MSGG102-1RR | | | 382 | 452 | 85 | 14 | 85 | 0 | 2 | 1.070 | 0 | 0 | 0 | 0 | 2.5 | 3.0 | ND | R |
| MSFF338-1PP | | | 355 | 453 | 78 | 20 | 78 | 0 | 1 | 1.061 | 0 | 0 | 0 | 0 | 0.5 | 4.0 | 0.5 | MS |
| MSFF335-3Pinto | | | 258 | 510 | 51 | 44 | 51 | 0 | 6 | 1.064 | 0 | 0 | 0 | 0 | 0.5 | 4.0 | 0.4 | MS |
| **Dark Red Norland** | | | **194** | **243** | **80** | **20** | **80** | **0** | **0** | **1.054** | **0** | **0** | **0** | **0** | **1.5** | **1.0** | **0.3** | **S** |
| W16025-5R | | | 160 | 212 | 76 | 22 | 76 | 0 | 2 | 1.055 | 0 | 0 | 0 | 0 | 2.5 | 2.0 | 0.3 | S |
| MSFF030-1WR | PVYR | | 144 | 225 | 64 | 26 | 64 | 0 | 10 | 1.060 | 0 | 0 | 0 | 0 | 0.5 | 3.0 | 0.7 | MS |
| W17005-3R | | | 111 | 149 | 74 | 21 | 74 | 0 | 4 | 1.059 | 0 | 0 | 10 | 10 | 2.0 | 3.0 | 0.0 | S |
| W17026-4R | | | 89 | 187 | 47 | 52 | 47 | 0 | 1 | 1.054 | 0 | 0 | 0 | 0 | 1.5 | 2.0 | 0.1 | - |
| MSFF334-1Pinto | | | 85 | 184 | 46 | 43 | 46 | 0 | 11 | 1.059 | 0 | 0 | 0 | 0 | 1.0 | 5.0 | 0.7 | R |
| MEAN | | | 198 | 291 | | | | | | 1.060 | | | | | 1.4 | 3.0 | 0.4 | |

[1]SIZE: B: < 2 in.; A: 2-3.25 in.; OV: > 3.25 in.; PO: Pickouts.

[2]QUALITY: HH: Hollow Heart; BC: Brown Center; VD: Vascular Discoloration; IBS: Internal Brown Spot. Percent of 10 Oversize and/or A-size tubers cut.

[3]SCAB DISEASE RATING: MSU Scab Nursery; 0: No Infection; 1: Low Infection <5%; 3: Intermediate; 5: Highly Susceptible.

[4]MATURITY RATING: August 17, 2023; Ratings 1-5; 1: Early (vines completely dead); 5: Late (vigorous vine, some flowering).

[5]BRUISE: Simulated blackspot bruise test, average number of spots per tuber.

[6]LB: Late blight (*P. infestans* US-23) foliar disease reaction. R=Resistant, MR=Moderate Resistance, MS=Moderate Susceptibility, S=Susceptible

Plant Date: 5/9/23
Vine Kill: 9/1/23
Days from planting to vine kill: 115

[7]Enviroweather: Entrican Station. Planting to vine kill

**Table 7**

**MICHIGAN STATE UNIVERSITY**
**POTATO BREEDING and GENETICS**

**DIPLOID REPLICATED TRIAL**
**MONTCALM RESEARCH CENTER**
**May 8 to September 26, 2023 (141 days)**
**DD Base 40°F 2952[6]**

| | | CWT/A | | PERCENT OF TOTAL[1] | | | | | | PERCENT (%) TUBER QUALITY[2] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LINE | N | US#1 | TOTAL | US#1 | Bs | As | OV | PO | SP GR | HH | VD | IBS | BC | SCAB[3] | MAT[4] | BRUISE[5] |
| MSHH618-01 | 2 | 345 | 368 | 94 | 6 | 94 | 0 | 1 | 1.068 | 90 | 5 | 0 | 0 | 1.5 | 4.0 | 0.0 |
| MSHH1043-02 | 2 | 317 | 384 | 83 | 16 | 83 | 0 | 3 | 1.077 | 30 | 5 | 0 | 0 | 0.8 | 4.5 | 2.4 |
| MSHH693-01 | 2 | 244 | 334 | 73 | 28 | 73 | 0 | 0 | 1.088 | 0 | 0 | 0 | 0 | - | 3.5 | 1.3 |
| MSII1591-3 | 2 | 215 | 235 | 92 | 9 | 92 | 0 | 0 | 1.096 | 100 | 0 | 0 | 0 | - | 4.0 | 3.2 |
| **Atlantic** | **2** | **202** | **224** | **90** | **10** | **90** | **0** | **1** | **1.086** | **15** | **10** | **5** | **0** | **3.5** | **2.0** | **2.1** |
| MSII1117-1 | 2 | 192 | 253 | 76 | 24 | 76 | 0 | 1 | 1.084 | 0 | 0 | 20 | 0 | - | 3.0 | 3.5 |
| **Lamoka** | **2** | **169** | **186** | **91** | **10** | **91** | **0** | **0** | **1.081** | **0** | **25** | **5** | **0** | **1.0** | **2.5** | **0.8** |
| MSGG691-06 | 2 | 168 | 267 | 64 | 31 | 64 | 0 | 6 | 1.072 | 50 | 0 | 10 | 0 | 2.5 | 4.0 | 2.9 |
| MSHH664-01 | 2 | 133 | 193 | 68 | 29 | 68 | 0 | 4 | 1.074 | 50 | 5 | 0 | 0 | 2.3 | 4.5 | 3.8 |
| MSII1081-2 | 2 | 128 | 171 | 75 | 21 | 75 | 0 | 5 | 1.083 | 35 | 0 | 0 | 0 | 0.8 | 2.0 | 3.3 |
| MSHH699-02 | 2 | 114 | 233 | 49 | 50 | 49 | 0 | 1 | 1.092 | 0 | 0 | 0 | 0 | - | 4.0 | 1.5 |
| MSFF690-01 | 2 | 102 | 175 | 58 | 42 | 58 | 0 | 1 | 1.081 | 40 | 20 | 5 | 0 | 1.5 | 3.0 | 2.1 |
| MSII1591-2 | 2 | 91 | 126 | 72 | 24 | 72 | 0 | 5 | 1.099 | 10 | 5 | 0 | 0 | 1.8 | 3.0 | 1.7 |
| MSGG655-01 | 2 | 65 | 95 | 70 | 31 | 70 | 0 | 0 | 1.084 | 0 | 0 | 0 | 0 | - | 3.0 | 1.9 |
| MSHH1041-4 | 2 | 42 | 87 | 48 | 48 | 48 | 0 | 5 | 1.068 | 0 | 0 | 5 | 0 | - | 2.0 | 3.3 |
| MEAN | | 168 | 222 | | | | | | 1.082 | | | | | 1.7 | 3.3 | 2.3 |

[1]SIZE: B: < 2 in.; A: 2-3.25 in.; OV: > 3.25 in.; PO: Pickouts.

[2]QUALITY: HH: Hollow Heart; BC: Brown Center; VD: Vascular Discoloration; IBS: Internal Brown Spot. Percent of 20 Oversize and/or A-size tubers cut.

[3]SCAB DISEASE RATING: MSU Scab Nursery; 0: No Infection; 1: Low Infection <5%; 3: Intermediate; 5: Highly Susceptible.

[4]MATURITY RATING: August 17, 2023; Ratings 1-5; 1: Early (vines completely dead); 5: Late (vigorous vine, some flowering).

[5]BRUISE: Simulated blackspot bruise test, average number of spots per tuber.

