Pennsylvania Potato Research Report, 2016

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EXECUTIVE SUMMARY

Penn State's Department of Plant Pathology & Environmental Microbiology potato research program can be categorized into five areas: 1) variety breeding and evaluation, 2) breeding for disease resistance (focused on early and late blight, and common and powdery scab), 3) biology and genetic variability of potato pathogens (focused on early and late blight and powdery scab), 4) chemical control and 5) integrated pest management of potatoes. Many of these projects are long term and only yearly results are presented here.

1. Variety Breeding and Evaluation

At the Rock Springs location the trials included 96 round whites with a few yellow flesh, 31 red-skinned (a few purple skinned) and 38 russet or long white types. The Northampton Co. and Erie Co. had 32 lines, respectively. Breeding lines were contributed by the USDA-ARS, New York, Maine, Michigan, Idaho, Wisconsin, Colorado and a few other sources. See **Pennsylvania Regional Potato Germplasm Evaluation Program, 2016 progress report on pages 1-2, and tables from different locations on pages 3-36, supplemental progress report on pages 41-42 and tables from different locations on pages 43-55, and notes on fresh colors of potato varieties/lines on page 56.**

2. Breeding for Disease Resistance

There are several projects focused around a cultivated diploid species hybrid population that can be easily intercrossed with common varieties. These are long term projects dealing with early and late blight resistance as well as powdery scab resistance. Results of these projects will not be presented here but results of small trials evaluating soon to be released lines for their reaction to early blight, late blight and powdery scab are presented. In three separate field trials, 31, 31 and 32 varieties and advanced breeding lines were evaluated for disease resistance to late blight, early blight, and powdery scab, respectively.

Cultivar Kennebec was the moderately resistant check for late blight; CO00291-5R, AF4648-2, AF4615-5, NY154 (NYH15-17), AF4953-6, and Kennebec were considered resistant or moderately resistant to late blight. See **Field evaluation of potato cultivars and breeding lines for resistance to late blight in Pennsylvania, 2016 on page 37.**

Early blight disease pressure was high and the most susceptible cultivar (cv. Dark Red Norland; susceptible check) reached 100% disease severity by the end of the season. Kennebec, Russet Burbank and Snowden were included as moderately resistant check cultivars. Twelve cultivars/lines with AUDPC values of less than 200 were characterized as moderately resistant: Katahdin, Kennebec, Russet Burbank, CO00291-5R, AF4953-6, BNC244-10, AF4648-2, AF4615-5, Snowden, AF4296-3, and Chieftain. See **Field**

evaluation of potato cultivars and breeding lines for resistance to early blight in Pennsylvania, 2016 on page 38.

Kennebec and Shepody were included as susceptible check cultivars in powdery scab trial. Russet Burbank is typically considered moderately resistant to powdery scab. Eight cultivars/lines with less than 10% scab incidence were considered resistant or moderately resistant to tuber infection and these included: Teton Russet, AF3362-1 (Caribou Russet), AF4953-6, AF4296-3, AF4615-5, Russet Burbank, NY154 (NYH15-17), and AF4138-8. See **Field evaluation of potato cultivars and breeding lines for resistance to powdery scab in Pennsylvania, 2016 on page 39.**

3. Chemical Control of Potato Late Blight

In the late blight fungicide trial 8 different treatments were compared to an untreated control. All of the treatments significantly suppressed season-long foliar late blight compared to the untreated control. In general, tuber disease incidence was low and all treatments did not significantly reduce tuber late blight disease incidence compared to the untreated control. See **Evaluation of foliar fungicides for control of potato late blight in Pennsylvania, 2016 on page 40.**

Progress Report---December 20, 2016

Pennsylvania Regional Potato Germplasm Evaluation Program, 2016

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The objective of this project is to find new breeding lines that have adaptation to Pennsylvania potato growing regions, and have qualities that are suitable for either processing or tablestock use. We cooperate with the project leaders of several other potato breeding programs from the Northeast US and a few programs from the Midwest US and Canada by evaluating their potato germplasm. Data from this project helps breeders determine which lines to focus on for potential release as new varieties and also allows you to focus on very specific lines that may be released in the near future.

Replicated and non-replicated variety evaluation plots were established at the following locations: Northampton Co. (Tables 1- 2), Erie Co. (Tables 3-4) and Rock Springs, Centre Co. (Tables 5-12). The Northampton location and Erie location had 32 varieties/lines in non-replicated trial, respectively. At the Rock Springs location the trials included 54 round whites with a few yellow flesh, 18 red-skinned (a few purple skinned) and 31 russet or long white types in replicated plots, and an additional 43 whites, 14 red-skinned and 8 russet or long white types planted in non-replicated observational plots. At Northampton Co. and Erie locations, the seed spacing was 8-inch within a 20-ft plot except for the russets that were at 10-inch. At Rock Springs location, the seed spacing was 8-inch within a 10-ft plot except for the russets and some whites that were at 10-inch. An early variety trial of 32 varieties was conducted at Rock Springs, Centre Co. (Table 13-14). Creamer variety trial of 11 varieties was conducted at and at Rock Springs, Centre Co. (Table 15). We assessed yield, tuber size, internal defects and external defects, skin color, texture, tuber shape, specific gravity and overall appearance. French Fry and chip quality tests and culinary tests will be conducted over the next few months. Management information for each site is provided in Table 16.

To interpret this data, one needs to know the yields for the check cultivars such as Atlantic, Snowden, Katahdin, Chieftain, Dark Red Norland, Russet Norkotah or Superior on your farm. Then compare the typical yield for this year on your farm to the data presented here. The yields tend to be inflated from these small plots but the ranking of the yields over the cultivars/lines usually is fairly consistent. Also the same method can be used to compare specific gravity and some of the other parameters. There are a few lines that will be very specific to certain environments so make the comparison to the location that best matches your own or use the Rock Springs location as a fairly typical area for most of PA.

Results:

Northampton county trials:
In the Northampton location the following lines had marketable yield higher than Atlantic: Snowden and Fenway Red.

Erie county trials:
In the Erie location the following lines had marketable yield higher than Atlantic: Snowden, Katahdin, Superior, Chieftain, Yukon Gold, NY 141, NY 149, NY 159, NY 157, BNC201-1, MSR127-2, W8405-1R, Elmo, Svenja, Connect, AF4138-8, AF4648-2, AF5040-8, MSR061-1, Caribou Russet, A08422-2VR, and Dione.

Round White planted 8-inch apart in Rock Springs:
Based on data of replicated trials at Rock Springs, there were 12 round white clones with marketable yields significantly greater than Atlantic: AF4138-8, AF4552-5, AF5225-1, AF5432-5, WAF10131-11, BNC182-5, BNC266-6, BNC369-4, NY 141, NY 151 (G73-1), CO02024-9W, and Malou. There were another 22 round white clones with marketable yields greater than Atlantic: AF5568-6, Katahdin, AF5280-5, VC1002-3W/Y, MSR061-1, L30-5, W9576-11Y, Connect, NCO349-3, NY 149, NY 152 (H15-5), MSW509-5, W8822-1, AF5484-3, B2904-2, Reba, AF5040-8, W6822-3, AF5429-3, Snowden, NY154, and B2869-28.

Red-skinned planted 8-inch apart in Rock Springs:
Based on data of replicated trials at Rock Springs, there were 2 red-skinned or purple-skinned clones with marketable yields greater than Chieftain: Fenway Red and AF4831-2.

Russet-skinned or white planted 10-inch apart in Rock Springs:
Based on data of replicated trials at Rock Springs, there were another 6 clones with marketable yields greater than Russet Norkotah: Caribou Russet, AF5407-13, CO98067-7RU, W9133-1rus, A08422-2VR, and Barcelona.

The results of chipping, French fry and culinary quality tests will be available in March 2017.

The Pennsylvania Potato Research Program, the Pennsylvania Department of Agriculture and USDA funded this research in conjunction with donations. This research is the result of cooperation of growers, industry and PSU staff. The growers hosting the plots provided contributions (land, fertilizer, pesticides, time, etc.). University of Maine, Cornell University, USDA Beltsville, USDA Idaho, Colorado State University, University of Wisconsin, Michigan State University potato breeding programs and Parkland Seed Potatoes, Sunrain, Solanum International, HZPC companies provided seed. Special thanks to Bob Leiby and Andy Muza who made sure this project was completed.

Table 1. Total yield, greater than 1 7/8" yield, percent of standard, size distribution, percent pick outs and specific gravity for potato evaluation trial in Clearview Farm, Northampton County, 2016

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5		Gravity
Atlantic	343	319	93	100	25	52	17	0	5	1.085
Snowden	413	400	97	125	35	51	11	0	0	1.083
Norwis[yf]	259	244	94	76	12	52	30	0	3	1.064
Katahdin	347	298	86	93	25	42	19	0	9	1.066
Superior	247	214	87	67	44	36	6	0	8	1.062
Chieftain	291	263	90	83	35	45	11	0	5	1.060
Yukon Gold[yf]	352	313	89	98	19	38	33	0	9	1.075
AF4138-8	326	292	90	92	44	37	9	0	3	1.059
AF4648-2	241	221	92	69	47	42	4	0	2	1.086
AF4831-2	272	181	66	57	54	13	0	0	4	1.067
AF5040-8	247	229	93	72	49	33	11	0	2	1.084
AF5225-1	345	316	92	99	41	47	4	0	2	1.071
AF5426-3	255	184	72	57	35	28	9	0	18	1.073
NY 141	271	243	90	76	39	44	6	0	1	1.075
NY 149	280	231	82	72	48	31	3	0	5	1.072
NY 151	326	288	88	90	40	48	0	0	5	1.054
NY 157	310	283	91	89	52	36	3	0	3	1.082
NY 159	250	213	85	67	38	43	4	0	6	1.047
B2869-28	230	203	88	63	51	37	0	0	0	1.070
B3005-7	185	159	86	50	65	21	0	0	1	1.076
BNC182-5	334	310	93	97	26	51	15	0	0	1.082
BNC369-4	286	276	97	87	28	57	11	0	0	1.074
MSV179-1	281	264	94	83	21	48	21	4	3	1.066
MSR061-1	283	248	88	78	37	51	0	0	5	1.077
A051802-3PY[yf]	294	221	75	69	45	30	0	0	6	1.060
Natascha[yf]	299	208	70	65	62	8	0	0	3	1.073
Colorado Rose	282	244	87	76	41	36	10	0	3	1.057

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific Gravity
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5		
Fenway Red	375	323	86	101	51	35	0	0	3	1.062
Canberra[yf]	232	166	71	52	45	22	4	0	11	1.065
Svenja* [yf]	287	239	83	75	51	32	0	0	7	1.069
Connect[yf]	279	226	81	71	48	33	0	0	14	1.080
Dakota Trialblazer*	211	157	74	49	37	28	9	0	19	1.095

[1]Yield Total = all yield including pickouts. Yield >1 7/8" = categories 2, 3, 4 and 5 excluding pickouts.

[2]Percentage of the standard, Atlantic, for >1 7/8" yield.

[3]Percentage of total yield according to size class. 2=1.875-2.5 in., 3=2.5-3.25 in., 4=3.25-4.0 in., 5=>4.0 in.

[4]Percentage of total that are pickouts.

