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2011 On-Farm Potato Variety Trials

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Introduction

On-farm potato variety trials were conducted with 13 growers in 2011 at a total of 17 locations. Ten of the locations evaluated processing entries and seven evaluated fresh market entries. The processing cooperators were Crooks Farms, Inc. (Montcalm), Walther Farms, Inc. (St. Joseph), Lennard Ag. Co. (St. Joseph), County Line Potato Farms, Inc. (Allegan), Main Farms (Montcalm), Sackett Potatoes (Mecosta), Michigan State University (MSU) Montcalm Research Center (Montcalm). The United States Potato Board/Snack Food Association (USPB / SFA) chip trial was at Sandyland Farms, LLC (Montcalm). Fresh market trial cooperators were Crawford Farms, Inc. (Montcalm), Elmaple Farms (Kalkaska), R & E Farms (Presque Isle), Horkey Bros. (Monroe), T.J.J. VanDamme Farms (Delta), Krummrey & Sons, Inc. (Ingham) and Walther Farms, Inc. (St. Joseph).

Procedure

There were six types of processing trials conducted this year. The first type contained 13 entries which were compared with the check varieties Snowden, Pike and FL1879. This trial type was conducted at Main Farms, Lennard Ag. Co. and County Line Farms. Varieties in these trials were planted in 100' strip plots. Seed spacing in each trial was grower dependent, but in general ranged from 9.5 to 11 inches. The second type of processing trial, referred to as a "Select" trial, contained six lines which were compared to the variety in the field. In these trials, each variety was planted in a 15' row plot. Seed spacing and row width were 10" and 34", respectively. These trials were conducted on Crooks Farms, Inc. (Montcalm). The third type was a processing variety trial where each plot consisted of three, 34" wide rows which were 15' long. Only the center row was harvested for the yield evaluation from each of four replicates. This trial was conducted at Walther Farms, Inc. (St. Joseph). At Walther's, 20 varieties were compared to the check varieties Snowden, Pike and FL1879. The plots were planted at 10" in-row spacing. The fourth type was the Box Bin trial at the Montcalm Research Center in Montcalm County, MI. This trial contained 20 varieties compared against the check variety Snowden. Each of the 21 varieties were planted in a single 34" wide row, 600' long with 10" in-row seed spacing. A single 23' yield check was taken to evaluate each clone. The fifth type of chip trial consisted of large multiple acreage blocks of four newly commercialized or soon to be commercialized varieties. Agronomic and production practices for these varieties were based on each individual grower's production system. The varieties and growers were: Sandyland Farms (Montcalm), Lamoka (NY139); Sackett Potatoes (Mecosta), Lamoka (NY139) and MSQ070-1;

Lennard Ag. Co. (Branch), Lamoka (NY139) and MSH228-6; Walther Farms (St. Joseph), Nicolet (W2133-1) and MSQ070-1.

The USPB / SFA chip trial was the 6th chip processing trial type. For procedural details on this trial, reference the 2011 annual report published by the United States Potato Board.

Within the fresh market trials, there were 29 entries evaluated. There were 5 to 18 lines planted at each of the following locations: Delta, Ingham, Kalkaska, Monroe, Montcalm, Presque Isle and St. Joseph counties. The varieties in each trial ranged from mostly round white varieties to mostly russet varieties. These varieties were generally planted in 100' strip plots. A single 23' yield check was taken to evaluate each clone in these strip trials. Seed spacing varied from 8 to 12 inches depending upon grower production practices and variety. The second fresh pack trial type was the Russet Select Trial. The select russet trials were planted at three locations (Elmaple Farm (Kalkaska), Montcalm Research Center (Montcalm) and Walther Farms, (St. Joseph)). At Elmaple Farms, each russet variety was planted in one, three row plot, that was thirty feet long with 34" wide rows and 11-12" in-row spacing. A yield determination was made on 23 feet of the center row. At Walther Farms, Inc. (St. Joseph), three row plots, replicated four times were evaluated. The plots were 15' long by 34" wide and seed spacing was 12". Only the center row was harvested and evaluated. Each select trial varied in the number of varieties tested.

Results

A. Processing Variety Trial Results

A description of the processing varieties, their pedigree and scab ratings are listed in Table 1. The overall averages from nine locations across Allegan, Montcalm and St. Joseph counties are shown in Table 2.