[6]Enviroweather: Entrican Station. Planting to vine kill

Plant Date: 5/8/23
Vine Kill: 9/1/23
Days from planting to vine kill: 116

**Table 8**

**MICHIGAN STATE UNIVERSITY**
**POTATO BREEDING and GENETICS**

## 2021-23 SCAB DISEASE TRIAL SUMMARY
## SCAB NURSERY, MONTCALM RESEARCH CENTER , MI

| LINE | 3-YR* AVG. | 2023 RATING | 2023 WORST | 2023 N | 2022 RATING | 2022 WORST | 2022 N | 2021 RATING | 2021 WORST | 2021 N |
|---|---|---|---|---|---|---|---|---|---|---|
| *Sorted by ascending 2023 Average Rating;* | | | | | | | | | | |
| MSEE182-3 | 1.1 | 0.3 | 0.5 | 3 | 1.2 | 2.0 | 3 | 1.7 | 3.0 | 3 |
| MSEE207-2 | 0.5 | 0.3 | 0.5 | 3 | 0.7 | 1.0 | 3 | 0.5 | 0.5 | 3 |
| MSDD247-11 | 0.7 | 0.5 | 0.5 | 3 | 1.2 | 2.0 | 3 | 0.5 | 0.5 | 3 |
| MSDD372-07 | 1.3 | 0.5 | 0.5 | 3 | 1.8 | 2.0 | 3 | 1.7 | 2.0 | 3 |
| MSEE035-4 | 0.8 | 0.5 | 0.5 | 3 | 0.8 | 1.0 | 3 | 1.2 | 1.5 | 3 |
| MSFF079-16 | 0.7* | 0.5 | 1.0 | 3 | 0.8 | 1.0 | 3 | | | |
| MSFF321-1 | | 0.5 | 0.5 | 3 | | | | | | |
| MSGG242-1 | | 0.5 | 0.5 | 3 | | | | | | |
| MSW474-1 | 0.7 | 0.5 | 0.5 | 3 | 1.0 | 1.5 | 3 | 0.5 | 0.5 | 3 |
| **Mackinaw**[PVYR, LBR] | **1.4** | 0.7 | 1.5 | 6 | **1.8** | **2.5** | **6** | **1.8** | **2.5** | **3** |
| MSBB060-1 | | 0.7 | 1.0 | 3 | | | | | | |
| MSBB614-15 | 0.6 | 0.7 | 1.0 | 3 | 0.7 | 1.0 | 3 | 0.3 | 0.5 | 3 |
| MSBB636-11 | 0.9* | 0.7 | 1.0 | 3 | 1.2 | 1.5 | 3 | | | |
| MSDD050-B | | 0.7 | 1.0 | 3 | | | | | | |
| MSDD085-13 | 0.8 | 0.7 | 1.0 | 3 | 1.2 | 1.5 | 3 | 0.5 | 0.5 | 3 |
| MSDD244-05 | 1.0 | 0.7 | 1.0 | 3 | 1.0 | 1.0 | 3 | 1.3 | 2.0 | 3 |
| MSEE115-1 | 0.9* | 0.7 | 1.0 | 3 | 1.2 | 1.5 | 3 | | | |
| MSFF035-2 | 1.1 | 0.7 | 1.0 | 3 | 1.2 | 1.5 | 3 | 1.5 | 2.0 | 3 |
| MSGG426-2 | | 0.7 | 1.0 | 3 | | | | | | |
| MSZ109-8PP | 0.9 | 0.7 | 1.0 | 3 | 0.8 | 1.0 | 3 | 1.3 | 1.5 | 3 |
| MSEE149-1 | | 0.8 | 1.0 | 2 | | | | | | |
| MSAA076-6 | 1.0 | 0.8 | 1.0 | 3 | 1.3 | 2.0 | 3 | 0.8 | 1.0 | 3 |
| MSAA101-1RR | 1.0 | 0.8 | 1.0 | 3 | 1.0 | 1.0 | 3 | 1.2 | 1.5 | 3 |
| MSBB626-11 | 1.0 | 0.8 | 1.0 | 3 | 1.0 | 1.0 | 3 | 1.2 | 1.5 | 3 |
| MSEE016-07 | 1.4 | 0.8 | 1.0 | 3 | 1.5 | 2.5 | 3 | 1.8 | 2.5 | 3 |
| MSEE031-3 | 1.2 | 0.8 | 1.0 | 3 | 1.3 | 1.5 | 3 | 1.3 | 2.0 | 3 |
| MSEE052-5 | | 0.8 | 1.0 | 3 | | | | | | |
| MSEE149-2 | | 0.8 | 1.5 | 3 | | | | | | |
| MSEE171-2 | | 0.8 | 1.0 | 3 | | | | | | |
| MSFF050-1 | 1.3* | 0.8 | 1.0 | 3 | 1.7 | 3.0 | 3 | | | |
| MSFF088-1 | | 0.8 | 1.0 | 3 | | | | | | |
| MSFF142-1P | 1.1 | 0.8 | 1.0 | 3 | 0.8 | 1.0 | 3 | 1.5 | 2.0 | 3 |
| MSFF145-2R | | 0.8 | 1.0 | 3 | | | | | | |
| MSFF182-1R | 1.3* | 0.8 | 1.5 | 3 | 1.7 | 2.0 | 3 | | | |
| MSZ242-13 | 1.2 | 0.8 | 1.0 | 3 | 0.8 | 1.0 | 3 | 2.0 | 2.0 | 3 |
| MSZ416-8RY | | 0.8 | 1.0 | 3 | | | | | | |
| **Dark Red Norland** | 1.1 | 0.9 | 1.5 | 9 | 1.3 | 2.0 | 6 | 1.2 | 2.0 | 3 |
| MSAA127-01PP | | 1.0 | 1.5 | 3 | | | | | | |
| MSAA217-3 | | 1.0 | 1.5 | 3 | | | | | | |
| MSBB635-14 | 1.1 | 1.0 | 1.0 | 2 | 1.0 | 1.5 | 3 | 1.2 | 1.5 | 3 |
| MSDD247-07 | 1.3 | 1.0 | 1.0 | 3 | 1.7 | 2.0 | 3 | 1.2 | 1.5 | 3 |
| MSDD249-9 | 1.6 | 1.0 | 1.5 | 3 | 2.0 | 2.0 | 3 | 1.8 | 2.0 | 3 |
| MSEE025-1 | | 1.0 | 1.5 | 3 | | | | | | |
| MSEE063-6 | | 1.0 | 1.5 | 3 | | | | | | |
| MSFF007-2 | 1.1* | 1.0 | 1.5 | 3 | 1.2 | 1.5 | 3 | | | |
| MSFF008-1 | | 1.0 | 1.0 | 3 | | | | | | |
| MSFF031-6 | 1.1 | 1.0 | 1.5 | 3 | 1.3 | 1.5 | 3 | 1.0 | 1.5 | 3 |
| MSFF138-04R | | 1.0 | 1.5 | 3 | | | | | | |
| MSGG302-1 | | 1.0 | 1.5 | 2 | | | | | | |
| Blackberry | 1.7 | 1.2 | 2.0 | 3 | 1.7 | 2.5 | 3 | 2.2 | 3.0 | 3 |

| LINE | 3-YR* AVG. | 2023 RATING | 2023 WORST | 2023 N | 2022 RATING | 2022 WORST | 2022 N | 2021 RATING | 2021 WORST | 2021 N |
|---|---|---|---|---|---|---|---|---|---|---|
| *Sorted by ascending 2023 Average Rating;* | | | | | | | | | | |
| MSAA174-1 | 1.6 | 1.2 | 2.0 | 3 | 1.7 | 2.0 | 3 | 1.8 | 2.5 | 3 |
| MSBB371-1YSPL | 1.2 | 1.2 | 2.0 | 3 | 1.2 | 2.0 | 3 | 1.3 | 2.0 | 3 |
| MSBB610-13 | 1.5* | 1.2 | 1.5 | 3 | 1.8 | 2.5 | 3 | | | |
| MSBB630-2 | 1.3 | 1.2 | 1.5 | 3 | 1.0 | 1.5 | 3 | 1.7 | 2.0 | 3 |
| MSDD039-01 | 1.4* | 1.2 | 1.5 | 3 | 1.7 | 2.0 | 3 | | | |
| MSDD244-15 | 1.0 | 1.2 | 2.0 | 3 | 1.0 | 1.5 | 3 | 0.8 | 1.0 | 3 |
| MSFF211-2 | 1.2 | 1.2 | 1.5 | 3 | 1.2 | 1.5 | 3 | 1.3 | 1.5 | 3 |
| MSFF335-2RR | 1.2* | 1.2 | 1.5 | 3 | 1.2 | 2.0 | 3 | | | |
| MSGG084-1 | | 1.2 | 1.5 | 3 | | | | | | |
| MSGG263-1 | | 1.2 | 1.5 | 3 | | | | | | |
| MSGG349-3 | | 1.2 | 1.5 | 3 | | | | | | |
| MSZ025-2 | | 1.2 | 2.0 | 3 | | | | | | |
| MSBB058-1 | 1.2* | 1.3 | 1.5 | 2 | 1.2 | 1.5 | 3 | | | |
| MSBB058-3 | 1.4 | 1.3 | 1.5 | 2 | 1.2 | 1.5 | 3 | 1.7 | 2.0 | 3 |
| Petoskey | 1.4 | 1.3 | 1.5 | 6 | 1.7 | 2.0 | 3 | 1.3 | 2.0 | 6 |
| **Lamoka** | **1.6** | 1.3 | 1.5 | 3 | **2.0** | **2.5** | **3** | **1.5** | **2.0** | **3** |
| MSDD042-01 | | 1.3 | 2.0 | 3 | | | | | | |
| MSDD089-2 | 1.2* | 1.3 | 2.5 | 3 | 1.0 | 1.5 | 3 | | | |
| MSDD376-4 | 1.5 | 1.3 | 2.0 | 3 | 1.7 | 2.0 | 3 | 1.5 | 2.5 | 3 |
| MSEE016-10 | 1.6 | 1.3 | 2.0 | 3 | 1.3 | 2.0 | 3 | 2.0 | 2.0 | 3 |
| MSFF097-6 | 1.1* | 1.3 | 2.0 | 3 | 0.8 | 1.5 | 3 | | | |
| MSFF120-2Y | 1.1 | 1.3 | 1.5 | 3 | 1.0 | 1.0 | 3 | 1.0 | 1.5 | 3 |
| MSFF149-01 | | 1.3 | 2.0 | 3 | | | | | | |
| MSFF301-3SPL | | 1.3 | 1.5 | 3 | | | | | | |
| MSFF305-1RY | 1.4 | 1.3 | 2.0 | 3 | 1.3 | 1.5 | 3 | 1.7 | 2.0 | 3 |
| MSDD088-1 | 1.3 | 1.5 | 2.0 | 3 | 0.8 | 1.0 | 3 | 1.7 | 2.0 | 3 |
| MSFF022-2 | 1.4* | 1.5 | 2.0 | 3 | 1.3 | 1.5 | 3 | | | |
| MSFF334-1Pinto | 1.1 | 1.5 | 2.0 | 3 | 1.2 | 1.5 | 3 | 0.7 | 1.0 | 3 |
| MSGG158-11PP | | 1.5 | 3.0 | 3 | | | | | | |
| MSAA260-3 | 1.6 | 1.7 | 2.0 | 3 | 1.5 | 1.5 | 3 | 1.7 | 2.0 | 3 |
| MSBB230-1 | | 1.7 | 2.0 | 3 | | | | | | |
| MSFF036-1 | 2* | 1.7 | 2.0 | 3 | 2.3 | 3.0 | 3 | | | |
| MSFF037-17 | 1.8* | 1.7 | 2.0 | 3 | 2.0 | 2.0 | 3 | | | |
| MSFF038-3 | 1.8* | 1.7 | 2.5 | 3 | 1.8 | 2.0 | 3 | | | |
| MSFF077-4 | | 1.7 | 2.0 | 3 | | | | | | |
| MSFF134-1PP | 1.6 | 1.7 | 2.5 | 3 | 1.3 | 1.5 | 3 | 1.8 | 2.0 | 3 |
| MSFF292-1 | 1.4* | 1.7 | 2.0 | 3 | 1.2 | 2.0 | 3 | | | |
| MSGG195-1 | | 1.7 | 3.0 | 3 | | | | | | |
| MSGG409-3 | | 1.7 | 2.5 | 3 | | | | | | |
| NY163 | 1.8* | 1.7 | 2.0 | 3 | 2.0 | 2.5 | 3 | | | |
| Spartan Splash | 2* | 1.7 | 2.5 | 3 | 2.3 | 2.5 | 3 | | | |
| W17005-3R | | 1.7 | 2.0 | 3 | | | | | | |
| MSGG135-1R | | 1.8 | 2.0 | 2 | | | | | | |
| Colomba | | 1.8 | 3.0 | 3 | | | | | | |
| FL2137 | | 1.8 | 2.5 | 3 | | | | | | |
| MSAA182-3R | 1.4* | 1.8 | 2.5 | 3 | 1.0 | 1.5 | 3 | | | |
| MSDD553-1 | 1.9 | 1.8 | 2.0 | 3 | 1.8 | 2.0 | 3 | 2.2 | 2.5 | 3 |
| MSFF030-1WR | | 1.8 | 2.0 | 3 | | | | | | |
| MSFF335-3Pinto | 2.3* | 1.8 | 2.5 | 3 | 2.8 | 3.5 | 3 | | | |
| MSFF338-1PP | 2.1* | 1.8 | 2.5 | 3 | 2.3 | 3.0 | 3 | | | |
| MSGG863-A2 | | 1.8 | 3.0 | 3 | | | | | | |
| MSFF029-10 | 2.2 | 2.0 | 2.0 | 3 | 2.7 | 3.0 | 3 | 1.8 | 2.0 | 3 |
| MSGG030-3Y | | 2.0 | 3.0 | 3 | | | | | | |
| **Reba** | 2.2 | 2.0 | 2.5 | 3 | 2.5 | 3.0 | 3 | 2.2 | 2.5 | 3 |