Non-replicated trial.

Varieties marked with * were planted 10-in. apart with 24 seed pieces per 20-ft plot, all other varieties were spaced 8-in. apart with 30 seed pieces per 20-ft plot.

Yellow flesh varieties are indicated with [yf].

Table 2. Tuber characteristics, internal and external defects for potato evaluation trial in Clearview Farm, Northampton County, 2016

Variety/Line	Tuber Characteristics[1]						Internal Defects[2]		External Defects[3]							
	TA	C	TX	Sh	TED	TCS	HH	IB	R	H	Gr	K	G	Sc	Sp	T
Atlantic	5	6	5	2	4	6	0	0	1	0	0	0	1	0	0	0
Snowden	4	6	5	2	3	5	0	0	0	0	0	0	0	0	0	0
Norwis	4	7	7	3	4	5	1	0	1	0	0	0	0	0	0	0
Katahdin	4	7	7	3	5	5	0	0	1	0	0	0	1	0	0	0
Superior	3	7	6	3	5	5	0	0	1	0	0	0	1	0	0	0
Chieftain	5	2	7	3	4	5	0	0	1	0	1	0	0	0	0	0
Yukon Gold	4	7	7	3	5	5	0	0	1	0	0	0	0	0	0	0
AF4138-8	5	7	7	3	6	5	0	0	1	0	0	0	0	0	0	0
AF4648-2	4	7	6	2	6	4	0	0	1	0	0	0	1	0	0	0
AF4831-2	6	2	8	3	6	5	0	0	0	0	0	0	0	0	0	0
AF5040-8	4	7	7	2	4	5	0	0	1	0	0	0	0	0	0	0
AF5225-1	5	6	6	2	6	5	0	1	1	0	0	0	0	0	0	0
AF5426-3	3	7	7	2	5	5	0	0	1	0	4	0	0	0	0	0
NY 141	5	7	7	2	5	5	0	0	1	0	0	0	0	0	0	0
NY 149	5	6	7	2	6	5	0	0	1	0	0	0	0	0	0	1
NY 151	5	7	7	2	6	5	0	0	1	0	0	0	1	0	0	0
NY 157	5	6	5	2	5	4	0	0	0	0	0	0	0	0	0	0
NY 159	4	2	7	2	6	5	0	0	2	0	0	0	0	0	0	0
B2869-28	5	7	7	2	5	6	0	0	1	0	0	0	0	0	0	0
B3005-7	5	7	6	3	6	4	0	0	2	0	0	0	0	0	0	0
BNC182-5	5	6	5	2	5	6	0	0	1	0	0	0	0	0	0	0
BNC369-4	5	7	6	3	5	5	0	0	1	0	0	0	0	0	0	0
MSV179-1	5	7	6	2	5	6	0	0	1	0	0	0	1	0	0	0
MSR061-1	6	6	7	2	5	6	0	0	0	0	0	0	0	0	0	0
A051802-3PY	4	1	2	8	6	6	0	0	1	0	0	0	0	0	0	0
Natascha	5	7	7	3	7	4	0	0	1	0	0	0	1	0	0	0
Colorado Rose	4	2	7	3	7	5	0	1	1	0	0	0	0	0	0	0

Variety/Line	Tuber Characteristics[1]						Internal Defects[2]		External Defects[3]							
	TA	C	TX	Sh	TED	TCS	HH	IB	R	H	Gr	K	G	Sc	Sp	T
Fenway Red	4	2	7	2	5	5	0	0	1	0	0	0	1	0	0	0
Canberra	3	3	7	3	6	5	0	0	1	0	0	0	1	0	0	0
Svenja	3	6	6	3	6	5	0	0	1	0	0	0	0	0	1	0
Connect	4	7	8	3	6	4	0	0	1	0	0	0	0	0	0	0
Dakota Trialblazer	5	5	3	4	7	4	2	0	1	0	1	0	0	1	0	0

[1]Tuber Characteristics: TA = tuber appearance: 1 = very poor, 5= fair, 9 = excellent.

C = skin color: 1 = purple, 2 = red, 3 = pink, 4 = dark brown, 5 = brown, 6 = tan, 7 = buff, 8 = white, 9 = cream.

TX = skin texture: 1 = partial russet, 2 = heavy russet, 3 = mod. russet, 4 = light russet, 5 = netted, 6 = slight net, 7 = mod. smooth, 8 = smooth, 9 = very smooth.

Sh = tuber shape: 1 = round, 2 = mostly round, 3 = round-oblong, 4 = mostly oblong, 5 = oblong, 6 = oblong-long, 7 = mostly long, 8 = long, 9 = cylindrical.

TED = tuber eye depth: 1 = very deep, 5 = medium, 9 = very shallow. TCS = tuber cross section: 1 = very flat, 5 = intermediate, 9 = very round.

[2]Internal Defects: HH = hollow heart, IB = internal browning. Total number observed out of 10 tubers. 0 = not observed.

[3]External Defects: R = Rhizoctonia, H = hairline cracks, Gr = growth cracks, K = knobs, G = sunburn, Sc = scab, Sp = sprouts, T = secondary tubers. Scale = 0-4, with 0 = not observed, 1 = slight to 4 = very severe.

Table 3. Total yield, greater than 1 7/8" yield, percent of standard, size distribution, percent pickouts and specific gravity for potato evaluation trial in Kevin Troyer Farm, Erie County, 2016

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific Gravity
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5		
Atlantic	240	190	79	100	17	33	29	0	18	1.079
Snowden	396	356	90	187	24	52	14	0	7	1.074
Katahdin	397	320	81	168	14	48	18	0	15	1.064
Superior	297	279	94	147	22	60	13	0	4	1.059
Chieftain	327	272	83	143	15	39	29	0	15	1.059
Yukon Gold[yf]	370	284	77	149	15	37	21	3	22	1.068
NY 141	338	260	77	137	18	45	14	0	19	1.069
NY 149	430	353	82	186	30	48	3	0	8	1.069
NY 159	289	229	79	120	24	38	17	0	14	1.051
NY 157	303	247	82	130	25	44	13	0	12	1.073
BNC201-1[yf]	330	292	88	154	33	38	18	0	5	1.072
BNC364-1	267	187	70	98	46	24	0	0	18	1.074
MSR127-2	265	213	81	112	22	48	11	0	17	1.076
MSU383-A	220	182	83	96	35	48	0	0	11	1.048
W8405-1R	368	266	72	140	28	28	16	0	16	1.054
Elmo	324	294	91	154	43	38	9	0	3	1.051
Canberra[yf]	306	187	61	98	42	19	0	0	28	1.058
Svenja* [yf]	366	259	71	136	28	34	8	0	25	1.070
Connect[yf]	404	342	85	180	36	47	2	0	9	1.063
AF4138-8	351	298	85	157	38	43	3	0	9	1.058
AF4648-2	324	245	76	129	28	33	15	0	17	1.082
AF5040-8	289	210	73	110	16	49	8	0	23	1.083
AF5426-3	299	128	43	67	11	27	5	0	52	1.070
MSR061-1	248	208	84	109	33	43	7	0	10	1.065
Norkotah Russet*	139	98	70	52	35	21	14	0	20	1.054
Caribou Russet*	327	206	63	109	14	24	25	0	33	1.057
CO05175-1RU*	167	95	57	50	15	28	14	0	31	1.069

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific Gravity
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5		
A08422-2VR*	306	245	80	129	24	36	19	0	15	1.065
W9133-1Rus*	207	137	66	72	18	28	20	0	20	1.057
W9433-1Rus*	337	185	55	97	13	26	16	0	41	1.066
A07088-6*	245	149	61	78	22	30	9	0	27	1.074
Dione*	384	255	66	134	14	37	15	0	29	1.068

[1]Yield Total = all yield including pickouts. Yield >1 7/8" = categories 2, 3, 4 and 5 excluding pickouts.

[2]Percentage of the standard, Atlantic, for >1 7/8" yield.

[3]Percentage of total yield according to size class. 2=1.875-2.5 in., 3=2.5-3.25 in., 4=3.25-4.0 in., 5=>4.0 in.

[4]Percentage of total that are pickouts.

Non-replicated trial.

Varieties marked with * were planted 10-in. apart with 24 seed pieces per 20-ft plot, all other varieties were spaced 8-in. apart with 30 seed pieces per 20-ft plot.

Yellow flesh varieties are indicated with [yf].

Table 4. Tuber characteristics, internal and external defects for potato evaluation trial in in Kevin Troyer Farm, Erie County, 2016

Variety/Line	Tuber Characteristics[1]						Internal Defects[2]		External Defects[3]							
	TA	C	TX	Sh	TED	TCS	HH	IB	R	H	Gr	K	G	Sc	Sp	T
Atlantic	3	6	5	2	3	6	4	1	3	0	0	0	2	0	0	0
Snowden	5	6	5	2	3	5	2	0	1	0	0	0	2	0	0	0
Katahdin	3	7	7	3	5	4	1	0	4	0	0	0	3	0	0	0
Superior	4	6	6	3	4	5	0	0	1	0	0	0	1	0	0	0
Chieftain	4	3	7	3	5	5	0	0	2	0	1	0	2	0	1	0
Yukon Gold	4	7	7	2	5	5	1	0	2	0	0	1	2	0	0	0
NY 141	4	7	7	3	6	5	0	0	2	0	0	0	3	0	0	0
NY 149	6	6	6	2	6	4	0	0	1	0	0	0	1	0	0	0
NY 159	4	2	7	3	6	5	0	0	2	0	1	0	1	0	0	0
NY 157	5	7	6	2	6	5	1	1	1	0	0	0	2	0	0	0
BNC201-1	4	2	7	2	4	6	0	0	1	0	0	0	1	0	0	0
BNC364-1	4	7	6	3	6	5	0	0	1	0	2	0	1	1	0	0
MSR127-2	4	6	5	2	5	5	1	0	2	0	1	0	1	0	0	0
MSU383-A	5	5	5	2	5	5	0	0	1	0	0	0	0	1	0	1
W8405-1R	4	2	7	3	6	5	0	0	1	0	0	0	1	2	0	0
Elmo	2	3	7	3	5	5	0	0	2	0	0	0	1	0	0	0
Canberra	3	3	7	3	6	5	0	0	0	0	0	0	2	0	0	0
Svenja	6	7	8	3	6	5	0	0	1	0	0	0	2	1	0	0
Connect	5	6	7	3	6	4	0	0	1	0	0	1	1	0	0	0
AF4138-8	5	7	7	2	6	5	0	0	1	0	0	0	1	0	0	0
AF4648-2	5	7	7	2	4	5	0	0	1	0	1	0	2	0	0	0
AF5040-8	5	7	6	3	4	5	0	0	1	0	0	0	3	0	0	0
AF5426-3	3	7	2	2	3	5	0	0	0	0	4	0	3	0	0	0
MSR061-1	6	6	6	2	5	5	0	0	1	0	0	0	1	0	0	0
Norkotah Russet	5	5	3	4	6	5	0	0	2	0	1	0	1	0	0	0
Caribou Russet	4	5	3	4	6	5	0	5	1	0	0	0	3	0	0	0
CO05175-1RU	3	6	4	4	7	4	2	0	0	0	0	2	2	0	0	0

Variety/Line	Tuber Characteristics[1]						Internal Defects[2]		External Defects[3]							
	TA	C	TX	Sh	TED	TCS	HH	IB	R	H	Gr	K	G	Sc	Sp	T
A08422-2VR	5	5	3	4	6	5	0	0	2	0	0	1	2	0	0	0
W9133-1Rus	5	6	4	4	6	5	0	0	1	0	0	0	2	0	0	0
W9433-1Rus	4	6	6	4	7	5	0	0	2	0	0	0	4	0	0	0
A07088-6	4	6	1	4	6	4	0	0	2	0	1	2	1	0	0	0
Dione	3	6	1	4	6	4	6	0	1	0	0	2	2	0	0	1

[1]Tuber Characteristics: TA = tuber appearance: 1 = very poor, 5= fair, 9 = excellent.
C = skin color: 1 = purple, 2 = red, 3 = pink, 4 = dark brown, 5 = brown, 6 = tan, 7 = buff, 8 = white, 9 = cream.
TX = skin texture: 1 = partial russet, 2 = heavy russet, 3 = mod. russet, 4 = light russet, 5 = netted, 6 = slight net, 7 = mod. smooth, 8 = smooth, 9 = very smooth.
Sh = tuber shape: 1 = round, 2 = mostly round, 3 = round-oblong, 4 = mostly oblong, 5 = oblong, 6 = oblong-long, 7 = mostly long, 8 = long, 9 = cylindrical.
TED = tuber eye depth: 1 = very deep, 5 = medium, 9 = very shallow. TCS = tuber cross section: 1 = very flat, 5 = intermediate, 9 = very round.