Processing Variety Highlights

A01143-3C; is an Aberdeen Idaho chip processing selection with average yield potential and good long term chip quality from storage. In 2011, it had a 396 cwt./A US#1 yield with a 1.078 average specific gravity (Table 2). The overall size profile of the variety was smaller, with 8 percent "B" size tubers and 82 percent "A's". This variety exhibits slight common scab susceptibility and appears to have a very late vine maturity. Heat sprouts were also observed.

AF2291-10; this selection has been developed at the University of Maine. This variety appears to chip process well from out of the field and early to mid-season storage. It's yield potential was good, producing 438 cwt./A US#1 in 2011 (Table 2). The average specific gravity of this line was 1.080. Four tubers with hollow heart were observed in 60 cut tubers. The overall tuber type of this variety is not very uniform. This line has some common scab tolerance and appears to exhibit a mid-season maturity (Table 1).

CO00188-4W; this selection is from the University of Colorado. It has a below average yield (Table 1), but has good common scab tolerance and late season chip quality and storability.

Lamoka (NY139); this is a Cornell University developed clone. This variety continues to exhibit a strong yield and good size profile. In the 2011 processing potato variety trials, Lamoka yielded 433 cwt./A US#1 over eight locations with a 92% marketable yield average (Table 2). The specific gravity of this clone was four points above the trial average at 1.080. No hollow heart was noted in 110 cut tubers. Vine maturity for this variety appeared to be medium-late to late. This variety, over four years of on-farm trialing, has a 415 cwt./A US#1 yield. Lamoka continues to chip process well out of mid to late season storage at 48 °F.

MSH228-6; this Michigan State University selection yielded slightly below the trial average in 2011 at 393 cwt./A US#1 (Table 2) and expresses common scab tolerance (Table 1). This variety, over five years of on-farm trialing, has a 364 cwt./A US#1 yield. Some internal vascular discoloration has been noted over the years in finished chips from storage as well as edge browning due to Pinkeye.

MSL007-B; is an MSU selection with a heavy netted skin, uniform tuber type and common scab tolerance (Table 1). In 2011, it yielded above average at 430 cwt./A US#1 (Table 2). Chip quality appears to be good from mid-season storage, but some stem end defect has been observed in finished chips from various regions of the state. This variety, over four years of on-farm trialing, has a 371 cwt./A US#1 yield.

MSL292-A; is a Michigan State University developed variety. In 2011, MSL292-A had an average yield at 427 cwt./A US#1 (Table 2). This variety had 90 percent marketable yield and a slightly below average specific gravity at 1.074. Raw internal tuber quality was good and tuber type was very uniform and round. Pitted scab was noted in some plots. MSL292-A exhibited excellent chip quality out of the field and from storage in 2011 and early 2012. MSL292-A, over four years of on-farm trialing, has a 425 cwt./A US#1 yield.

MSQ070-1; is an MSU clone with common scab and late blight tolerance. In 2011 on-farm trials, this variety yielded only 310 cwt./A US#1 with a 1.083 specific gravity. There were three tubers with hollow heart observed in 80 cut tubers (Table 2). This variety had a vine maturity that was later than Snowden. Tuber type was very uniformly round and chip quality was good from mid-season storage. This variety appeared to set well and could benefit from a slightly wider in-row seed spacing of 11 inches. Vine lateness and sticky stolons are detrimental to this varieties' success. MSQ070-1, over three years of on-farm trialing, has a 339 cwt./A US#1 yield.

MSQ086-3; is an MSU selection with a uniform tuber type, early bulking potential and slight common scab tolerance (Table 1). In 2011, it's average yield across four locations was 552 cwt./A US#1 with 89 percent of the total tuber yield being

marketable (Table 2). The specific gravity was below average at 1.070. Chip quality appears to be good from out of the field.

MSQ089-1; is a Michigan State University developed variety. In 2011, MSQ089-1 had an average yield at 439 cwt./A US#1 (Table 2). This variety had 90 percent marketable yield and a below average specific gravity at 1.069. Raw internal tuber quality was good and tuber type was uniform and round. This variety has moderate scab tolerance. Chip quality out of the field and from storage in 2011 and early 2012 was good.

MSQ279-1; is an MSU clone with common scab tolerance. In 2011 on-farm trials, this variety yielded below average at 387 cwt./A US#1 with a 1.071 specific gravity. There were three tubers with hollow heart observed in 50 cut tubers (Table 2). Tuber type was generally uniformly round and chip quality was good from mid-season storage.