| LINE | 3-YR* AVG. | 2023 RATING | 2023 WORST | 2023 N | 2022 RATING | 2022 WORST | 2022 N | 2021 RATING | 2021 WORST | 2021 N |
|---|---|---|---|---|---|---|---|---|---|---|
| *Sorted by ascending 2023 Average Rating;* | | | | | | | | | | |
| Allison | | 2.2 | 2.5 | 3 | | | | | | |
| Becca Rose | | 2.2 | 2.5 | 3 | | | | | | |
| Jelly | | 2.2 | 2.5 | 3 | | | | | | |
| MSCC553-1R | 1.9 | 2.2 | 2.5 | 3 | 1.2 | 1.5 | 3 | 2.5 | 3.0 | 3 |
| MSDD084-19 | 1.8* | 2.2 | 2.5 | 3 | 1.3 | 1.5 | 3 | | | |
| MSFF191-1Y | | 2.2 | 3.0 | 3 | | | | | | |
| MSGG194-3 | | 2.2 | 2.5 | 3 | | | | | | |
| MSGG169-2 | | 2.3 | 3.0 | 3 | | | | | | |
| Manistee | 2.7 | 2.5 | 3.0 | 3 | 2.8 | 3.5 | 3 | 2.8 | 3.0 | 3 |
| MSAA240-5 | | 2.5 | 3.0 | 3 | | | | | | |
| MSCC282-2PP | 2.3* | 2.5 | 3.0 | 3 | 2.2 | 2.5 | 3 | | | |
| MSFF230-2PY | | 2.5 | 3.0 | 3 | | | | | | |
| MSGG039-11 | | 2.5 | 3.0 | 3 | | | | | | |
| MSGG190-1 | | 2.5 | 3.0 | 3 | | | | | | |
| Mystere | | 2.5 | 2.5 | 3 | | | | | | |
| W16025-5R | | 2.5 | 3.0 | 3 | | | | | | |
| W17026-4R | | 2.5 | 2.5 | 3 | | | | | | |
| **Atlantic** | 2.8 | 2.6 | 3.0 | 6 | 3.1 | 3.5 | 6 | 2.8 | 3.5 | 3 |
| Golden Globe | | 2.7 | 3.5 | 3 | | | | | | |
| Jacqueline Lee | 2.8* | 2.7 | 3.5 | 3 | 2.8 | 3.5 | 3 | | | |
| MSGG137-1R | | 2.7 | 3.5 | 3 | | | | | | |
| **Yukon Gold** | 2.4 | 2.7 | 3.0 | 3 | 2.7 | 3.0 | 3 | 1.8 | 2.5 | 3 |
| MSFF230-1 | | 2.8 | 3.0 | 3 | | | | | | |
| Sifra | | 2.8 | 3.5 | 3 | | | | | | |
| Camelia | | 3.0 | 3.5 | 3 | | | | | | |
| MSGG039-08 | | 3.0 | 3.5 | 3 | | | | | | |
| MSGG127-3R | | 3.0 | 3.5 | 3 | | | | | | |
| **Snowden** | 3.1 | 3.0 | 3.5 | 6 | 3.3 | 3.5 | 6 | 3.0 | 3.5 | 3 |
| MSFF353-1R | 2.6* | 3.2 | 3.5 | 3 | 2.0 | 2.5 | 3 | | | |
| MSGG102-1RR | | 3.8 | 4.0 | 3 | | | | | | |

**$HSD_{0.05}$ =**

SCAB DISEASE RATING: MSU Scab Nursery plot rating of 0-5; 0: No Infection; 1: Low Infection <5%, no pitted leisions; 3: Intermediate >20%, some pitted leisions (Susceptible, as commonly seen on Atlantic); 5: Highly Susceptible, >75% coverage and severe pitted leisions.

N = Number of replications.

*2-Year Average.

**Table 9**

**MICHIGAN STATE UNIVERSITY**

**POTATO BREEDING and GENETICS**

## 2023 SCAB DISEASE EARLY GENERATION TRIAL SUMMARY
## SCAB NURSERY, MONTCALM RESEARCH CENTER, MI

| LINE | 2023 RATING | 2023 N | LINE | 2023 RATING | 2023 N |
|---|---|---|---|---|---|
| *Sorted by ascending 2023 Rating:* | | | | | |
| MSII1593-2 | 0.0 | 1 | MSII147-9 | 0.5 | 1 |
| MSFF725-3 | 0.5 | 1 | MSII150-3 | 0.5 | 1 |
| MSHH015-5 | 0.5 | 1 | MSII154-1 | 0.5 | 1 |
| MSHH034-12 | 0.5 | 1 | MSII168-1 | 0.5 | 1 |
| MSHH043-03 | 0.5 | 1 | MSII172-3 | 0.5 | 1 |
| MSHH043-10 | 0.5 | 1 | MSII195-1 | 0.5 | 1 |
| MSHH046-1 | 0.5 | 1 | MSII199-2 | 0.5 | 1 |
| MSHH053-19 | 0.5 | 1 | MSII210-6 | 0.5 | 1 |
| MSHH069-3 | 0.5 | 1 | MSII211-3 | 0.5 | 1 |
| MSHH091-03 | 0.5 | 1 | MSII212-1 | 0.5 | 1 |
| MSHH119-1 | 0.5 | 1 | MSII214-1 | 0.5 | 1 |
| MSHH134-20 | 0.5 | 2 | MSII224-1 | 0.5 | 1 |
| MSHH137-1 | 0.5 | 1 | MSII243-2 | 0.5 | 1 |
| MSHH170-5RR | 0.5 | 1 | MSII311-1Y | 0.5 | 1 |
| MSHH600-A2 | 0.5 | 1 | MSII400-1RR | 0.5 | 1 |
| MSHH601-A2 | 0.5 | 1 | MSII415-1R | 0.5 | 1 |
| MSHH1042-A1 | 0.5 | 1 | MSII416-6R | 0.5 | 1 |
| MSHH1042-A2 | 0.5 | 1 | MSII423-06R | 0.5 | 1 |
| MSII046-7 | 0.5 | 1 | MSII1022-1 | 0.5 | 1 |
| MSII049-1 | 0.5 | 1 | MSII1051-4 | 0.5 | 1 |
| MSII050-3 | 0.5 | 1 | MSII1054-2 | 0.5 | 1 |
| MSII050-4 | 0.5 | 1 | MSII1075-1 | 0.5 | 1 |
| MSII052-2 | 0.5 | 1 | MSII1189-1 | 0.5 | 1 |
| MSII057-2 | 0.5 | 1 | MSII1592-2Y | 0.5 | 1 |
| MSII063-2 | 0.5 | 1 | MSII1593-1RY | 0.5 | 1 |
| MSII075-1 | 0.5 | 1 | MSII1594-1Y | 0.5 | 1 |
| MSII090-4 | 0.5 | 1 | MSII1598-1Y | 0.5 | 1 |
| MSII093-1 | 0.5 | 1 | MSII1606-1 | 0.5 | 1 |
| MSII098-1 | 0.5 | 1 | MSII1631-1 | 0.5 | 1 |
| MSII105-1 | 0.5 | 1 | WI3-6 | 0.5 | 1 |
| MSII107-1 | 0.5 | 1 | MSHH056-03 | 0.8 | 2 |
| MSII108-6 | 0.5 | 1 | MSHH004-2 | 1.0 | 1 |
| MSII112-3 | 0.5 | 1 | MSHH053-04 | 1.0 | 1 |
| MSII117-15 | 0.5 | 1 | MSHH066-6 | 1.0 | 1 |
| MSII120-4 | 0.5 | 1 | MSHH113-06 | 1.0 | 1 |
| MSII128-1 | 0.5 | 1 | MSHH172-3PP | 1.0 | 1 |
| MSII133-1 | 0.5 | 1 | MSHH224-4Y | 1.0 | 1 |
| MSII133-2 | 0.5 | 1 | MSHH606-A2 | 1.0 | 1 |
| MSII142-1 | 0.5 | 1 | MSHH970-A1 | 1.0 | 1 |
| MSII146-1 | 0.5 | 1 | MSHH1500-A7 | 1.0 | 1 |
| MSII147-3 | 0.5 | 1 | MSII040-1 | 1.0 | 1 |