[2]Internal Defects: HH = hollow heart, IB = internal browning. Total number observed out of 10 tubers. 0 = not observed.

[3]External Defects: R = Rhizoctonia, H = hairline cracks, Gr = growth cracks, K = knobs, G = sunburn, Sc = scab, Sp = sprouts, T = secondary tubers.
Scale = 0-4, with 0 = not observed, 1 = slight to 4 = very severe.

Table 5. Total yield, greater than 1 7/8" yield, percent of standard, size distribution, percent pickouts, specific gravity and vine maturity for round white potato evaluation trial in Plant Pathology Farm, Rock Springs, 2016

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]					Specific	Vine
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5	%PO[4]	Gravity	Maturity
Atlantic	332	301	91	100	18	43	29	0	7	1.089	ML
Katahdin	356	302	85	100	14	49	22	0	13	1.074	L
Snowden	383	363	95	121	35	52	8	0	1	1.088	ML
Superior	336	270	82	90	14	52	15	2	17	1.072	M
Yukon Gold[yf]	335	271	81	90	8	39	32	2	18	1.081	ML
AF4138-8	438	394	90	131	31	49	10	0	7	1.065	ML
AF4552-5	395	370	94	123	33	49	11	0	2	1.074	ME
AF4648-2	366	290	80	96	28	43	8	0	14	1.090	L
AF5040-8	368	337	91	112	35	50	6	0	4	1.090	M
AF5280-5	339	303	89	101	27	52	9	0	7	1.062	M
B3005-7	375	301	80	100	62	18	0	0	6	1.088	ME
BNC364-1	315	285	90	95	45	40	5	0	4	1.081	M
NY154	423	367	87	122	15	51	20	0	10	1.089	ML
NY157	324	286	89	95	33	49	7	0	6	1.084	ML
Norwis[yf]	258	246	95	82	13	59	24	0	1	1.067	ML
AF4157-6	313	282	90	94	41	49	0	0	4	1.083	ME
AF5225-1	512	461	90	153	20	50	20	0	6	1.078	L
AF5426-3	315	201	58	67	9	41	9	0	41	1.081	ML
AF5429-3	453	354	78	117	16	45	17	0	20	1.084	ML
AF5432-5	437	382	87	127	24	47	17	0	7	1.081	ML
WAF10131-11	433	406	94	135	23	55	16	0	4	1.086	ML
AF5484-3	362	330	91	110	20	59	12	0	7	1.093	ML
AF5563-5	297	270	91	90	16	52	23	0	8	1.077	ME
AF5568-6	312	302	97	100	20	64	12	0	1	1.077	E
BNC182-5	476	445	94	148	23	51	20	0	2	1.094	M
B2869-28	420	367	87	122	40	44	2	0	5	1.077	M
B2904-2	350	330	94	110	13	64	17	0	3	1.091	L
BNC266-6	468	412	88	137	34	47	6	0	8	1.090	L
NCO349-3	375	319	85	106	43	38	4	0	5	1.087	M

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]					Specific	Vine
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5	%PO[4]	Gravity	Maturity
BNC369-4	423	394	93	131	24	56	12	0	5	1.084	ML
NY 141	431	368	86	122	26	50	9	0	10	1.077	M
NY 149[yf]	375	319	85	106	55	30	1	0	6	1.075	ML
NY 151 (G73-1)	467	385	83	128	16	45	21	2	12	1.067	ML
L30-5[yf]	449	313	70	104	56	14	0	0	7	1.079	ML
NY 152 (H15-5)	378	322	85	107	50	32	4	0	7	1.086	ML
Reba	381	336	88	112	20	49	18	0	10	1.075	ML
MSR127-2	298	258	87	86	12	42	33	0	10	1.088	ML
MST252-1Y[yf]	254	194	77	64	28	41	9	0	18	1.071	E
MSV383-B	163	118	72	39	25	44	3	0	25	1.086	E
MSW509-5	388	326	84	108	38	40	6	0	8	1.085	ML
MSU383-A	258	235	91	78	32	53	6	0	5	1.057	M
MSV179-1	292	258	88	86	14	29	43	3	9	1.067	ML
MSR061-1	341	311	91	103	19	52	17	2	7	1.083	ML
CO02024-9W	458	371	81	123	45	36	0	0	10	1.088	ML
ACO1151-5W	368	254	68	84	45	23	0	0	9	1.085	ML
W6822-3	409	346	85	115	37	45	3	0	10	1.089	M
W9576-11Y[yf]	384	317	83	105	39	33	10	0	9	1.061	ME
W8822-1[yf]	387	329	85	109	33	44	7	0	8	1.091	L
A10419-3Yadg[yf]	396	205	52	68	37	15	0	0	29	1.087	VL
A06336-2Y[yf]	418	244	58	81	41	16	1	0	22	1.071	ML
A06336-5Y[yf]	411	227	55	75	46	9	0	0	13	1.063	ML
Malou[yf]	479	375	78	125	44	32	2	0	11	1.065	ML
Connect[yf]	472	317	67	105	26	33	8	0	27	1.077	VL
VC1002-3W/Y[yf]	390	310	80	103	49	27	4	0	10	1.079	ML
Non-rep*											
Atlantic*	352	305	87	100	21	46	20	0	9	1.089	ML
AF5540-2*	225	159	71	52	46	25	0	0	8	1.073	E
AF5558-13*	390	359	92	118	37	47	8	0	2	1.078	ME
AF5584-1*	340	318	93	104	24	55	14	0	0	1.082	M
AF5585-2*	393	342	87	112	19	42	18	8	10	1.085	M
WAF10629-5*	301	293	98	96	44	49	5	0	0	1.074	M
WAF10636-1*	282	249	89	82	12	65	12	0	10	1.071	ME

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]					Specific	Vine
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5	%PO[4]	Gravity	Maturity
WAF10636-3*	307	274	89	90	55	34	0	0	4	1.083	ME
COAF10055-6*	268	236	88	77	39	49	0	0	10	1.076	M
AF5615-1*	384	363	95	119	38	56	0	0	2	1.078	M
AF5648-5*	442	413	93	135	49	38	7	0	0	1.076	ME
AF5658-6* yf	385	312	81	102	57	24	0	0	12	1.076	M
AF5677-4*	392	350	89	115	47	36	6	0	5	1.089	ML
WAF12080-3*	361	273	76	90	24	44	8	0	21	1.087	L
WAF12099-6*	454	345	76	113	20	47	9	0	19	1.073	L
NDAF113371CAB-2*	483	355	74	116	42	25	6	0	13	1.084	ML
NDAF113394CAB-2*	338	269	80	88	54	25	0	0	8	1.094	M
NDAF113490C-6*	336	301	90	99	34	49	7	0	7	1.084	M
NDAF113491C-6*	365	324	89	106	27	48	14	0	8	1.085	M
B3103-4* yf	331	270	81	88	28	51	3	0	10	1.070	E
BNC426-2*	384	306	80	100	32	39	8	0	8	1.098	ML
BNC468-1*	371	315	85	103	54	29	2	0	0	1.084	L
BNC469-9*	473	398	84	131	46	30	8	0	7	1.089	L
BNC469-11*	460	345	75	113	39	34	2	0	8	1.079	ML
BNC470-13*	406	357	88	117	55	33	0	0	5	1.088	ML
BNC470-16*	398	387	97	127	6	43	48	0	2	1.080	ML
B3148-12* yf	320	292	91	96	25	67	0	0	4	1.077	E
B3148-22* yf	315	295	94	97	19	70	4	0	2	1.067	M
B3156-2* yf	311	245	79	80	57	22	0	0	4	1.080	E
B3156-10*	478	387	81	127	45	36	0	0	9	1.091	ML
B3156-15* yf	275	221	80	72	47	34	0	0	8	1.067	M
B3168-3*	404	338	84	111	59	20	5	0	0	1.079	M
B3175-8* yf	390	309	79	101	42	29	9	0	12	1.093	ML
B3175-15*	432	351	81	115	37	36	8	0	13	1.086	ML
B3176-1*	371	267	72	87	25	40	7	0	22	1.090	L
B3177-9*	440	302	69	99	32	37	0	0	25	1.070	ML
B3195-8*	378	354	94	116	55	39	0	0	1	1.073	ME
B3215-17*	295	267	90	87	32	40	18	0	5	1.065	E
B3222-2*	372	243	65	80	49	17	0	0	17	1.092	ML

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]					Specific	Vine
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5	%PO[4]	Gravity	Maturity
BNC538-3*	391	348	89	114	36	48	6	0	3	1.079	ML
BNC539-1*	319	287	90	94	43	44	3	0	7	1.086	M
BNC543-2*	493	467	95	153	28	51	16	0	1	1.084	ML
BD982-15*	285	123	43	40	43	0	0	0	11	1.099	M
LSD	75	67	12		10	14	10	2	11		

[1]Yield Total = all yield including pickouts. Yield >1 7/8" = categories 2, 3, 4 and 5 excluding pickouts.

[2]Percentage of the standard, Atlantic, for >1 7/8" yield.

[3]Percentage of total yield according to size class. 2=1.875-2.5 in., 3=2.5-3.25 in., 4=3.25-4.0 in., 5=>4.0 in.

[4]Percentage of total that are pickouts.

Planted 8-in. apart with 15 seed pieces per 10-ft plot. Yellow flesh varieties are indicated with [yf].
Replicated trials are the average of 3 replicates except for those lines with * which were non-replicated.
LSD indicates least significant difference ($P = 0.05$), calculated for replicated varieties.