MSR036-5; this Michigan State University selection yielded below the trial average in 2011 at 244 cwt./A US#1 (Table 2), but does express common scab tolerance (Table 1). Some internal vascular discoloration was noted in the finished chips from storage as well as general sugar accumulation. This variety does not appear to have any commercial potential.

MSR061-1; is an MSU developed variety with common scab tolerance, resistance to PVY and foliar late blight resistance (Table 1). This variety is a below average yielding line with an average specific gravity (Table 2).

MSR157-1Y; is an MSU selection with a yellow flesh (Table 1). In 2011, it yielded below the trial average at 351 cwt./A US#1 (Table 2). Chip quality appears to be good from mid-season storage.

MSR159-2; is a Michigan State University developed variety. In 2011, MSR159-2 had a below average yield at 347 cwt./A US#1 (Table 2). This variety had an 81 percent marketable yield and an above average specific gravity at 1.083. Raw internal tuber quality was a concern with 12 out of 60 cut tubers exhibiting hollow heart.

MSR169-8Y; is an MSU clone with common scab resistance. In 2011 on-farm trials, this variety yielded only 299 cwt./A US#1 with a 1.076 specific gravity. Sixteen percent, on average, of the tubers were "B" size. There was 1 tubers with hollow heart observed in 60 cut tubers (Table 2). This variety has a uniform yellow flesh. Tuber type was uniformly round and chip quality was good from mid-season storage.

MSS165-2Y; is an MSU selection with a uniform tuber type, high yield potential and common scab tolerance (Table 1). In 2011, it's average yield across five locations, was 488 cwt./A US#1 with 86 percent marketable tubers and 11 percent "B" size (Table 2). The specific gravity was above average at 1.085. Chip quality appears to be good. Tuber flesh is very yellow.

NY140; this is a Cornell University developed clone. This variety exhibits a strong yield and good tuber size profile. In the 2011 processing potato variety trials, this selection yielded 520 cwt./A US#1 over five locations with a 92% marketable yield average (Table 2). The specific gravity of this clone was one point below the trial average at 1.075. Six tubers with hollow heart were noted in 50 cut tubers. Vine maturity for this variety appeared to be medium-late. This variety shows some common scab susceptibility.

NY148 (NYE106-4); this Cornell University developed clone exhibited a strong yield, good size profile and common scab tolerance. In 2011, NY148 yielded 487 cwt./A US#1 over five locations with an 89% marketable yield average (Table 2). The specific gravity of this clone was nine points above the trial average at 1.085. No hollow heart was noted in 50 cut tubers. Vine maturity for this variety appeared to be late. NY148 chip quality does not appear to be as good as Lamoka.

W2978-3; this clone was developed at the University of Wisconsin and has exhibited an average yield, early bulking potential with a low average specific gravity. In 2011, W2978-3, when averaged across four Michigan trial locations, yielded 386 cwt./A US#1 with one hollow heart being observed in 40 cut tubers (Table 2). The size profile and the specific gravity were both below the trial average. This variety was susceptible to common scab.

W4980-1; is a University of Wisconsin variety with average yield potential. In 2011, it yielded 424 cwt./A US#1 with a 1.074 specific gravity (Table 2). Two percent hollow heart was observed in this variety when averaged over five locations. Slight pitted and surface scab susceptibility was also noted. Chip quality from mid-season storage appears to be good.

W5015-12; is a University of Wisconsin developed variety. In 2011, it yielded 400 cwt./A US#1 with a 1.081 specific gravity (Table 2). Two tubers with hollow heart were observed in 20 cut tubers when this variety was averaged over two locations. Pitted and surface scab susceptibility was noted.

B. USPB / SFA Chip Trial Results

The Michigan location of the USPB / SFA chip trial was on Sandyland Farms, LLC in Montcalm County in 2011. Table 3 shows the yield, size distribution and specific gravity of the entries when compared with Atlantic and Snowden. Table 4 shows the at-harvest raw tuber quality results. Table 5 shows the out of the field chip quality evaluations from samples processed and scored by Herr Foods, Inc., Nottingham, PA and Table 6 provides the blackspot bruise susceptibility of each entry. Table 7 provides a pre-harvest panel for each of the 16 varieties in the trial. This table compares tuber specific gravity, percent glucose and sucrose ratings taken on August 31st, 2011 for each variety.