| LINE | 2023 RATING | 2023 N | LINE | 2023 RATING | 2023 N |
|---|---|---|---|---|---|
| *Sorted by ascending 2023 Rating:* | | | | | |
| MSII052-1 | 1.0 | 1 | MSII1653-1 | 1.0 | 1 |
| MSII067-1 | 1.0 | 1 | MSHH018-4 | 1.5 | 1 |
| MSII076-1 | 1.0 | 1 | MSHH185-4 | 1.5 | 1 |
| MSII090-2 | 1.0 | 1 | MSHH796-A2 | 1.5 | 1 |
| MSII107-5 | 1.0 | 1 | MSII042-1 | 1.5 | 1 |
| MSII117-1 | 1.0 | 1 | MSII042-2 | 1.5 | 1 |
| MSII117-10 | 1.0 | 1 | MSII046-1 | 1.5 | 1 |
| MSII117-12 | 1.0 | 1 | MSII078-10 | 1.5 | 1 |
| MSII117-13 | 1.0 | 1 | MSII081-1 | 1.5 | 1 |
| MSII119-2 | 1.0 | 1 | MSII084-1 | 1.5 | 1 |
| MSII126-4 | 1.0 | 1 | MSII107-7 | 1.5 | 1 |
| MSII135-1 | 1.0 | 1 | MSII108-4 | 1.5 | 1 |
| MSII147-8 | 1.0 | 1 | MSII115-2 | 1.5 | 1 |
| MSII169-1 | 1.0 | 1 | MSII120-5 | 1.5 | 1 |
| MSII171-1 | 1.0 | 1 | MSII122-2 | 1.5 | 1 |
| MSII184-1 | 1.0 | 1 | MSII128-4 | 1.5 | 1 |
| MSII186-2 | 1.0 | 1 | MSII132-1 | 1.5 | 1 |
| MSII190-1 | 1.0 | 1 | MSII134-1 | 1.5 | 1 |
| MSII210-2 | 1.0 | 1 | MSII135-2 | 1.5 | 1 |
| MSII212-2 | 1.0 | 1 | MSII149-1 | 1.5 | 1 |
| MSII213-1 | 1.0 | 1 | MSII164-1 | 1.5 | 1 |
| MSII214-2 | 1.0 | 1 | MSII177-1 | 1.5 | 1 |
| MSII226-1 | 1.0 | 1 | MSII186-1 | 1.5 | 1 |
| MSII227-1 | 1.0 | 1 | MSII198-1 | 1.5 | 1 |
| MSII233-1 | 1.0 | 1 | MSII231-1 | 1.5 | 1 |
| MSII233-2 | 1.0 | 1 | MSII233-3 | 1.5 | 1 |
| MSII239-1 | 1.0 | 1 | MSII238-1 | 1.5 | 1 |
| MSII241-1 | 1.0 | 1 | MSII243-1 | 1.5 | 1 |
| MSII241-2 | 1.0 | 1 | MSII301-4 | 1.5 | 1 |
| MSII242-1 | 1.0 | 1 | MSII306-5Y | 1.5 | 1 |
| MSII325-1Y | 1.0 | 1 | MSII344-4Y | 1.5 | 1 |
| MSII328-6Y | 1.0 | 1 | MSII353-1Y | 1.5 | 1 |
| MSII336-2 | 1.0 | 1 | MSII409-05R | 1.5 | 1 |
| MSII338-1Y | 1.0 | 1 | MSII418-03R | 1.5 | 1 |
| MSII339-1Y | 1.0 | 1 | MSII418-10 | 1.5 | 1 |
| MSII413-2R | 1.0 | 1 | MSII419-10 | 1.5 | 1 |
| MSII415-2P | 1.0 | 1 | MSII1505-1 | 1.5 | 1 |
| MSII416-2RR | 1.0 | 1 | MSII1518-1 | 1.5 | 1 |
| MSII432-2R | 1.0 | 1 | MSII1519-1 | 1.5 | 1 |
| MSII1054-1 | 1.0 | 1 | MSII1604-1 | 1.5 | 1 |
| MSII1073-1 | 1.0 | 1 | ND2-7 | 1.5 | 1 |
| MSII1148-1 | 1.0 | 1 | WI1-16 | 1.5 | 1 |
| MSII1151-1 | 1.0 | 1 | MI2-24 | 2.0 | 1 |
| MSII1172-1 | 1.0 | 1 | MSBB764-1 | 2.0 | 1 |
| MSII1198-1 | 1.0 | 1 | MSBB791-1 | 2.0 | 1 |

| LINE | 2023 RATING | 2023 N | LINE | 2023 RATING | 2023 N |
|---|---|---|---|---|---|
| *Sorted by ascending 2023 Rating:* | | | | | |
| MSBB829-1 | 2.0 | 1 | MSII163-1 | 2.5 | 1 |
| MSEE824-04 | 2.0 | 1 | MSII176-3 | 2.5 | 1 |
| MSHH018-3 | 2.0 | 1 | MSII305-1 | 2.5 | 1 |
| MSHH063-2 | 2.0 | 1 | MSII309-2Y | 2.5 | 1 |
| MSHH064-2 | 2.0 | 1 | MSII311-5Y | 2.5 | 1 |
| MSHH157-4RR | 2.0 | 1 | MSII326-1 | 2.5 | 1 |
| MSHH614-A4 | 2.0 | 1 | MSII353-2Y | 2.5 | 1 |
| MSHH685-A1 | 2.0 | 1 | MSII1201-1 | 2.5 | 1 |
| MSHH685-A6 | 2.0 | 1 | MSII1503-2RP | 2.5 | 1 |
| MSHH1040-A4 | 2.0 | 1 | MSII1505-2 | 2.5 | 1 |
| MSHH1040-A5 | 2.0 | 1 | MSII1512-1 | 2.5 | 1 |
| MSII039-1 | 2.0 | 1 | ND1-3 | 2.5 | 1 |
| MSII050-1 | 2.0 | 1 | MSHH130-1 | 3.0 | 1 |
| MSII060-5 | 2.0 | 1 | MSHH206-11 | 3.0 | 1 |
| MSII091-1 | 2.0 | 1 | MSHH228-3PP | 3.0 | 1 |
| MSII106-1 | 2.0 | 1 | MSHH614-A5 | 3.0 | 1 |
| MSII122-4 | 2.0 | 1 | MSHH614-A6 | 3.0 | 1 |
| MSII129-1 | 2.0 | 1 | MSHH614-A7 | 3.0 | 1 |
| MSII311-4Y | 2.0 | 1 | MSHH710-A2 | 3.0 | 1 |
| MSII323-5Y | 2.0 | 1 | MSHH970-A6 | 3.0 | 1 |
| MSII414-2PP | 2.0 | 1 | MSII088-1 | 3.0 | 1 |
| MSII414-6PP | 2.0 | 1 | MSII125-1 | 3.0 | 1 |
| MSII415-3R | 2.0 | 1 | MSII155-1 | 3.0 | 1 |
| MSII418-04R | 2.0 | 1 | MSII160-1 | 3.0 | 1 |
| MSII418-07R | 2.0 | 1 | MSII225-1 | 3.0 | 1 |
| MSII419-07R | 2.0 | 1 | MSII237-1 | 3.0 | 1 |
| MSII432-7R | 2.0 | 1 | MSII1046-01 | 3.0 | 1 |
| MSII445-1 | 2.0 | 1 | MSII1167-1 | 3.0 | 1 |
| MSII1001-1 | 2.0 | 1 | MSII1503-1PP | 3.0 | 1 |
| MSII1044-1 | 2.0 | 1 | MSII076-2 | 3.5 | 1 |
| MSII1111-1 | 2.0 | 1 | MSII102-1 | 3.5 | 1 |
| MSII1511-1PP | 2.0 | 1 | MSII132-2 | 3.5 | 1 |
| MSII1594-3Y | 2.0 | 1 | MSII1199-1 | 3.5 | 1 |
| MSII1659-1 | 2.0 | 1 | MSII1505-3 | 3.0 | 1 |
| MSHH068-10 | 2.5 | 1 | MI2-20 | 3.5 | 1 |
| MSHH614-A1 | 2.5 | 1 | MSGG563-A4 | 3.5 | 1 |
| MSHH1040-A6 | 2.5 | 1 | MSHH048-4 | 3.5 | 1 |
| MSII046-8 | 2.5 | 1 | MSII327-1Y | 3.5 | 1 |
| MSII048-1 | 2.5 | 1 | MSII336-1 | 3.5 | 1 |
| MSII126-1 | 2.5 | 1 | | | |
| MSII143-1 | 2.5 | 1 | | | |