Table 6. Tuber characteristics, internal and external defects for round white potato evaluation trial in Plant Pathology Farm, Rock Springs, 2016

Variety/Line	Tuber Characteristics[1]						Internal Defects[2]		External Defects[3]							
	TA	C	TX	Sh	TED	TCS	HH	IB	R	H	Gr	K	G	Sc	Sp	T
Atlantic	5	7	5	2	4	5	1	1	2	0	0	0	1	0	0	0
Katahdin	4	8	7	3	5	4	0	0	2	0	0	0	1	1	0	0
Snowden	4	6	5	2	4	6	1	0	2	0	0	0	1	0	0	0
Superior	4	7	6	3	4	4	0	1	2	0	0	0	1	0	0	0
Yukon Gold	4	7	7	2	5	4	2	0	1	0	0	0	1	0	0	0
AF4138-8	5	7	6	2	5	6	0	0	2	0	0	0	1	0	0	0
AF4552-5	4	7	5	2	6	6	0	0	2	0	0	0	1	0	0	0
AF4648-2	4	8	7	2	5	4	2	0	1	0	0	0	1	0	0	1
AF5040-8	4	7	7	2	4	5	0	0	1	0	0	0	1	0	0	0
AF5280-5	4	7	6	3	6	5	0	1	1	0	0	0	1	0	0	0
B3005-7	5	7	6	2	5	5	2	0	3	0	0	0	1	0	0	0
BNC364-1	4	7	6	3	6	5	1	0	1	0	0	0	1	0	0	0
NY154	4	7	6	2	5	5	3	0	3	0	0	0	1	0	0	0
NY157	4	7	6	3	6	6	0	0	1	0	0	0	1	0	0	0
Norwis	4	7	7	2	3	5	0	0	2	0	0	0	0	0	0	0
AF4157-6	5	7	5	2	6	5	0	0	1	0	0	0	0	0	0	1
AF5225-1	4	6	6	3	4	4	0	2	1	0	0	0	1	0	0	0
AF5426-3	4	6	6	3	5	5	0	0	1	0	4	0	1	0	0	0
AF5429-3	4	7	7	3	5	6	2	0	1	0	0	0	2	1	0	0
AF5432-5	4	6	6	2	5	5	0	0	2	0	0	0	1	0	0	0
WAF10131-11	5	7	6	2	6	5	0	0	2	0	0	0	1	0	0	0
AF5484-3	4	7	7	2	6	6	0	0	2	0	0	0	1	0	0	0
AF5563-5	4	7	7	2	4	5	0	0	2	0	0	0	1	1	0	0
AF5568-6	4	7	7	2	3	5	0	0	2	0	0	0	0	0	0	0
BNC182-5	5	6	5	2	4	6	0	0	1	0	0	0	0	0	0	0
B2869-28	5	7	6	2	4	6	0	0	1	0	0	0	0	1	0	0
B2904-2	4	6	5	2	4	5	1	0	1	0	0	0	0	0	0	0
BNC266-6	4	7	6	2	4	5	0	0	2	0	0	0	1	0	0	1
NCO349-3	5	6	5	2	4	6	0	0	1	0	0	0	1	0	0	0

Variety/Line	Tuber Characteristics[1]						Internal Defects[2]		External Defects[3]							
	TA	C	TX	Sh	TED	TCS	HH	IB	R	H	Gr	K	G	Sc	Sp	T
BNC369-4	4	6	5	3	5	5	2	0	1	0	0	0	1	0	0	0
NY 141	4	7	7	3	5	5	0	0	1	0	0	0	1	0	0	0
NY 149	4	6	6	2	6	5	0	0	1	0	0	0	0	0	0	0
NY 151 (G73-1)	5	7	7	2	4	6	0	0	1	0	1	0	2	0	0	0
L30-5	3	7	7	3	6	4	0	0	1	0	0	0	0	0	1	2
NY 152 (H15-5)	5	7	6	2	5	6	0	0	1	0	0	0	1	0	0	0
Reba	5	7	7	3	4	6	2	0	1	0	0	0	1	1	0	0
MSR127-2	4	6	6	2	4	5	0	0	3	0	0	0	0	0	0	0
MST252-1Y	5	7	7	2	5	5	0	0	2	0	1	0	0	0	0	0
MSV383-B	5	5	5	2	5	6	0	0	1	0	2	0	0	0	0	0
MSW509-5	4	5	5	2	4	5	0	2	1	0	0	0	1	0	0	0
MSU383-A	5	6	6	3	5	5	0	0	1	0	0	0	0	0	0	0
MSV179-1	5	7	7	2	4	6	0	1	1	0	0	0	1	0	0	0
MSR061-1	6	6	5	2	5	6	0	0	1	0	0	0	1	1	0	0
CO02024-9W	4	7	7	3	5	4	0	0	2	0	0	0	2	0	0	0
ACO1151-5W	5	7	7	2	5	6	0	5	1	0	1	1	1	0	0	0
W6822-3	4	6	6	3	5	4	0	1	1	0	0	0	1	1	0	0
W9576-11Y	4	6	6	4	5	5	0	0	1	0	0	0	1	0	0	0
W8822-1	4	5	5	2	5	5	0	0	0	0	0	0	1	1	0	0
A10419-3Yadg	3	7	6	3	6	5	0	0	1	0	0	0	1	0	0	2
A06336-2Y	3	7	8	3	6	5	0	0	0	0	0	0	1	0	0	2
A06336-5Y	4	7	8	2	6	5	0	0	1	0	0	0	0	0	0	2
Malou	5	7	7	2	4	5	0	0	0	0	0	0	1	0	0	1
Connect	4	6	7	3	6	4	0	0	1	0	0	0	1	0	0	0
VC1002-3W/Y	4	6	5	2	6	5	0	0	1	0	1	0	0	0	0	0
Non-rep*																
Atlantic*	5	6	5	2	4	5	0	1	2	0	0	0	1	0	0	0
AF5540-2*	4	8	7	2	6	6	0	0	1	0	0	0	0	0	0	0
AF5558-13*	5	6	5	2	6	5	0	0	1	0	0	0	0	0	0	0
AF5584-1*	4	7	6	3	5	5	0	0	3	0	0	0	0	0	0	0
AF5585-2*	4	7	7	2	4	5	0	0	0	0	0	0	1	0	0	0
WAF10629-5*	7	7	6	3	6	6	0	0	1	0	0	0	0	0	0	0
WAF10636-1*	5	6	5	2	4	5	0	0	1	0	0	0	0	0	0	0

Variety/Line	Tuber Characteristics[1]						Internal Defects[2]		External Defects[3]							
	TA	C	TX	Sh	TED	TCS	HH	IB	R	H	Gr	K	G	Sc	Sp	T
WAF10636-3*	4	6	6	2	5	5	0	0	1	0	0	0	1	0	0	0
COAF10055-6*	5	6	6	2	4	5	0	0	1	0	0	0	1	0	0	0
AF5615-1*	4	7	7	3	6	5	0	0	2	0	0	0	0	0	0	0
AF5648-5*	4	7	6	2	6	6	0	0	0	0	0	0	0	0	0	0
AF5658-6*	4	7	6	3	7	5	0	0	1	0	0	0	1	0	0	0
AF5677-4*	5	7	6	2	4	5	0	0	0	0	0	0	0	0	0	0
WAF12080-3*	4	7	6	2	5	5	0	0	1	0	0	0	1	0	0	0
WAF12099-6*	3	7	6	3	3	5	0	0	3	0	0	0	1	0	0	0
NDAF113371CAB-2*	3	7	7	3	4	5	0	0	1	0	1	0	0	0	0	0
NDAF113394CAB-2*	5	7	7	2	6	6	0	0	1	0	0	0	1	0	0	0
NDAF113490C-6*	4	7	7	2	6	6	0	0	1	0	0	0	0	0	0	0
NDAF113491C-6*	5	6	5	2	6	5	0	0	1	0	0	0	1	0	0	0
B3103-4*	4	7	7	2	4	5	0	0	1	0	1	0	0	0	0	0
BNC426-2*	4	6	7	2	6	6	0	0	1	0	0	0	1	0	0	0
BNC468-1*	5	6	5	2	6	5	0	0	1	0	0	0	0	0	0	0
BNC469-9*	3	6	5	2	6	6	0	0	3	0	0	0	1	0	0	0
BNC469-11*	4	7	7	2	4	5	0	0	1	0	0	0	1	0	0	0
BNC470-13*	4	6	6	2	4	5	0	0	0	0	0	0	0	0	0	0
BNC470-16*	5	5	5	2	4	6	0	1	2	0	0	0	0	0	0	0
B3148-12*	5	7	7	2	6	5	0	0	1	0	0	0	0	0	0	0
B3148-22*	6	7	6	2	6	5	0	0	1	0	0	0	0	0	0	0
B3156-2*	5	7	7	2	5	5	0	0	1	0	0	0	0	0	0	0
B3156-10*	5	7	6	3	5	5	0	0	1	0	0	0	1	0	0	0
B3156-15*	5	7	7	2	6	5	0	0	2	0	0	0	0	0	0	0
B3168-3*	5	7	6	2	6	5	0	0	0	0	0	0	0	0	0	0
B3175-8*	4	7	7	3	5	4	0	0	1	0	0	0	1	0	0	0
B3175-15*	4	7	7	3	6	5	0	0	2	0	1	0	1	0	0	0
B3176-1*	4	6	6	2	5	5	2	0	1	0	0	0	2	0	0	0
B3177-9*	3	6	6	3	6	5	0	0	2	0	1	0	1	0	0	0
B3195-8*	5	6	5	2	5	5	0	0	0	0	0	0	0	0	0	0
B3215-17*	6	6	5	2	6	6	0	0	0	0	0	0	0	0	0	0
B3222-2*	4	7	7	2	6	5	0	0	1	0	0	0	1	0	0	0

Variety/Line	Tuber Characteristics[1]						Internal Defects[2]		External Defects[3]							
	TA	C	TX	Sh	TED	TCS	HH	IB	R	H	Gr	K	G	Sc	Sp	T
BNC538-3*	4	5	5	2	6	6	0	0	1	0	0	0	1	0	0	0
BNC539-1*	6	7	6	2	6	6	0	0	1	0	0	0	0	0	0	0
BNC543-2*	5	6	6	2	6	5	1	0	1	0	0	0	0	0	0	0
BD982-15*	4	6	6	2	7	6	0	0	1	0	0	0	0	0	1	0

[1]Tuber Characteristics: TA = tuber appearance: 1 = very poor, 5= fair, 9 = excellent.
C = skin color: 1 = purple, 2 = red, 3 = pink, 4 = dark brown, 5 = brown, 6 = tan, 7 = buff, 8 = white, 9 = cream.
TX = skin texture: 1 = partial russet, 2 = heavy russet, 3 = mod. russet, 4 = light russet, 5 = netted, 6 = slight net, 7 = mod. smooth, 8 = smooth, 9 = very smooth.
Sh = tuber shape: 1 = round, 2 = mostly round, 3 = round-oblong, 4 = mostly oblong, 5 = oblong, 6 = oblong-long, 7 = mostly long, 8 = long, 9 = cylindrical.
TED = tuber eye depth: 1 = very deep, 5 = medium, 9 = very shallow. TCS = tuber cross section: 1 = very flat, 5 = intermediate, 9 = very round.

[2]Internal Defects: HH = hollow heart, IB = internal browning. Total number observed out of 12 tubers for replicated trials and total number out of 4 for non replicated trials (marked with *). 0 = not observed.