USPB / SFA Chip Trial Highlights

NY140 and Atlantic topped the yield table in 2011 followed by W2310-3, NY148 (NYE106-4) and Snowden (Table 3). NY140 and Atlantic had the largest percentage of recorded oversize tubers in the trial (Table 3). MSL292-A, CO00188-4W, W4980-1, W2978-3, MSJ126-9Y and CO00197-3W had very low specific gravities. The varieties in the 2011 trial that displayed the greatest potential for commercialization were NY140, W2310-3, NY148 (NYE106-4) and MSL292-A. Yield potential and specific gravity were good for W2310-3 and NY148 (NYE106-4) (Table 3). MSL292-A had the highest AGTRON score at Herr Foods on October 12th at 69.4 (Table 5). Atlantic, NY148 (NYE106-4), W5015-12 and ND8305-1 showed the greatest susceptibility to blackspot bruise (Table 6). CO00188-4W and W4980-1 were very mature on August 31st which was approximately one week prior to vine kill (Table 7).

C. Fresh Market and Variety Trial Results

A description of the freshpack varieties, their pedigree and scab ratings are listed in Table 8. Table 9 shows the overall yield averages for the seven freshpack locations: Delta, Ingham, Kalkaska, Monroe, Montcalm, Presque Isle and St. Joseph Counties.

Fresh Market Variety Highlights

One round white, one yellow flesh and five russet lines are worthy of mention from the 2011 on-farm variety trials. They are MSQ440-2 (the round white), MSM288-2Y (the yellow flesh variety), and the russets, A0008-1TERus (Teton Russet), A01124-3Rus, A02062-1TERus, AF3362-1 and Dakota Trailblazer.

MSQ440-2; this Michigan State University variety has a bright tuber appearance and moderate common scab tolerance (Table 8). In the 2011 freshpack variety trials, this clone had a 304 cwt./A US#1 yield with a 1.061 specific gravity (Table 9). There were no hollow heart in 50 cut tubers, but some vascular discoloration was observed. Tuber size distribution was good with 90 percent of the tubers being marketable. The skin type of this variety is smooth and bright and the tubers are uniform in shape. The vine maturity is mid-season. This variety, over two years of on-farm trialing, has a 292 cwt./A US#1 yield.

MSM288-2Y; this Michigan State University variety has uniform tuber type with a nice yellow flesh. The tubers have pink eye color similar to Yukon Gold. In 2011, MSM288-2Y yielded 372 cwt./A US#1 with a medium vine maturity (Table 9). The total yield of this variety was reported as 443 cwt./A. The percentage of the total tuber yield that was "B" sized was 13 and the specific gravity was 1.074. This variety also expresses common scab susceptibility.

A0008-1TERus (Teton Russet); this is a USDA Aberdeen, ID developed variety. In 2011, over 6 locations, this varieties' average yield was 292 cwt./A US#1. Twenty-three percent of the total yield was "B" sized tubers (Table 9). Marketable yield was 68 percent of the total. The specific gravity was 1.070 and 11 of 90 cut tubers exhibited hollow heart. Vine maturity was medium-early. This variety, over three years of on-farm trialing, has a 313 cwt./A US#1 yield. A0008-1TERus appears to perform much better agronomically in northern climates and will be tested more specifically north of Lansing, MI.

A01124-3Rus; this University of Idaho selection had a 325 cwt./A US#1 yield, an average specific gravity of 1.074 and 16 of 90 tubers exhibited hollow heart (Table 9). The tuber's appearance was long and blocky with a nice russeted skin. Vine maturity was medium.

A02062-1TERus; this is a USDA Aberdeen, ID developed variety. Across seven locations in 2011, this variety on average yielded 304 cwt./A US#1 with a 1.074 specific gravity with only 4 tubers exhibiting hollow heart out of 100 cut (Table 9). This variety has a very nice skin type and tuber shape. As a result of a smaller tuber set per plant, a 9.5 -10 inch in-row seed spacing is recommended. This variety, over two years of on-farm trialing, has a 374 cwt./A US#1 yield.

AF3362-1Rus; this University of Maine selection had a 334 cwt./A US#1 yield, an average specific gravity of 1.073 and zero out of 80 tubers exhibiting hollow heart (Table 9). The tuber appearance was long and blocky with a nice russeted skin. Vine maturity was early. This variety appears very promising for the early russet market.

Dakota Trailblazer; is a variety developed at North Dakota State University. Averaged over two locations, this variety yielded 415 cwt./A US#1 which placed it as the top yielding russet in 2011. The specific gravity was very high at 1.093. Six tubers with hollow heart were reported in 30 cut tubers. Vine maturity was late. Tuber type was extremely blocky. Common scab susceptibility was observed at one location this season.