**Table 10**

**MICHIGAN STATE UNIVERSITY**
**POTATO BREEDING and GENETICS**

## 2023 MSU LATE BLIGHT VARIETY TRIAL
## PLANT PATHOLOGY FARM, LANSING, MI

***Line Sort:***

| LINE | N | RAUDPC[1] MEAN | LB RESISTANCE[2] |
|---|---|---|---|
| Allison | 3 | 6.6 | MS |
| **Atlantic Guard** | **45** | **13.9** | **S** |
| **Atlantic** | **3** | **12.3** | **S** |
| Becca Rose | 3 | 8.4 | MS |
| Camelia | 3 | 4.2 | MR |
| Colomba | 3 | 10.7 | MS |
| COTX08063-2Ru | 2 | 10.7 | MS |
| COTX10080-2Ru | 3 | 9.4 | MS |
| **Dark Red Norland** | **6** | **24.0** | **S** |
| Golden Globe | 1 | 13.4 | S |
| **Jacqueline Lee** | **2** | **12.7** | **S** |
| Jelly | 3 | 5.1 | MR |
| **Mackinaw** | **6** | **6.2** | **MR** |
| MSAA101-01RR | 3 | 12.3 | S |
| MSAA127-01PP | 3 | 10.2 | MS |
| MSAA174-1 | 3 | 4.1 | MR |
| MSAA240-5 | 3 | 7.0 | MS |
| MSAA260-3 | 3 | 9.4 | MS |
| MSBB351-1 | 3 | 11.2 | MS |
| MSBB614-15 | 3 | 0.7 | R |
| MSBB626-11 | 3 | 5.7 | MR |
| MSBB636-11 | 3 | 6.9 | MS |
| MSCC553-1R | 3 | 4.4 | MR |
| MSCC725-232 | 3 | 9.7 | MS |
| MSDD050-B | 3 | 5.0 | MR |
| MSDD084-19 | 3 | 3.3 | MR |
| MSDD088-1 | 3 | 15.8 | S |
| MSDD244-05 | 3 | 7.6 | MS |
| MSDD244-15 | 3 | 0.5 | R |
| MSDD247-07 | 3 | 5.9 | MR |
| MSDD247-11 | 3 | 5.3 | MR |
| MSDD249-9 | 3 | 3.6 | MR |
| MSDD370-2 | 3 | 4.5 | MR |
| MSDD372-07 | 3 | 0.6 | R |
| MSDD483-1 | 3 | 10.6 | MS |
| MSDD553-1 | 3 | 5.6 | MR |
| MSEE025-1 | 3 | 4.4 | MR |
| MSEE031-3 | 3 | 5.9 | MR |
| MSEE035-4 | 3 | 2.7 | R |
| MSEE048-2Y | 3 | 0.1 | R |
| MSEE052-5 | 3 | 5.8 | MR |
| MSEE063-6 | 3 | 1.5 | R |
| MSEE180-3P | 3 | 3.5 | MR |
| MSEE182-3 | 3 | 6.5 | MS |
| MSEE191-3Y | 2 | 3.2 | MR |
| MSEE207-2 | 3 | 4.3 | MR |
| MSFF007-2 | 3 | 7.6 | MS |
| MSFF022-2 | 3 | 7.8 | MS |
| MSFF030-1WR | 3 | 8.0 | MS |
| MSFF031-3SPL | 2 | 3.9 | MR |
| MSFF031-6 | 3 | 6.5 | MS |

***RAUDPC Sort:***

| LINE | N | RAUDPC[1] MEAN | LB RESISTANCE[2] |
|---|---|---|---|
| MSFF230-2PY | 3 | 0.1 | R |
| MSEE048-2Y | 3 | 0.1 | R |
| MSFF334-1Pinto | 3 | 0.3 | R |
| MSFF072-1Y | 3 | 0.4 | R |
| MSDD244-15 | 3 | 0.5 | R |
| MSDD372-07 | 3 | 0.6 | R |
| MSFF305-1RY | 3 | 0.6 | R |
| MSBB614-15 | 3 | 0.7 | R |
| MSFF182-1R | 3 | 0.7 | R |
| MSFF353-1R | 3 | 1.4 | R |
| MSEE063-6 | 3 | 1.5 | R |
| MSFF230-1 | 3 | 2.1 | R |
| MSGG137-1R | 2 | 2.4 | R |
| MSFF138-04R | 3 | 2.5 | R |
| MSGG102-1RR | 3 | 2.5 | R |
| MSFF211-2 | 3 | 2.6 | R |
| MSEE035-4 | 3 | 2.7 | R |
| MSEE191-3Y | 2 | 3.2 | MR |
| MSDD084-19 | 3 | 3.3 | MR |
| MSFF149-01 | 3 | 3.5 | MR |
| MSEE180-3P | 3 | 3.5 | MR |
| MSDD249-9 | 3 | 3.6 | MR |
| MSZ219-13 | 3 | 3.6 | MR |
| MSFF097-6 | 3 | 3.7 | MR |
| MSFF079-16 | 3 | 3.8 | MR |
| MSFF031-3SPL | 2 | 3.9 | MR |
| MSFF191-1Y | 3 | 4.1 | MR |
| MSAA174-1 | 3 | 4.1 | MR |
| MSGG242-1 | 3 | 4.1 | MR |
| Camelia | 3 | 4.2 | MR |
| MSEE207-2 | 3 | 4.3 | MR |
| MSCC553-1R | 3 | 4.4 | MR |
| MSEE025-1 | 3 | 4.4 | MR |
| MSDD370-2 | 3 | 4.5 | MR |
| MSFF088-1 | 3 | 4.6 | MR |
| MSFF301-3SPL | 3 | 4.6 | MR |
| MSFF335-2RR | 3 | 4.8 | MR |
| MSGG349-3 | 3 | 5.0 | MR |
| MSDD050-B | 3 | 5.0 | MR |
| MSGG426-2 | 3 | 5.1 | MR |
| Jelly | 3 | 5.1 | MR |
| MSFF142-1P | 3 | 5.2 | MR |
| MSDD247-11 | 3 | 5.3 | MR |
| MSGG302-1 | 3 | 5.5 | MR |
| MSDD553-1 | 3 | 5.6 | MR |
| MSBB626-11 | 3 | 5.7 | MR |
| MSEE052-5 | 3 | 5.8 | MR |
| MSGG409-3 | 4 | 5.9 | MR |
| MSDD247-07 | 3 | 5.9 | MR |
| MSEE031-3 | 3 | 5.9 | MR |
| MSGG135-1R | 3 | 6.0 | MR |

***Line Sort:***

| LINE | N | RAUDPC[1] MEAN | LB RESISTANCE[2] |
|---|---|---|---|
| MSFF034-4P | 3 | 11.5 | MS |
| MSFF037-17 | 3 | 7.5 | MS |
| MSFF038-3 | 3 | 10.7 | MS |
| MSFF072-1Y | 3 | 0.4 | R |
| MSFF077-4 | 3 | 11.0 | MS |
| MSFF079-16 | 3 | 3.8 | MR |
| MSFF088-1 | 3 | 4.6 | MR |
| MSFF097-6 | 3 | 3.7 | MR |
| MSFF120-2Y | 3 | 13.3 | S |
| MSFF134-1PP | 3 | 11.2 | MS |
| MSFF138-04R | 3 | 2.5 | R |
| MSFF142-1P | 3 | 5.2 | MR |
| MSFF145-2R | 2 | 23.2 | S |
| MSFF149-01 | 3 | 3.5 | MR |
| MSFF182-1R | 3 | 0.7 | R |
| MSFF191-1Y | 3 | 4.1 | MR |
| MSFF206-1 | 3 | 6.1 | MR |
| MSFF211-2 | 3 | 2.6 | R |
| MSFF230-1 | 3 | 2.1 | R |
| MSFF230-2PY | 3 | 0.1 | R |
| MSFF301-3SPL | 3 | 4.6 | MR |
| MSFF305-1RY | 3 | 0.6 | R |
| MSFF321-1 | 3 | 8.8 | MS |
| MSFF334-1Pinto | 3 | 0.3 | R |
| MSFF335-2RR | 3 | 4.8 | MR |
| MSFF335-3Pinto | 3 | 6.9 | MS |
| MSFF338-1PP | 3 | 7.7 | MS |
| MSFF353-1R | 3 | 1.4 | R |
| MSGG030-3Y | 3 | 14.6 | S |
| MSGG039-08 | 3 | 8.7 | MS |
| MSGG039-11 | 2 | 7.1 | MS |
| MSGG084-1 | 3 | 7.3 | MS |
| MSGG102-1RR | 3 | 2.5 | R |
| MSGG135-1R | 3 | 6.0 | MR |
| MSGG137-1R | 2 | 2.4 | R |
| MSGG169-2 | 3 | 15.2 | S |
| MSGG190-1 | 3 | 10.2 | MS |
| MSGG242-1 | 3 | 4.1 | MR |
| MSGG263-1 | 3 | 8.4 | MS |
| MSGG302-1 | 3 | 5.5 | MR |
| MSGG349-3 | 3 | 5.0 | MR |
| MSGG409-3 | 4 | 5.9 | MR |
| MSGG426-2 | 3 | 5.1 | MR |
| MSW474-1 | 3 | 9.3 | MS |
| MSZ219-13 | 3 | 3.6 | MR |
| MSZ242-13 | 3 | 10.2 | MS |
| MSZ416-8RY | 3 | 9.2 | MS |
| MSZ513-2 | 3 | 13.6 | S |
| MSZ598-2 | 3 | 12.8 | S |
| Mystere | 3 | 14.5 | S |
| NY163 | 3 | 14.2 | S |
| **Reba** | **3** | **13.8** | **S** |
| Sifra | 3 | 9.8 | MS |
| **Snowden** | **3** | **6.8** | **MS** |

***RAUDPC Sort:***

| LINE | N | RAUDPC[1] MEAN | LB RESISTANCE[2] |
|---|---|---|---|
| MSFF206-1 | 3 | 6.1 | MR |
| **Mackinaw** | **6** | **6.2** | **MR** |
| MSEE182-3 | 3 | 6.5 | MS |
| MSFF031-6 | 3 | 6.5 | MS |
| Allison | 3 | 6.6 | MS |
| **Snowden** | **3** | **6.8** | **MS** |
| MSFF335-3Pinto | 3 | 6.9 | MS |
| MSBB636-11 | 3 | 6.9 | MS |
| MSAA240-5 | 3 | 7.0 | MS |
| MSGG039-11 | 2 | 7.1 | MS |
| MSGG084-1 | 3 | 7.3 | MS |
| MSFF037-17 | 3 | 7.5 | MS |
| MSDD244-05 | 3 | 7.6 | MS |
| MSFF007-2 | 3 | 7.6 | MS |
| MSFF338-1PP | 3 | 7.7 | MS |
| MSFF022-2 | 3 | 7.8 | MS |
| MSFF030-1WR | 3 | 8.0 | MS |
| Becca Rose | 3 | 8.4 | MS |
| MSGG263-1 | 3 | 8.4 | MS |
| MSGG039-08 | 3 | 8.7 | MS |
| MSFF321-1 | 3 | 8.8 | MS |
| MSZ416-8RY | 3 | 9.2 | MS |
| MSW474-1 | 3 | 9.3 | MS |
| MSAA260-3 | 3 | 9.4 | MS |
| COTX10080-2Ru | 3 | 9.4 | MS |
| MSCC725-232 | 3 | 9.7 | MS |
| Sifra | 3 | 9.8 | MS |
| MSGG190-1 | 3 | 10.2 | MS |
| MSZ242-13 | 3 | 10.2 | MS |
| MSAA127-01PP | 3 | 10.2 | MS |
| MSDD483-1 | 3 | 10.6 | MS |
| Colomba | 3 | 10.7 | MS |
| COTX08063-2Ru | 2 | 10.7 | MS |
| MSFF038-3 | 3 | 10.7 | MS |
| MSFF077-4 | 3 | 11.0 | MS |
| MSBB351-1 | 3 | 11.2 | MS |
| MSFF134-1PP | 3 | 11.2 | MS |
| MSFF034-4P | 3 | 11.5 | MS |
| MSAA101-01RR | 3 | 12.3 | S |
| **Atlantic** | **3** | **12.3** | **S** |
| **Jacqueline Lee** | **2** | **12.7** | **S** |
| MSZ598-2 | 3 | 12.8 | S |
| MSFF120-2Y | 3 | 13.3 | S |
| Golden Globe | 1 | 13.4 | S |
| MSZ513-2 | 3 | 13.6 | S |
| **Reba** | **3** | **13.8** | **S** |
| **Atlantic Guard** | **45** | **13.9** | **S** |
| NY163 | 3 | 14.2 | S |
| Mystere | 3 | 14.5 | S |
| MSGG030-3Y | 3 | 14.6 | S |
| W16025-5R | 2 | 14.9 | S |
| MSGG169-2 | 3 | 15.2 | S |
| W17005-3R | 3 | 15.5 | S |
| MSDD088-1 | 3 | 15.8 | S |