[3]External Defects: R = Rhizoctonia, H = hairline cracks, Gr = growth cracks, K = knobs, G = sunburn, Sc = scab, Sp = sprouts, T = secondary tubers. Scale = 0-4, with 0 = not observed, 1 = slight to 4 = very severe.

Table 7. Total yield, greater than 1 7/8" yield, percent of standard, size distribution, percent pickouts, specific gravity and vine maturity for red or purple skinned potato evaluation trial in Plant Pathology Farm, Rock Springs, 2016

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific	Vine
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5		Gravity	Maturity
Chieftain	441	401	91	100	18	61	12	0	7	1.072	M
Dark Red Norland	366	329	90	82	19	57	15	0	6	1.058	E
AF4831-2	491	424	86	106	44	32	11	0	4	1.063	ME
AF4985-1	436	361	83	90	30	48	5	0	14	1.064	ME
AF5245-1	387	344	89	86	44	39	6	0	2	1.079	M
BNC244-10[pur]	361	154	43	38	38	5	0	0	22	1.088	ML
CO00291-5R	248	216	87	54	33	46	9	0	7	1.069	ML
CO098012-5R	396	324	82	81	57	25	0	0	6	1.075	ML
Peter Wilcox[yf]	367	336	92	84	38	48	5	0	2	1.070	M
BNC201-1[yf]	353	307	88	76	33	50	5	0	7	1.080	M
NY159 (K100-3)	320	252	78	63	42	30	6	0	15	1.060	M
Colorado Rose	278	213	77	53	20	41	16	0	19	1.077	ME
W8405-1R	390	289	73	72	51	21	2	0	11	1.067	ML
W8890-1R	376	309	82	77	44	30	8	0	9	1.066	M
A05180-3PY[yf]	476	358	75	89	43	29	3	0	13	1.073	L
Fenway Red	585	416	71	104	35	30	6	0	18	1.079	ML
Elmo	538	388	72	97	27	35	10	0	24	1.071	M
Canberra[yf]	305	221	72	55	47	24	1	0	8	1.072	ML
Non-Rep*											
Chieftain*	386	366	95	100	30	49	16	0	3	1.072	M
NDAF102691B-7*	437	407	93	111	44	38	11	0	1	1.082	ML
NDAF102696C-1*	335	293	88	80	52	36	0	0	4	1.066	ME
NDAF102696C-5*	423	335	79	92	68	11	0	0	1	1.077	ML
NDAF113431C-2*	490	407	83	111	31	42	10	0	11	1.065	ML
AAF10577-1*	379	304	80	83	27	54	0	0	10	1.067	ML
NDAF113483B-6*	377	279	74	76	43	24	6	0	15	1.064	ML
NDAF113484B-1*	315	287	91	79	52	39	0	0	0	1.064	E
BNC481-6*	262	129	49	35	49	0	0	0	0	1.060	E
BNC483-2* [yf]	315	244	77	67	74	3	0	0	4	1.072	ME
BNC484-3* [yf]	299	269	90	73	60	30	0	0	1	1.075	ME

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific	Vine
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5		Gravity	Maturity
B3187-11*	253	196	78	54	61	17	0	0	1	1.072	ME
B3211-1*	413	287	69	78	43	26	0	0	20	1.071	M
BNC555-4*	453	383	85	105	55	24	6	0	0	1.071	L
LSD	80	74	9		11	13	8	0	8		

[1]Yield Total = all yield including pickouts. Yield >1 7/8" = categories 2, 3, 4 and 5 excluding pickouts.

[2]Percentage of the standard, Chieftain, for >1 7/8" yield.

[3]Percentage of total yield according to size class. 2=1.875-2.5 in., 3=2.5-3.25 in., 4=3.25-4.0 in., 5=>4.0 in.

[4]Percentage of total that are pickouts.

Replicated trials are the average of 3 replicates except for those lines with * which were non-replicated.

LSD indicates least significant difference ($P = 0.05$), calculated for replicated varieties.

Varieties with colored flesh are indicated by ^{yf}for yellow, ^{pur} for purple.

Plots consisted of 10-ft rows with 15 seed pieces spaced 8-in. apart.

Table 8. Tuber characteristics, internal and external defects for red skinned potato evaluation trial in Plant Pathology Farm, Rock Springs, 2016

Variety/Line	Tuber Characteristics[1]						Internal Defects[2]		External Defects[3]							
	TA	C	TX	Sh	TED	TCS	HH	IB	R	H	Gr	K	G	Sc	Sp	T
Chieftain	5	2	7	3	5	5	0	3	2	0	0	0	0	0	0	1
Dark Red Norland	5	2	7	3	5	5	0	0	1	0	0	0	0	0	0	0
AF4831-2	5	2	8	3	6	5	0	0	2	0	0	0	1	0	0	0
AF4985-1	4	2	7	3	5	5	0	0	2	0	0	0	2	0	0	0
AF5245-1	5	1	7	2	6	4	0	0	1	0	0	0	0	0	0	0
BNC244-10	4	1	7	2	6	5	0	0	0	0	0	0	0	0	0	2
CO00291-5R	5	2	8	2	6	5	0	0	1	0	0	0	0	0	0	0
CO098012-5R	5	2	8	2	6	5	0	0	2	0	1	0	1	0	0	0
Peter Wilcox	4	1	7	3	5	5	0	0	2	0	1	0	0	0	0	0
BNC201-1	4	2	7	2	5	5	0	0	1	0	1	0	0	0	0	0
NY159 (K100-3)	5	2	8	2	6	6	0	0	1	0	1	0	0	0	0	1
Colorado Rose	5	2	8	3	6	5	0	0	1	0	0	0	1	0	0	0
W8405-1R	4	2	8	3	6	5	0	1	1	0	0	0	1	1	0	0
W8890-1R	4	2	7	2	5	5	0	0	0	0	0	0	0	1	0	0
A05180-3PY	4	1	7	2	5	6	0	0	1	0	2	1	1	0	0	0
Fenway Red	4	2	7	2	5	5	0	0	1	0	0	0	1	0	0	1
Elmo	3	2	7	3	4	5	0	0	1	0	0	0	1	0	0	1
Canberra	4	3	6	3	7	5	0	0	1	0	0	0	1	0	0	0
Non-Rep*																
Chieftain*	5	2	7	3	5	5	0	0	2	0	0	0	0	0	0	0
NDAF102691B-7*	5	2	8	3	4	5	0	0	1	0	0	0	0	0	0	0
NDAF102696C-1*	4	2	7	2	3	5	0	0	1	0	0	0	0	0	0	0
NDAF102696C-5*	4	2	8	2	5	6	0	0	3	0	0	0	0	0	0	0
NDAF113431C-2*	4	2	7	2	3	4	0	0	1	0	1	0	1	0	0	0
AAF10577-1*	5	2	7	3	5	5	0	0	1	0	0	0	1	0	0	0
NDAF113483B-6*	4	2	8	3	4	5	0	0	1	0	0	0	1	0	0	0
NDAF113484B-1*	4	2	7	2	5	5	0	0	1	0	0	0	0	0	0	0
BNC481-6*	6	1	7	2	6	6	0	0	0	0	0	0	0	0	0	0
BNC483-2*	6	2	7	2	6	5	0	0	1	0	0	0	0	0	0	0
BNC484-3*	5	2	7	2	6	5	0	0	2	0	0	0	0	0	0	0

Variety/Line	Tuber Characteristics[1]						Internal Defects[2]		External Defects[3]							
	TA	C	TX	Sh	TED	TCS	HH	IB	R	H	Gr	K	G	Sc	Sp	T
B3187-11*	7	2	6	2	6	5	0	0	1	0	0	0	0	0	0	0
B3211-1*	5	1	7	3	5	5	0	0	1	0	0	0	0	0	0	0
BNC555-4*	4	1	8	3	7	5	0	0	0	0	0	0	0	0	0	0

[1]Tuber Characteristics: TA = tuber appearance: 1 = very poor, 5= fair, 9 = excellent.
C = skin color: 1 = purple, 2 = red, 3 = pink, 4 = dark brown, 5 = brown, 6 = tan, 7 = buff, 8 = white, 9 = cream.
TX = skin texture: 1 = partial russet, 2 = heavy russet, 3 = mod. russet, 4 = light russet, 5 = netted, 6 = slight net, 7 = mod. smooth, 8 = smooth, 9 = very smooth.
Sh = tuber shape: 1 = round, 2 = mostly round, 3 = round-oblong, 4 = mostly oblong, 5 = oblong, 6 = oblong-long, 7 = mostly long, 8 = long, 9 = cylindrical.
TED = tuber eye depth: 1 = very deep, 5 = medium, 9 = very shallow. TCS = tuber cross section: 1 = very flat, 5 = intermediate, 9 = very round.

[2]Internal Defects: HH = hollow heart, IB = internal browning. Total number observed out of 12 tubers for replicated trials and total number out of 4 for non replicated trials (marked with *). 0 = not observed.

[3]External Defects: R = Rhizoctonia, H = hairline cracks, Gr = growth cracks, K = knobs, G = sunburn, Sc = scab, Sp = sprouts, T = secondary tubers. Scale = 0-4, with 0 = not observed, 1 = slight to 4 = very severe.

Table 9. Total yield, greater than 1 7/8" yield, percent of standard, size distribution, percent pickouts, specific gravity and vine maturity for russet skinned or white potato evaluation trial in Plant Pathology Farm, Rock Springs, 2016

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific	Vine
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5		Gravity	Maturity
Russet Burbank	526	145	28	45	11	11	7	0	66	1.076	ML
Russet Norkotah	441	324	73	100	4	27	35	6	24	1.070	ME
Teton Russet	486	251	52	78	13	20	18	1	45	1.070	ML
Caribou Russet	477	338	71	105	9	28	29	4	29	1.078	ML
AF4296-3	516	277	53	86	10	23	15	5	39	1.087	ML
AF4615-5	378	267	70	82	20	30	21	0	25	1.091	L
AF4953-6	427	204	49	63	22	14	13	0	47	1.086	L
ND8068-5Russ	274	199	73	61	16	42	14	0	24	1.078	E
AF4113-2	379	235	63	73	26	27	9	0	27	1.072	M
AF5071-2	490	300	61	93	13	29	15	4	36	1.092	L
AF5091-8	447	213	48	66	6	20	20	1	50	1.066	ML
AF5406-7	433	216	48	67	11	15	18	4	49	1.079	VL
AF5468-5	458	286	62	88	16	27	20	0	28	1.079	ML
AF5406-10	312	189	60	58	15	34	9	2	35	1.077	ME
AF5407-13	496	343	69	106	18	38	13	0	26	1.077	ML
CO05175-1RU	282	101	35	31	11	19	6	0	59	1.082	L
CO98067-7RU	528	330	62	102	16	27	16	3	33	1.066	M
W9133-1rus	501	348	70	108	18	26	24	1	26	1.066	M
W9433-1rus	476	319	67	99	8	31	25	3	30	1.088	L
A08422-2VR	503	398	79	123	5	25	40	9	19	1.076	ML
A06021-1T	392	257	66	79	13	30	23	0	31	1.081	M
A06030-23	272	184	67	57	25	35	8	0	23	1.085	ML
A061070-3CSR	464	258	56	80	18	23	15	0	36	1.087	L
A08009-2TE	371	160	44	50	14	19	10	1	50	1.085	L
A07088-6	344	221	63	68	14	31	18	0	32	1.084	L
A071012-4BF	414	162	39	50	5	15	18	2	56	1.096	VL
Dione[yf]	533	273	51	84	12	22	18	0	47	1.081	L
Svenja[yf]	349	180	53	56	17	23	12	0	41	1.090	ML

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific	Vine
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5		Gravity	Maturity
Barcelona[yf]	601	364	61	112	17	33	11	0	34	1.062	L
Maris Piper	396	169	43	52	21	18	4	0	50	1.075	L
Atlantic	400	336	85	104	14	47	21	3	13	1.089	ML
Non-Rep*											
Russet Norkotah*	360	245	68	100	8	32	29	0	29	1.070	ME
AF5312-1*	467	199	43	81	17	20	6	0	49	1.071	M
AF5494-3*	340	159	47	65	7	22	18	0	49	1.071	M
AF5521-1*	340	212	62	86	2	38	22	0	38	1.090	ML
AF5522-5*	296	159	54	65	11	24	20	0	43	1.077	ML
AF5525-2*	413	207	50	84	7	17	26	0	49	1.084	ML
AAF10237-4*	421	135	32	55	13	19	0	0	62	1.072	?
WAF10612-1*	472	249	53	101	24	21	8	0	42	1.080	?
LSD	86	76	12		9	10	10	5	13		

[1]Yield Total = all yield including pickouts. Yield >1 7/8" = categories 2, 3, 4 and 5 excluding pickouts.

[2]Percentage of the standard, Russet Norkotah for >1 7/8" yield.

[3]Percentage of total yield according to size class: 2=1.875-2.5 in., 3=2.5-3.25 in., 4=3.25-4.0 in., 5=>4.0 in.

[4]Percentage of total that are pickouts.

Replicated trials are the average of 3 replicates except for those lines with * which were non-replicated.

LSD indicates least significant difference ($P = 0.05$), calculated for replicated varieties.

Plots consisted of 10-ft rows with 12 seed pieces spaced 10-in. apart. Yellow flesh varieties are indicated with [yf].

Table 10. Tuber characteristics, internal and external defects for russet skinned or white potato evaluation trial in Plant Pathology Farm, Rock Springs, 2016

Variety/Line	Tuber Characteristics[1]						Internal Defects[2]		External Defects[3]							
	TA	C	TX	Sh	TED	TCS	HH	IB	R	H	Gr	K	G	Sc	Sp	T
Russet Burbank	3	5	3	4	7	5	3	0	2	0	2	2	1	0	0	2
Russet Norkotah	4	5	3	5	6	5	2	1	1	0	0	1	1	0	0	0
Teton Russet	4	6	4	4	6	5	7	0	1	0	3	1	1	0	0	0
Caribou Russet	3	5	3	4	6	5	1	0	2	0	1	1	1	1	0	0
AF4296-3	3	6	6	5	6	5	5	0	2	0	0	2	2	0	0	0
AF4615-5	3	6	6	4	7	5	3	0	3	0	1	1	2	0	0	0
AF4953-6	3	6	4	5	6	4	7	0	2	0	0	2	1	0	0	0
ND8068-5Russ	4	6	5	4	6	5	1	0	1	0	1	0	0	0	0	0
AF4113-2	3	7	7	4	7	5	0	0	1	0	2	0	1	0	0	0
AF5071-2	3	6	3	4	6	5	7	0	1	0	2	1	1	0	0	0
AF5091-8	3	6	4	4	7	5	0	0	1	0	0	1	2	0	0	0
AF5406-7	3	6	4	5	7	5	0	0	2	0	1	2	1	0	0	0
AF5468-5	3	6	4	4	7	5	2	0	1	0	0	0	1	0	0	0
AF5406-10	4	6	6	5	5	5	0	0	2	0	1	0	1	0	0	0
AF5407-13	4	6	4	4	7	5	2	0	2	0	0	0	1	0	0	0
CO05175-1RU	4	6	4	4	7	5	1	0	2	0	0	1	1	0	0	0
CO98067-7RU	3	5	3	5	7	4	0	1	1	0	1	0	1	0	0	0
W9133-1rus	4	6	5	5	6	5	0	0	3	0	0	1	2	0	0	0
W9433-1rus	4	6	6	5	6	5	3	0	1	0	0	0	2	0	0	0
A08422-2VR	4	6	5	5	5	5	7	0	1	0	0	0	2	0	0	0
A06021-1T	3	6	5	5	6	5	4	0	2	0	0	1	1	0	0	0
A06030-23	5	6	4	5	7	5	2	0	2	0	1	1	1	0	0	0
A061070-3CSR	3	6	6	4	7	5	6	0	2	0	0	2	2	0	0	0
A08009-2TE	3	6	4	4	7	5	0	0	1	0	0	1	2	0	0	0
A07088-6	3	6	5	4	7	4	2	0	2	0	1	0	0	0	0	0
A071012-4BF	3	5	3	4	6	5	7	0	1	0	0	1	2	0	0	0
Dione	4	6	4	4	6	4	7	0	1	0	2	0	2	0	0	1
Svenja	4	7	8	3	6	5	0	0	1	0	1	1	1	0	0	0

Variety/Line	Tuber Characteristics[1]						Internal Defects[2]		External Defects[3]							
	TA	C	TX	Sh	TED	TCS	HH	IB	R	H	Gr	K	G	Sc	Sp	T
Barcelona	4	7	7	3	5	5	0	0	3	0	2	0	2	0	0	1
Maris Piper	2	7	7	3	6	4	0	0	4	0	1	2	1	0	0	1
Atlantic	5	6	5	2	4	5	9	1	2	0	0	0	1	0	0	0
Non-Rep*																
Russet Norkotah*	6	5	3	4	6	5	0	0	1	0	0	0	0	0	0	0
AF5312-1*	3	5	3	4	6	4	0	0	1	0	1	0	0	0	0	1
AF5494-3*	3	6	5	4	6	4	0	0	1	0	0	0	1	0	0	0
AF5521-1*	4	5	3	4	6	5	1	0	3	0	0	0	0	0	0	0
AF5522-5*	3	5	3	4	7	5	0	0	1	0	0	0	0	0	0	0
AF5525-2*	4	6	4	4	5	6	2	0	1	0	0	2	1	0	0	0
AAF10237-4*	2	6	4	4	7	4	0	0	1	0	1	2	1	0	0	0
WAF10612-1*	3	5	4	4	7	4	0	0	2	0	0	0	1	2	0	0

[1]Tuber Characteristics: TA = tuber appearance: 1 = very poor, 5= fair, 9 = excellent.
C = skin color: 1 = purple, 2 = red, 3 = pink, 4 = dark brown, 5 = brown, 6 = tan, 7 = buff, 8 = white, 9 = cream.
TX = skin texture: 1 = partial russet, 2 = heavy russet, 3 = mod. russet, 4 = light russet, 5 = netted, 6 = slight net, 7 = mod. smooth, 8 = smooth, 9 = very smooth.
Sh = tuber shape: 1 = round, 2 = mostly round, 3 = round-oblong, 4 = mostly oblong, 5 = oblong, 6 = oblong-long, 7 = mostly long, 8 = long, 9 = cylindrical.
TED = tuber eye depth: 1 = very deep, 5 = medium, 9 = very shallow. TCS = tuber cross section: 1 = very flat, 5 = intermediate, 9 = very round.

[2]Internal Defects: HH = hollow heart, IB = internal browning. Total number observed out of 12 tubers for replicated trials and total number out of 4 for non replicated trials (marked with *). 0 = not observed.

[3]External Defects: R = Rhizoctonia, H = hairline cracks, Gr = growth cracks, K = knobs, G = sunburn, Sc = scab, Sp = sprouts, T = secondary tubers.
Scale = 0-4, with 0 = not observed, 1 = slight to 4 = very severe.

Table 11. Total yield, greater than 1 7/8", percent of standard, size distribution, percent pickouts, specific gravity and vine maturity for NE1231 potato evaluation trial in Plant Pathology Farm, Rock Springs, 2016

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific	Vine	Merit
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5		Gravity	Maturity	Score[5]
Atlantic	326	299	92	100	18	47	27	0	6	1.089	ML	2
Chieftain	418	383	92	128	20	60	12	0	6	1.072	M	2
Dark Red Norland	366	333	91	111	21	57	13	0	5	1.058	E	2
Katahdin	349	295	85	98	16	47	21	2	13	1.074	L	2
Russet Burbank	479	132	28	44	11	11	7	0	66	1.076	ML	4
Russet Norkotah	419	300	71	100	4	27	35	5	26	1.070	ME	2
Snowden	376	353	94	118	36	47	11	0	3	1.088	ML	1
Superior	349	287	84	96	14	50	18	1	15	1.072	M	3
Teton Russet	474	245	52	82	14	21	16	1	44	1.070	ML	3
Yukon Gold[yf]	333	273	82	91	7	39	34	2	17	1.081	ML	2
Caribou Russet	447	324	73	108	11	27	32	3	26	1.078	ML	2
AF4138-8	430	388	90	130	34	47	9	0	7	1.065	ML	1
AF4296-3	499	258	51	86	11	22	13	4	41	1.087	ML	4
AF4552-5	386	354	92	118	30	51	11	0	4	1.074	ME	3
AF4615-5	356	251	70	84	19	32	19	0	25	1.091	L	4
AF4648-2	367	286	78	96	28	41	9	0	16	1.090	L	2
AF4831-2	472	401	85	134	47	30	8	0	4	1.063	ME	1
AF4953-6	405	205	52	68	21	16	15	0	44	1.086	L	4
AF4985-1	427	352	83	118	28	49	6	0	14	1.064	ME	2
AF5040-8	361	325	90	109	39	47	5	0	4	1.090	M	2
AF5245-1	381	337	89	113	42	42	5	0	2	1.079	M	1
AF5280-5	355	310	87	104	28	51	8	0	8	1.062	M	2
B3005-7	350	279	80	93	58	21	0	0	7	1.088	ME	3
BNC244-10[pur]	364	156	43	52	38	4	0	0	22	1.088	ML	4
BNC364-1	317	286	90	96	40	46	4	0	5	1.081	M	3
CO00291-5R	248	218	88	73	34	45	9	0	6	1.069	ML	3

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific	Vine	Merit
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5		Gravity	Maturity	Score[5]
CO098012-5R	392	313	80	104	56	24	0	0	7	1.075	ML	2
ND8068-5Russ	261	197	76	66	25	38	13	0	20	1.078	E	4
NY154	422	361	86	121	16	51	19	0	11	1.089	ML	2
NY157	317	274	87	92	27	51	9	0	8	1.084	ML	3
LSD	71	58	8		11	10	9	3	8			

[1]Yield Total = all yield including pickouts. Yield >1 7/8" = categories 2, 3, 4 and 5 excluding pickouts.

[2]Percentage of the standard, Atlantic, for >1 7/8" yield.

[3]Percentage of total yield according to size class. 2=1.875-2.5 in., 3=2.5-3.25 in., 4=3.25-4.0 in., 5=>4.0 in.