***Line Sort:*** ***RAUDPC Sort:***

| LINE | N | RAUDPC[1] MEAN | LB RESISTANCE[2] | LINE | N | RAUDPC[1] MEAN | LB RESISTANCE[2] |
|---|---|---|---|---|---|---|---|
| W16025-5R | 2 | 14.9 | S | MSFF145-2R | 2 | 23.2 | S |
| W17005-3R | 3 | 15.5 | S | **Dark Red Norland** | **6** | **24.0** | **S** |

[1]Ratings indicate the average plot RAUDPC (Relative Area Under the Disease Progress Curve).

[2]LB Resistance: R=Resistant, MR=Moderate Resistance, MS=Moderate Susceptibility, S=Susceptible

LB Isolate used: US-23

**Table 11**

MICHIGAN STATE UNIVERSITY
POTATO BREEDING and GENETICS

## 2023 MSU LATE BLIGHT EARLY GENERATION TRIAL
## PATHOLOGY FARM EAST, LANSING, MI

| LINE | RAUDPC[1] MEAN | LB RESISTANCE[2] | N | LINE | RAUDPC[1] MEAN | LB RESISTANCE[2] | N |
|---|---|---|---|---|---|---|---|
| *Sorted by ascending 2023 RAUDPC* | | | | | | | |
| MSFF230-2PY | 0.1 | R | 1 | MSHH113-06 | 7.9 | MS | 1 |
| MSII414-6PP | 0.2 | R | 1 | MSHH137-1 | 7.9 | MS | 1 |
| MSSFF230-1 | 0.4 | R | 1 | MSII199-2 | 7.9 | MS | 1 |
| MSII233-2 | 0.5 | R | 1 | MSII212-2 | 7.9 | MS | 1 |
| MI2-20 | 0.6 | R | 1 | MSII416-6R | 7.9 | MS | 1 |
| MSHH056-19 | 0.6 | R | 1 | WI1-16 | 7.9 | MS | 1 |
| MSII414-2PP | 0.6 | R | 1 | ND2-7 | 8.2 | MS | 1 |
| MSII416-2RR | 0.6 | R | 1 | MSII106-1 | 8.3 | MS | 1 |
| MSII186-2 | 1.3 | R | 1 | MSII076-2 | 8.4 | MS | 1 |
| MSII120-5 | 1.4 | R | 1 | MSHH048-4 | 8.6 | MS | 1 |
| MSHH043-03 | 1.4 | R | 1 | MSII135-2 | 8.7 | MS | 1 |
| MSHH053-04 | 1.9 | R | 1 | MSII120-4 | 8.8 | MS | 1 |
| MSHH134-20 | 1.9 | R | 2 | MSII125-1 | 9.0 | MS | 1 |
| MSII149-1 | 2.1 | R | 1 | MSII060-5 | 9.1 | MS | 1 |
| MSII305-1 | 2.2 | R | 1 | MSII042-1 | 9.3 | MS | 1 |
| MSII198-1 | 2.4 | R | 1 | MSII093-1 | 10.0 | MS | 1 |
| MSII233-1 | 2.5 | R | 1 | MSII112-3 | 10.0 | MS | 1 |
| MSII306-5Y | 2.5 | R | 1 | MSII212-1 | 10.0 | MS | 1 |
| MSII147-9 | 2.6 | R | 1 | MSII226-1 | 10.1 | MS | 1 |
| MSII147-8 | 2.8 | R | 1 | MSII186-1 | 10.4 | MS | 1 |
| MSHH056-03 | 2.9 | R | 2 | MSII119-2 | 10.4 | MS | 1 |
| MSHH004-2 | 3.9 | MR | 1 | MSHH206-11 | 10.7 | MS | 1 |
| MSII213-1 | 3.9 | MR | 1 | MSII042-2 | 10.7 | MS | 1 |
| MSHH018-3 | 4.3 | MR | 1 | MSII076-1 | 10.7 | MS | 1 |
| MSHH063-2 | 4.3 | MR | 1 | MSHH224-4Y | 10.9 | MS | 1 |
| MSHH069-3 | 4.3 | MR | 1 | MSII231-1 | 11.1 | MS | 1 |
| MSII233-3 | 4.4 | MR | 1 | MSHH119-1 | 11.4 | MS | 1 |
| MI2-24 | 4.7 | MR | 1 | MSII338-1Y | 11.4 | MS | 1 |
| MSHH018-4 | 4.7 | MR | 1 | MSII184-1 | 12.1 | S | 1 |
| MSII150-3 | 4.7 | MR | 1 | MSII445-1 | 12.4 | S | 1 |
| MSII242-1 | 4.7 | MR | 1 | **Atlantic Guard** | **12.5** | **S** | **15** |
| MSII126-4 | 5.0 | MR | 1 | MSII126-1 | 12.9 | S | 1 |
| MSII057-2 | 5.1 | MR | 1 | ND1-3 | 13.1 | S | 1 |
| MSHH043-10 | 5.4 | MR | 1 | MSII040-1 | 13.6 | S | 1 |
| MSHH015-5 | 5.4 | MR | 1 | MSII301-4 | 15.0 | S | 1 |
| MSII237-1 | 5.4 | MR | 1 | WI3-6 | 15.4 | S | 1 |
| MSII147-3 | 6.0 | MR | 1 | MSII309-2Y | 16.4 | S | 1 |
| MSHH053-19 | 6.1 | MR | 1 | | | | |
| MSII049-1 | 6.1 | MR | 1 | | | | |
| MSHH066-6 | 7.1 | MS | 1 | | | | |
| MSHH091-03 | 7.1 | MS | 1 | | | | |
| MSHH130-1 | 7.3 | MS | 1 | | | | |
| MSII176-3 | 7.3 | MS | 1 | | | | |
| MSII135-1 | 7.4 | MS | 1 | | | | |
| MSHH185-4 | 7.4 | MS | 1 | | | | |
| MSII115-2 | 7.5 | MS | 1 | | | | |
| MSII328-6Y | 7.5 | MS | 1 | | | | |
| MSII048-1 | 7.6 | MS | 1 | | | | |
| MSII105-1 | 7.6 | MS | 1 | | | | |
| MSII134-1 | 7.6 | MS | 1 | | | | |

[1]Ratings indicate the average plot RAUDPC (Relative Area Under the Disease Progress Curve).

[2]LB Resistance: R=Resistant, MR=Moderate Resistance, MS=Moderate Susceptibility, S=Susceptible