[4]Percentage of total that are pickouts.

[5]Merit score: 1 = outstanding; 2 = keep; 3 = marginal; 4 = drop.

Replicated trials are the average of 4 replicates. LSD indicates least significant difference (*P= 0.05*).

Russets were planted 10-in. apart with 12 seed pieces per 10-ft plot, all other varieties were spaced 8-in. apart with 15 seed pieces per 10-ft plot.

Varieties with colored flesh are indicated by ^{yf} for yellow, ^{pur} for purple.

Table 12. Tuber characteristics, internal and external defects for NE1231 potato evaluation trial in Plant Pathology Farm, Rock Springs, 2016

Variety/Line	Tuber Characteristics[1]						Internal Defects[2]		External Defects[3]							
	TA	C	TX	Sh	TED	TCS	HH	IB	R	H	Gr	K	G	Sc	Sp	T
Atlantic	5	7	5	2	4	5	1	2	2	0	0	0	1	0	0	0
Chieftain	5	2	7	3	5	5	0	3	2	0	0	0	0	0	0	1
Dark Red Norland	5	2	7	3	5	5	0	0	1	0	0	0	0	0	0	0
Katahdin	4	8	7	3	5	4	0	0	2	0	0	0	1	1	0	0
Russet Burbank	2	5	3	4	7	5	3	0	2	0	2	2	1	0	0	2
Russet Norkotah	4	5	3	5	6	5	2	1	1	0	0	1	1	0	0	0
Snowden	4	6	5	2	4	6	1	0	2	0	0	0	1	0	0	0
Superior	4	7	6	3	4	4	0	1	2	0	0	0	1	0	0	0
Teton Russet	4	6	4	4	6	5	9	0	2	0	3	1	1	0	0	0
Yukon Gold	4	7	7	2	5	4	3	0	1	0	0	0	1	0	0	0
Caribou Russet	3	5	3	4	6	5	1	0	2	0	1	1	1	1	0	0
AF4138-8	5	7	6	2	5	6	0	0	2	0	1	0	1	0	0	0
AF4296-3	3	6	6	5	6	5	5	0	2	0	0	2	2	0	0	0
AF4552-5	4	7	5	2	6	6	0	0	2	0	0	0	1	0	0	0
AF4615-5	3	6	6	4	7	5	8	0	2	0	1	1	2	0	0	0
AF4648-2	4	8	7	2	5	4	2	0	1	0	0	0	1	0	0	1
AF4831-2	5	2	8	3	6	5	0	0	2	0	0	0	1	0	0	0
AF4953-6	3	6	4	5	6	4	8	0	1	0	0	2	1	0	0	0
AF4985-1	4	2	7	3	5	5	0	0	2	0	0	0	2	0	0	0
AF5040-8	4	7	7	2	4	5	0	0	1	0	0	0	1	0	0	0
AF5245-1	5	1	7	2	6	4	0	0	1	0	0	0	0	0	0	0
AF5280-5	4	7	6	3	6	5	0	1	1	0	0	0	1	0	0	0
B3005-7	5	7	5	2	5	5	2	0	3	0	0	0	1	0	0	0
BNC244-10	4	1	7	2	6	5	0	0	0	0	0	0	0	0	0	2
BNC364-1	4	7	6	3	6	5	1	0	1	0	0	0	1	0	0	0
CO00291-5R	5	2	8	2	6	5	0	0	1	0	0	0	0	0	0	0

Variety/Line	Tuber Characteristics[1]						Internal Defects[2]		External Defects[3]							
	TA	C	TX	Sh	TED	TCS	HH	IB	R	H	Gr	K	G	Sc	Sp	T
CO098012-5R	5	2	8	2	6	5	0	0	2	0	1	0	1	0	0	0
ND8068-5Russ	4	6	5	4	6	5	1	0	1	0	1	0	0	0	0	0
NY154	4	7	6	2	5	5	4	0	3	0	0	0	1	0	0	0
NY157	4	7	6	3	6	6	0	0	1	0	0	0	1	0	0	0

[1]Tuber Characteristics: TA = tuber appearance: 1 = very poor, 5= fair, 9 = excellent.
C = skin color: 1 = purple, 2 = red, 3 = pink, 4 = dark brown, 5 = brown, 6 = tan, 7 = buff, 8 = white, 9 = cream.
TX = skin texture: 1 = partial russet, 2 = heavy russet, 3 = mod. russet, 4 = light russet, 5 = netted, 6 = slight net, 7 = mod. smooth, 8 = smooth, 9 = very smooth.
SH = tuber shape: 1 = round, 2 = mostly round, 3 = round-oblong, 4 = mostly oblong, 5 = oblong, 6 = oblong-long, 7 = mostly long, 8 = long, 9 = cylindrical.
TED = tuber eye depth: 1 = very deep, 5 = medium, 9 = very shallow. TCS = tuber cross section: 1 = very flat, 5 = intermediate, 9 = very round.

[2]Internal Defects: HH = hollow heart, IB = internal browning. Total number observed out of 16 tubers (4 per replication). 0 = not observed.

[3]External Defects: R = Rhizoctonia, H = hairline cracks, Gr = growth cracks, K = knobs, G = sunburn, Sc = scab, Sp = sprouts, T = secondary tubers.
Scale = 0-4, with 0 = not observed, 1 = slight to 4 = very severe.

Russets were planted 10-in. apart with 12 seed pieces per 10-ft plot, all other varieties were spaced 8-in. apart with 15 seed pieces per 10-ft plot.

Table 13. Total yield, greater than 1 7/8", size distribution, percent pickouts, and specific gravity for potato early variety trial in Plant Pathology Farm, Rock Springs, 2016

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5		Gravity
Superior	304	271	89	100	25	46	18	0	5	1.068
Dk Red Norland	324	302	93	112	29	52	12	0	3	1.060
AF5215-2[yf]	342	264	77	97	60	17	0	0	6	1.070
NDAF102573-2	339	301	89	111	55	30	4	0	4	1.066
B2152-17[yf]	308	263	85	97	64	21	0	0	4	1.073
B2834-8	252	225	89	83	42	44	3	0	2	1.073
BNC320-2	313	273	87	101	74	14	0	0	1	1.070
NY 150	298	96	32	35	31	1	0	0	6	1.074
K45-2	278	230	83	85	41	37	6	0	4	1.053
Purple Soul[pur]	163	143	87	53	49	35	3	0	4	1.059
Envol	241	229	95	85	31	53	11	0	2	1.064
CO04099-3W/Y[yf]	282	151	53	56	40	13	0	0	17	1.074
CO00277-2R	235	148	62	55	51	11	0	0	13	1.066
Smart[yf]	332	200	60	74	47	13	0	0	24	1.058
Colomba[yf]	466	311	67	115	35	25	6	0	22	1.051
Nobless[yf]	289	109	38	40	37	1	0	0	13	1.065
Viviana[yf]	328	292	89	108	43	45	1	0	4	1.062
Julinka[yf]	383	222	58	82	37	18	3	0	30	1.069
Oriana[yf]	386	236	61	87	49	12	0	0	15	1.064
Erika[yf]	321	179	56	66	41	14	0	0	28	1.066
Goldeye[yf]	279	221	79	81	55	25	0	0	5	1.059
Musica[yf]	364	266	73	98	51	21	1	0	9	1.064
Bordeaux[yf]	181	11	6	4	6	0	0	0	55	1.057
AF5412-3[pur]	307	244	79	90	38	28	13	0	10	1.052
AF5414-1[pk]	358	278	78	103	45	29	3	0	5	1.067
AF5533-2	356	272	77	100	57	19	0	0	6	1.063

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific Gravity
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5		
Masquerade[yf]	271	175	64	65	50	15	0	0	8	1.063
Natascha[yf]	326	178	55	66	45	10	0	0	11	1.070
Non-Rep*										
AF5682-9*	282	270	96	100	37	59	0	0	1	1.071
AF5633-2* [pur]	373	291	78	108	59	20	0	0	3	1.073
AF5658-2* [yf]	270	169	63	62	54	8	0	0	13	1.068
NDAF113458-2*	374	235	63	87	51	9	2	0	6	1.055
LSD	54	51	10		11	11	6	0	9	

[1]Yield Total = all yield including pickouts. Yield >1 7/8" = categories 2, 3, 4 and 5 excluding pickouts.

[2]Percentage of the standard, Superior, for >1 7/8" yield.

[3]Percentage of total yield according to size class. 2=1.875-2.5 in., 3=2.5-3.25 in., 4=3.25-4.0 in., 5=>4.0 in.

[4]Percentage of total that are pickouts.

The trial was replicated trial with 3 replications except for those lines with * which were non-replicated.

LSD indicates least significant difference ($P = 0.05$).

Varieties with colored flesh are indicated by [yf]for yellow, [pur] for purple, and [pk] for pink.

Planted 8-in. apart with 15 seed pieces per 10-ft plot.

Table 14. Tuber characteristics, internal and external defects for potato early variety trial in Plant Pathology Farm, Rock Springs, 2016

Variety/Line	Tuber Characteristics[1]						Internal Defects[2]		External Defects[3]							
	TA	C	TX	Sh	TED	TCS	HH	IB	R	H	Gr	K	G	Sc	Sp	T
Superior	5	7	6	3	4	5	0	0	1	0	0	0	0	0	0	0
Dk Red Norland	5	2	7	3	5	6	0	0	0	0	0	0	0	0	0	0
AF5215-2	5	6	6	2	6	5	0	0	2	0	0	0	0	0	0	0
NDAF102573-2	5	2	8	2	6	5	0	0	1	0	0	0	0	0	0	0
B2152-17	5	2	7	2	6	5	0	0	2	0	0	0	0	0	0	0
B2834-8	5	7	6	2	6	6	0	0	1	0	0	0	0	0	0	0
BNC320-2	5	1	8	3	6	5	0	0	0	0	0	0	0	0	0	0
NY 150	5	8	7	2	7	6	0	0	1	0	0	0	0	0	0	0
K45-2	4	2	7	2	4	5	0	0	2	0	0	0	0	0	0	0
Purple Soul	5	8	7	2	4	5	0	0	1	0	0	0	0	1	0	0
Envol	5	7	6	3	4	6	0	0	2	0	0	0	0	0	0	0
CO04099-3W/Y	4	6	5	2	6	5	0	1	1	0	0	0	0	0	0	0
CO00277-2R	4	2	8	2	7	6	0	0	3	0	0	0	0	0	0	1
Smart	5	7	7	3	6	5	0	0	1	0	0	0	0	0	0	0
Colomba	4	7	7	2	6	5	0	0	0	0	0	0	1	1	0	2
Nobless	5	7	8	2	7	6	0	0	2	0	0	0	0	0	0	1
Viviana	5	7	7	2	6	6	0	1	1	0	0	0	1	0	0	0
Julinka	4	7	8	3	7	5	0	0	1	0	0	0	1	0	0	1
Oriana	4	7	8	2	6	5	0	0	1	0	0	0	0	0	0	1
Erika	4	7	7	3	7	5	0	0	1	0	0	0	0	0	0	0
Goldeye	4	6	5	2	5	5	0	0	1	0	0	0	0	0	0	1
Musica	4	6	6	3	6	5	0	1	0	0	0	0	0	0	0	1
Bordeaux	4	2	8	3	6	5	0	0	0	0	0	0	0	0	0	2
AF5412-3	3	1	8	3	6	5	0	0	3	0	0	0	0	0	0	1
AF5414-1	4	2	8	3	4	4	0	0	1	0	0	0	0	0	0	0
AF5533-2	5	7	6	2	6	4	0	0	2	0	0	0	1	0	0	0

Variety/Line	Tuber Characteristics[1]						Internal Defects[2]		External Defects[3]							
	TA	C	TX	Sh	TED	TCS	HH	IB	R	H	Gr	K	G	Sc	Sp	T
Masquerade	4	pur/wh	7	2	6	6	0	0	2	0	0	0	0	0	0	1
Natascha	5	7	8	3	6	5	0	0	2	0	0	0	1	0	0	0
Non-Rep*																
AF5682-9*	5	7	8	2	5	6	1	1	2	0	0	0	0	0	0	0
AF5633-2*	5	1	7	2	6	5	0	0	1	0	0	0	0	0	0	0
AF5658-2*	4	7	6	2	7	5	0	0	0	0	0	0	0	0	0	0
NDAF113458-2*	4	7	7	2	3	6	0	0	0	0	0	0	0	0	0	1

[1]Tuber Characteristics: TA = tuber appearance: 1 = very poor, 5= fair, 9 = excellent.