**Table 12**

**MICHIGAN STATE UNIVERSITY**
**POTATO BREEDING and GENETICS**

**2023 BLACKSPOT BRUISE SUSCEPTIBILITY TEST**
**SIMULATED BRUISE SAMPLES***

| ENTRY | SP GR | NUMBER OF SPOTS PER TUBER 0 | 1 | 2 | 3 | 4 | 5+ | PERCENT (%) BRUISE FREE | AVERAGE SPOTS/TUBER |
|---|---|---|---|---|---|---|---|---|---|
| **ADAPTATION TRIAL, CHIP-PROCESSING LINES** | | | | | | | | | |
| NY163 | 1.083 | 21 | 4 | 0 | 0 | 0 | 0 | 84 | 0.2 |
| MSGG426-2 | 1.080 | 19 | 6 | 0 | 0 | 0 | 0 | 76 | 0.2 |
| MSBB636-11 | 1.075 | 19 | 4 | 2 | 0 | 0 | 0 | 76 | **0.3** |
| MSDD042-01 | 1.074 | 15 | 10 | 0 | 0 | 0 | 0 | 60 | **0.4** |
| MSDD089-2 | 1.078 | 16 | 7 | 2 | 0 | 0 | 0 | 64 | **0.4** |
| MSGG349-3 | 1.070 | 13 | 7 | 3 | 0 | 0 | 0 | 57 | 0.6 |
| MSEE182-3 | 1.077 | 11 | 11 | 3 | 0 | 0 | 0 | 44 | 0.7 |
| MSFF077-4 | 1.078 | 11 | 10 | 4 | 0 | 0 | 0 | 44 | 0.7 |
| MSZ025-2 | 1.076 | 12 | 7 | 3 | 0 | 1 | 0 | 52 | 0.7 |
| MSAA260-3 | 1.084 | 11 | 8 | 4 | 1 | 0 | 0 | 46 | **0.8** |
| **Atlantic** | **1.081** | **11** | **9** | **4** | **1** | **0** | **0** | **44** | **0.8** |
| **FL2137** | **1.080** | **11** | **10** | **0** | **2** | **1** | **0** | **46** | **0.8** |
| MSZ242-13 | 1.092 | 10 | 9 | 6 | 0 | 0 | 0 | 40 | 0.8 |
| **Snowden** | **1.080** | **9** | **10** | **6** | **0** | **0** | **0** | **36** | **0.9** |
| MSFF292-1 | 1.086 | 6 | 12 | 5 | 0 | 0 | 0 | 26 | 1.0 |
| MSFF321-1 | 1.087 | 10 | 5 | 7 | 0 | 1 | 0 | 43 | 1.0 |
| MSGG263-1 | 1.073 | 10 | 7 | 6 | 1 | 1 | 0 | 40 | 1.0 |
| MSGG195-1 | 1.075 | 8 | 7 | 5 | 2 | 0 | 0 | 36 | 1.0 |
| MSBB610-13 | 1.082 | 7 | 6 | 3 | 4 | 0 | 0 | 35 | **1.2** |
| MSDD247-11 | 1.090 | 6 | 10 | 9 | 1 | 1 | 0 | 22 | **1.3** |
| MSDD039-01 | 1.078 | 5 | 9 | 8 | 2 | 1 | 0 | 20 | **1.4** |
| MSAA240-5 | 1.086 | 3 | 11 | 4 | 5 | 1 | 0 | 13 | **1.6** |
| MSFF097-6 | 1.087 | 1 | 13 | 7 | 1 | 2 | 0 | 4 | 1.6 |
| **Manistee** | **1.077** | **5** | **9** | **5** | **4** | **1** | **1** | **20** | **1.6** |
| **Lamoka** | **1.084** | **2** | **11** | **6** | **4** | **1** | **0** | **8** | **1.6** |
| MSDD085-13 | 1.081 | 1 | 10 | 9 | 3 | 1 | 0 | 4 | **1.7** |
| MSBB230-1 | 1.085 | 5 | 6 | 9 | 1 | 4 | 0 | 20 | **1.7** |
| MSFF036-1 | 1.077 | 3 | 10 | 3 | 6 | 2 | 0 | 13 | 1.8 |
| Petoskey | 1.086 | 6 | 5 | 6 | 3 | 3 | 1 | 25 | 1.8 |
| MSEE115-1 | 1.094 | 3 | 7 | 3 | 7 | 1 | 0 | 14 | **1.8** |
| MSEE031-3 | 1.083 | 2 | 6 | 11 | 6 | 0 | 0 | 8 | 1.8 |
| MSEE207-2 | 1.083 | 6 | 4 | 8 | 4 | 1 | 2 | 24 | 1.8 |
| MSFF037-17 | 1.090 | 4 | 5 | 8 | 6 | 2 | 0 | 16 | 1.9 |
| MSDD244-05 | 1.084 | 2 | 8 | 7 | 6 | 2 | 0 | 8 | **1.9** |
| MSDD376-4 | 1.088 | 4 | 6 | 8 | 4 | 1 | 2 | 16 | **1.9** |
| MSDD247-07 | 1.098 | 4 | 7 | 5 | 3 | 4 | 1 | 17 | **2.0** |
| MSBB060-1 | 1.079 | 3 | 8 | 6 | 4 | 4 | 1 | 12 | **2.0** |
| MSBB058-3 | 1.085 | 6 | 2 | 9 | 2 | 5 | 1 | 24 | **2.0** |
| MSFF079-16 | 1.083 | 2 | 7 | 9 | 4 | 1 | 2 | 8 | 2.0 |
| MSBB614-15 | 1.081 | 4 | 4 | 6 | 6 | 2 | 1 | 17 | **2.0** |
| MSAA217-3 | 1.093 | 3 | 5 | 8 | 5 | 4 | 0 | 12 | **2.1** |
| MSFF038-3 | 1.086 | 6 | 3 | 6 | 5 | 3 | 2 | 24 | 2.1 |
| MSBB635-14 | 1.077 | 5 | 5 | 3 | 8 | 2 | 2 | 20 | **2.1** |
| MSEE171-2 | 1.080 | 3 | 6 | 6 | 4 | 6 | 0 | 12 | 2.2 |
| MSFF007-2 | 1.085 | 4 | 7 | 6 | 1 | 3 | 4 | 16 | 2.2 |
| MSGG409-3 | 1.078 | 1 | 11 | 9 | 3 | 1 | 5 | 3 | 2.2 |
| MSDD249-9 | 1.087 | 2 | 5 | 6 | 8 | 2 | 1 | 8 | **2.3** |
| **Mackinaw** | **1.092** | **2** | **4** | **8** | **7** | **1** | **2** | **8** | **2.3** |
| MSDD244-15 | 1.078 | 2 | 6 | 7 | 4 | 2 | 3 | 8 | **2.3** |
| MSBB058-1 | 1.095 | 1 | 4 | 8 | 9 | 3 | 0 | 4 | **2.4** |
| MSEE016-07 | 1.094 | 1 | 7 | 7 | 2 | 3 | 5 | 4 | **2.6** |
| MSDD553-1 | 1.078 | 2 | 3 | 5 | 7 | 8 | 0 | 8 | **2.6** |
| MSAA076-6 | 1.089 | 0 | 6 | 8 | 5 | 0 | 6 | 0 | **2.7** |
| MSBB630-2 | 1.081 | 2 | 6 | 4 | 2 | 4 | 6 | 8 | **2.8** |
| MSDD372-07 | 1.094 | 1 | 2 | 10 | 2 | 5 | 5 | 4 | **2.9** |
| MSGG194-3 | 1.079 | 0 | 2 | 9 | 6 | 5 | 3 | 0 | 2.9 |
| MSW474-1 | 1.082 | 0 | 3 | 4 | 5 | 7 | 6 | 0 | 3.4 |

| ENTRY | SP GR | NUMBER OF SPOTS PER TUBER 0 | 1 | 2 | 3 | 4 | 5+ | PERCENT (%) BRUISE FREE | AVERAGE SPOTS/TUBER |
|---|---|---|---|---|---|---|---|---|---|
| **ADAPTATION TRIAL, CHIP-PROCESSING LINES (contd.)** | | | | | | | | | |
| MSEE035-4 | 1.091 | 1 | 1 | 2 | 6 | 10 | 5 | 4 | 3.5 |
| MSEE016-10 | 1.095 | 0 | 2 | 0 | 3 | 9 | 8 | 0 | 4.0 |
| | | | | | | | | | |
| **ADAPTATION TRIAL, TABLESTOCK LINES** | | | | | | | | | |
| MSFF145-2R | 1.066 | 26 | 1 | 0 | 0 | 0 | 0 | **96** | **0.0** |
| Colomba | 1.051 | 22 | 3 | 0 | 0 | 0 | 0 | 88 | 0.1 |
| MSZ109-8PP | 1.066 | 22 | 3 | 0 | 0 | 0 | 0 | 88 | 0.1 |
| MSCC553-1R | 1.074 | 21 | 3 | 0 | 0 | 0 | 0 | 88 | 0.1 |
| Golden Globe | 1.065 | 20 | 4 | 1 | 0 | 0 | 0 | 80 | 0.2 |
| MSFF305-1RY | 1.071 | 19 | 6 | 0 | 0 | 0 | 0 | 76 | 0.2 |
| MSFF142-1P | 1.071 | 17 | 6 | 0 | 0 | 0 | 0 | 74 | 0.3 |
| Becca Rose | 1.064 | 19 | 5 | 1 | 0 | 0 | 0 | 76 | 0.3 |
| **Dark Red Norland** | **1.057** | **17** | **7** | **0** | **0** | **0** | **0** | **71** | **0.3** |
| Blackberry | 1.066 | 17 | 8 | 0 | 0 | 0 | 0 | 68 | 0.3 |
| MSGG039-11 | 1.071 | 17 | 8 | 0 | 0 | 0 | 0 | 68 | 0.3 |
| MSZ416-8RY | 1.060 | 19 | 4 | 2 | 0 | 0 | 0 | 76 | 0.3 |
| MSGG135-1R | 1.076 | 17 | 7 | 1 | 0 | 0 | 0 | 68 | 0.4 |
| MSDD088-1 | 1.073 | 15 | 8 | 1 | 0 | 0 | 0 | 63 | 0.4 |
| MSFF230-2PY | 1.080 | 18 | 5 | 2 | 1 | 0 | 0 | 69 | 0.5 |
| MSGG039-08 | 1.071 | 16 | 6 | 3 | 0 | 0 | 0 | 64 | 0.5 |
| MSGG084-1 | 1.070 | 15 | 7 | 1 | 1 | 0 | 0 | 63 | 0.5 |
| MSBB371-1YSPL | 1.073 | 13 | 11 | 1 | 0 | 0 | 0 | 52 | 0.5 |
| MSAA174-1 | 1.058 | 12 | 10 | 2 | 0 | 1 | 0 | 48 | 0.7 |
| MSAA182-3R | 1.078 | 11 | 9 | 4 | 1 | 0 | 0 | 44 | 0.8 |
| MSFF120-2Y | 1.070 | 10 | 10 | 5 | 0 | 0 | 0 | 40 | 0.8 |
| **Reba** | **1.071** | **8** | **10** | **4** | **0** | **0** | **0** | **36** | **0.8** |
| MSGG137-1R | 1.070 | 9 | 12 | 3 | 1 | 0 | 0 | 36 | 0.8 |
| MSFF182-1R | 1.086 | 6 | 16 | 3 | 0 | 0 | 0 | 24 | 0.9 |
| MSFF353-1R | 1.078 | 11 | 7 | 6 | 1 | 0 | 0 | 44 | 0.9 |
| MSGG127-3R | 1.081 | 11 | 8 | 4 | 2 | 0 | 0 | 44 | 0.9 |
| **Yukon Gold** | **1.071** | **9** | **10** | **6** | **0** | **0** | **0** | **36** | **0.9** |
| MSAA101-01RR | 1.077 | 6 | 11 | 8 | 1 | 0 | 0 | 23 | 1.2 |
| Jacqueline Lee | 1.079 | 3 | 12 | 6 | 2 | 0 | 0 | 13 | 1.3 |
| MSFF230-1 | 1.082 | 8 | 6 | 5 | 4 | 1 | 0 | 33 | 1.3 |
| MSFF031-6 | 1.067 | 6 | 8 | 4 | 3 | 2 | 1 | 25 | 1.6 |
| MSFF138-04R | 1.077 | 5 | 6 | 7 | 6 | 1 | 1 | 19 | 1.8 |
| MSFF335-2RR | 1.066 | 2 | 4 | 7 | 5 | 1 | 0 | 11 | 1.9 |
| | | | | | | | | | |
| **PRELLIMINARY CHIP** | | | | | | | | | |
| MSEE025-1 | 1.077 | 21 | 2 | 0 | 0 | 0 | 0 | 91 | 0.1 |
| MSFF191-1Y | 1.064 | 22 | 3 | 0 | 0 | 0 | 0 | 88 | 0.1 |
| MSFF029-10 | 1.087 | 21 | 4 | 0 | 0 | 0 | 0 | 84 | 0.2 |
| MSGG169-2 | 1.068 | 9 | 0 | 1 | 0 | 0 | 0 | 90 | 0.2 |
| MSEE052-5 | 1.076 | 16 | 8 | 1 | 0 | 0 | 0 | 64 | 0.4 |
| MSDD084-19 | 1.080 | 13 | 8 | 3 | 1 | 0 | 0 | 52 | 0.7 |
| Mystere | 1.076 | 12 | 9 | 4 | 0 | 0 | 0 | 48 | 0.7 |
| MSFF022-2 | 1.076 | 12 | 8 | 3 | 1 | 1 | 0 | 48 | 0.8 |
| MSDD050-B | 1.069 | 12 | 4 | 5 | 2 | 1 | 0 | 50 | 1.0 |
| MSEE063-6 | 1.080 | 3 | 6 | 3 | 0 | 0 | 0 | 25 | 1.0 |
| MSGG190-1 | 1.078 | 10 | 8 | 4 | 2 | 1 | 0 | 40 | 1.0 |
| MSFF008-1 | 1.078 | 5 | 6 | 4 | 4 | 0 | 0 | 26 | 1.4 |
| MSFF035-2 | 1.080 | 3 | 10 | 11 | 0 | 1 | 0 | 12 | 1.4 |
| **Atlantic** | **1.083** | **1** | **6** | **5** | **0** | **1** | **0** | **8** | **1.5** |
| **Snowden** | **1.085** | **2** | **8** | **10** | **5** | **0** | **0** | **8** | **1.7** |
| **Mackinaw** | **1.091** | **4** | **7** | **7** | **3** | **3** | **0** | **17** | **1.8** |
| MSGG242-1 | 1.088 | 1 | 8 | 7 | 5 | 3 | 0 | 4 | 2.0 |
| MSGG302-1 | 1.090 | 1 | 1 | 5 | 5 | 1 | 0 | 8 | 2.3 |
| Petoskey | 1.095 | 0 | 3 | 12 | 8 | 2 | 0 | 0 | 2.4 |
| MSEE149-1 | 1.079 | 2 | 2 | 3 | 2 | 3 | 1 | 15 | 2.4 |
| MSEE149-2 | 1.084 | 3 | 4 | 6 | 4 | 6 | 2 | 12 | 2.5 |
| MSFF088-1 | 1.083 | 3 | 1 | 3 | 4 | 4 | 2 | 18 | 2.6 |

| ENTRY | SP GR | NUMBER OF SPOTS PER TUBER 0 | 1 | 2 | 3 | 4 | 5+ | PERCENT (%) BRUISE FREE | AVERAGE SPOTS/TUBER |
|---|---|---|---|---|---|---|---|---|---|
| **PRELIMINARY PIGMENTED** | | | | | | | | | |
| W17005-3R | 1.059 | 21 | 1 | 0 | 0 | 0 | 0 | 95 | 0.0 |
| W17026-4R | 1.054 | 12 | 1 | 0 | 0 | 0 | 0 | 92 | 0.1 |
| **Dark Red Norland** | **1.054** | **18** | **6** | **1** | **0** | **0** | **0** | **72** | **0.3** |
| W16025-5R | 1.055 | 18 | 6 | 1 | | | | 72 | 0.3 |
| MSFF335-3Pinto | 1.064 | 15 | 9 | 1 | 0 | 0 | 0 | 60 | 0.4 |
| MSFF338-1PP | 1.061 | 15 | 8 | 2 | 0 | 0 | 0 | 60 | 0.5 |
| MSFF030-1WR | 1.060 | 7 | 4 | 1 | 1 | 0 | 0 | 54 | 0.7 |
| MSFF334-1Pinto | 1.059 | 7 | 3 | 3 | 0 | 0 | 0 | 54 | 0.7 |
| **PRELIMINARY TABLE** | | | | | | | | | |
| Sifra | 1.061 | 21 | 2 | 1 | 0 | 0 | 0 | 88 | 0.2 |
| **Dark Red Norland** | **1.056** | **13** | **1** | **1** | **0** | **0** | **0** | **87** | **0.2** |
| Camelia | 1.060 | 19 | 6 | 0 | 0 | 0 | 0 | 76 | 0.2 |
| Jelly | 1.074 | 18 | 5 | 2 | 0 | 0 | 0 | 72 | 0.4 |
| Allison | 1.070 | 13 | 4 | 4 | 2 | 0 | 0 | 57 | 0.8 |
| MSAA127-01PP | 1.059 | 6 | 16 | 3 | 0 | 0 | 0 | 24 | 0.9 |
| Spartan Splash | 1.070 | 10 | 8 | 4 | 1 | 1 | 0 | 42 | 1.0 |
| MSFF050-1 | 1.069 | 5 | 4 | 3 | 1 | 0 | 0 | 38 | 1.0 |
| MSGG030-3Y | 1.066 | 6 | 10 | 7 | 1 | 1 | 0 | 24 | 1.2 |
| MSFF301-3SPL | 1.079 | 8 | 4 | 10 | 3 | 0 | 0 | 32 | 1.3 |
| MSFF149-01 | 1.081 | 6 | 9 | 3 | 5 | 2 | 0 | 24 | 1.5 |
| **USPB/SFA TRIAL CHECK SAMPLES (Not bruised)** | | | | | | | | | |
| **Lamoka** | **1.083** | **15** | **7** | **2** | **1** | **0** | **0** | **60** | **0.6** |
| AF6165-9 | 1.085 | 11 | 10 | 4 | 0 | 0 | 0 | 44 | 0.7 |
| **Snowden** | **1.085** | **11** | **10** | **2** | **2** | **0** | **0** | **44** | **0.8** |
| MSAFB635-15 | 1.087 | 11 | 9 | 2 | 3 | 0 | 0 | 44 | 0.9 |
| NY174 | 1.079 | 7 | 11 | 6 | 0 | 1 | 0 | 28 | 1.1 |
| AF6200-4 | 1.080 | 5 | 9 | 5 | 3 | 2 | 1 | 20 | 1.6 |
| NY177 | 1.095 | 1 | 8 | 7 | 7 | 0 | 2 | 4 | 2.1 |
| **USPB/SFA TRIAL BRUISE SAMPLES** | | | | | | | | | |
| NY174 | 1.079 | 5 | 7 | 9 | 3 | 0 | 1 | 20 | 1.6 |
| MSAFB635-15 | 1.087 | 8 | 7 | 3 | 2 | 3 | 2 | 32 | 1.6 |
| **Lamoka** | **1.083** | **2** | **8** | **6** | **7** | **1** | **1** | **8** | **2.0** |
| AF6165-9 | 1.085 | 2 | 7 | 6 | 4 | 5 | 1 | 8 | 2.2 |
| **Snowden** | **1.085** | **3** | **6** | **7** | **3** | **3** | **3** | **12** | **2.2** |
| NY177 | 1.095 | 1 | 3 | 6 | 4 | 9 | 2 | 4 | 2.9 |
| AF6200-4 | 1.080 | 1 | 4 | 2 | 3 | 2 | 13 | 4 | 3.6 |
| **DIPLOID TRIAL (replicated trial)** | | | | | | | | | |
| MSHH618-01 | 1.068 | 25 | 0 | 0 | 0 | 0 | 0 | 100 | 0.0 |
| **Lamoka** | **1.081** | **9** | **12** | **4** | **0** | **0** | **0** | **36** | **0.8** |
| MSHH693-01 | 1.088 | 7 | 9 | 5 | 2 | 2 | 0 | 28 | 1.3 |
| MSHH699-02 | 1.092 | 6 | 6 | 3 | 5 | 0 | 1 | 29 | 1.5 |
| MSII1591-2 | 1.099 | 5 | 6 | 6 | 3 | 3 | 0 | 22 | 1.7 |
| MSGG655-01 | 1.084 | 3 | 6 | 9 | 5 | 1 | 1 | 12 | 1.9 |
| **Atlantic** | **1.086** | **3** | **4** | **9** | **6** | **3** | **0** | **12** | **2.1** |
| MSFF690-01 | 1.081 | 6 | 3 | 5 | 7 | 2 | 2 | 24 | 2.1 |
| MSHH1043-02 | 1.077 | 0 | 3 | 9 | 12 | 1 | 0 | 0 | 2.4 |
| MSGG691-06 | 1.072 | 1 | 4 | 3 | 6 | 6 | 3 | 4 | 2.9 |
| MSII1591-3 | 1.096 | 0 | 1 | 4 | 10 | 9 | 1 | 0 | 3.2 |
| MSHH1041-4 | 1.068 | 0 | 2 | 2 | 7 | 3 | 4 | 0 | 3.3 |
| MSII1081-2 | 1.083 | 0 | 1 | 3 | 2 | 3 | 3 | 0 | 3.3 |
| MSII1117-1 | 1.084 | 0 | 1 | 3 | 7 | 8 | 5 | 0 | 3.5 |
| MSHH664-01 | 1.074 | 0 | 1 | 1 | 5 | 12 | 6 | 0 | 3.8 |

* Thirteen to twenty-five (dependent on the number of replications used) A-size tuber samples were collected at harvest, held at 50 F at least 12 hours, and placed in a six-sided plywood drum and rotated ten times to produce simulated bruising. Samples were abrasive-peeled and scored 10/27/2023.

The table is presented in ascending order of average number of spots per tuber.