C = skin color: 1 = purple, 2 = red, 3 = pink, 4 = dark brown, 5 = brown, 6 = tan, 7 = buff, 8 = white, 9 = cream.

TX = skin texture: 1 = partial russet, 2 = heavy russet, 3 = mod. russet, 4 = light russet, 5 = netted, 6 = slight net, 7 = mod. smooth, 8 = smooth, 9 = very smooth.

Sh = tuber shape: 1 = round, 2 = mostly round, 3 = round-oblong, 4 = mostly oblong, 5 = oblong, 6 = oblong-long, 7 = mostly long, 8 = long, 9 = cylindrical.

TED = tuber eye depth: 1 = very deep, 5 = medium, 9 = very shallow. TCS = tuber cross section: 1 = very flat, 5 = intermediate, 9 = very round.

[2]Internal Defects: HH = hollow heart, IB = internal browning. Total number observed out of 12 tubers for replicated trials and total number out of 4 for non replicated trials (marked with *). 0 = not observed.

[3]External Defects: R = Rhizoctonia, H = hairline cracks, Gr = growth cracks, K = knobs, G = sunburn, Sc = scab, Sp = sprouts, T = secondary tubers.

Scale = 0-4, with 0 = not observed, 1 = slight to 4 = very severe.

Table 15. Total yield, size distribution, and external characteristic for potato creamer variety trial in Plant Pathology Farm, Rock Springs, 2016

Variety/Line	Yield (cwt/A)[1]	Total tuber number	% by size class[2]						Tuber Characteristics[3]				Notes
	Total		1		2		3		TA	C	TX	Sh	
			Number	weight	Number	weight	Number	weight					
Jazzy	247	125	7	1	86	82	7	17	3	7	7	4	Lots of dumbell tubers, cream color flesh
Gemson	110	63	17	2	57	47	26	51	4	7	7	2	Moderate scab, a few 2nd tubers, white flesh
Little Giant	54	117	67	38	33	62	0	0	5	2	7	3	Cream color flesh
Cerisa	98	65	11	1	78	73	11	26	4	3	8	4	Moderate scab, tubers tend to be flat, slight yellow flesh
Rosemarie	138	220	53	31	47	69	0	0	5	3	8	4	Slight pink flesh
SM03-83-01R	64	86	36	9	64	87	1	3	3	2	7	2	Enlarged lenticels, some secondary tubers, slight yellow flesh
Papapura	59	52	14	3	86	97	0	0	4	7	8	3	Very severe rhizoc, yellow skin, yellow flesh
Violetta	49	88	46	25	54	75	0	0	4	1	7	4	Enlarged lenticels, purple flesh
NY150	125	84	13	2	74	68	13	29	5	8	7	2	Slight rhizoctonia
Smart	123	62	3	0	81	71	16	29	5	7	8	3	Slight scab, yellow skin, slight yellow flesh
LSD	35	38	11	8	15	16	7	13					

[1]Yield Total = yield including all size categories 1, 2, and 3.

[2]Percentage of total tuber number and yield according to size class. 1 = < 1 in., 2 = 1 - 1.625 in., 3 = > 1.625

[3]Tuber Characteristics: TA = tuber appearance: 1 = very poor, 5= fair, 9 = excellent.
C = skin color: 1 = purple, 2 = red, 3 = pink, 4 = dark brown, 5 = brown, 6 = tan, 7 = buff, 8 = white, 9 = cream.
TX = skin texture: 1 = partial russet, 2 = heavy russet, 3 = mod. russet, 4 = light russet, 5 = netted, 6 = slight net, 7 = mod. smooth, 8 = smooth, 9 = very smooth.
SH = tuber shape: 1 = round, 2 = mostly round, 3 = round-oblong, 4 = mostly oblong, 5 = oblong, 6 = oblong-long, 7 = mostly long, 8 = long, 9 = cylindrical.

The trial was replicated trial with 3 replications and planted 6-in. apart. LSD indicates least significant difference (P = 0.05).

Table 16: Management of evaluation trials, 2016

Rock Springs

Trial	Germplasm
Planting Date:	1and 2 June
Harvest Date:	25, 26 and 31 October and 1 November
Previous Crop:	Wheat
Fertilizer Rate/A:	9 May: 115 lbs/A 0-0-62 (N-P-K). At planting: 1065 lb/A 10-10-10 (N-P-K) 30 June: 49.5 lb/A liquid N
Herbicide:	Eptam 7E, Medal EC, Sencor 75DF, Matrix
Fungicide:	Gavel 75DF, Manzate ProStik, Bravo WS, Curzate, Forum
Insecticide:	Admire Pro, Avaunt, Baythroid XL, Agri-Mek, Rimon
Vine Kill:	15and 21 September
Rainfall (inches):	June (3.13), July (3.60), August (4.59), September (2.66)

Trial	Early variety
Planting Date:	1 June
Harvest Date:	18 October
Previous Crop:	Wheat
Fertilizer Rate/A:	9 May: 115 lbs/A 0-0-62 (N-P-K). At planting: 1065 lb/A 10-10-10 (N-P-K) 30 June: 33 lb/A liquid N
Herbicide:	Eptam 7E, Medal EC, Sencor 75DF, Matrix
Fungicide:	Gavel 75DF, Manzate ProStik, Bravo WS, Curzate, Forum
Insecticide:	Admire Pro, Avaunt, Baythroid XL, Agri-Mek, Rimon
Vine Kill:	26 and 31 Aug
Rainfall (inches):	June (3.13), July (3.60), August (4.59), September (2.66)

Trial	Creamer variety
Planting Date:	13 June
Harvest Date:	13 September
Previous Crop:	Wheat
Fertilizer Rate/A:	9 May: 70 lbs/A 0-0-62 (N-P-K). At planting: 1058 lb/A 10-10-10 (N-P-K)
Herbicide:	Eptam 7E, Medal EC, Sencor 75DF
Fungicide:	Gavel 75DF, Manzate ProStik, Bravo WS, Curzate, Forum
Insecticide:	Admire Pro, Avaunt, Baythroid XL, Rimon
Vine Kill:	24, 25, 30, 28 Aug, 28 Sep, 5 Oct
Rainfall (inches):	June (3.13), July (3.60), August (4.59), September (2.66)

Northampton Co.

Planting Date:	20 May
Harvest Date:	19 September
Previous Crop:	Oat
Fertilizer Rate/A:	20 May: 1100 lb/A 13-9-1-13 (N-P-K-S)
Herbicide:	Tricor, Medal, Poast
Fungicide:	Bravo SC, Manzate ProStik, Ridamil
Insecticide:	Admire Pro, Radiant SC, Brigade, Warrior
Vine Kill:	Natural
Rainfall (inches):	May (4.45). June (5.65), July (4.55), August (2.30), September (2.25)

Erie Co.

Planting Date:	18 May
Harvest Date:	4 October
Previous Crop:	Corn
Fertilizer Rate/A:	20 May: 790 lb/A band 0.127 Am + 0.127 Urea + 0.267 Dap + 0.479 Potash
Herbicide:	Boundry, Tricor, Matrix
Fungicide:	Curzate, Echo, Roper, Initiate

POTATO (*Solanum tuberosum*)
Late blight; *Phytophthora infestans*

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Field evaluation of potato cultivars and breeding lines for resistance to late blight in Pennsylvania, 2016.

Thirty-one potato cultivars and advanced breeding lines were evaluated at the Pennsylvania State University Russell E. Larson Agricultural Research Center in Pennsylvania Furnace, PA. The soil type was a Hagerstown silty clay loam. Potatoes were planted on 14 Jun. The experimental design was a randomized complete block with three replicates. The plots were 4-ft long with five seed pieces planted in each plot and 5-ft breaks between plots within a row. Each treatment row had an adjacent row of the susceptible cv. Atlantic as a spreader row. Precipitation was 3.13, 3.60, 4.59, and 2.66 in. for Jun, Jul, Aug, and Sep, respectively. On 15 Aug, spreader rows were spray-inoculated with a mixture of four isolates of *Phytophthora infestans* clonal lineage US-23, at a concentration of 2.1×10^5 sporangia/ml, to promote a uniform spread of the pathogen to all treatment plots. Overhead sprinklers were used for approximately one hour daily when the weather was dry and hot to increase humidity in the plant canopy after infection. Disease ratings were determined by visually assessing each 4-ft plot and estimating the percentage of late blight diseased foliage. Assessments were made on 25 Aug and 1, 7, 11, 15, 20 Sep. Disease data were expressed as area under the disease progress curve (AUDPC), subjected to analysis of variance, and means separated using Fisher's protected least significant difference test (SAS v. 9.4, SAS Institute, Cary, NC).

Late blight disease pressure was high and the most susceptible plots reached 100% disease severity by the end of the season. Cultivar Kennebec was the moderately resistant check; CO00291-5R, AF4648-2, AF4615-5, NY154 (NYH15-17), AF4953-6, and Kennebec were considered resistant or moderately resistant.

Cultivar/Line	AUDPC[z]	Cultivar/Line	AUDPC
CO00291-5R	33 o[y]	Russet Burbank	526 hij
AF4648-2	64 no	AF3362-1 (Caribou Russet)	528 hij
AF4615-5	80 no	AF5040-8	573 ghi
NY154 (NYH15-17)	82 no	Superior	577 ghi
AF4953-6	115 mno	BNC364-1	718 fgh
Kennebec	142 l-o	AF5280-5	736 fg
BNC244-10	260 k-n	Teton Russet	739 fg
Snowden	298 klm	AF5245-1	779 ef
AF4138-8	307 klm	Chieftain	788 ef
Russet Norkotah	328 jkl	Atlantic	951 de
AF4831-2	346 jk	Dark Red Norland	1032 cd
CO098012-5R	370 jk	B3005-7	1065 bcd
Katahdin	399 ijk	AF4985-1	1214 bc
NY157	431 ijk	AF4552-5	1236 ab
Yukon Gold	451 ijk	ND8068-5Russ	1427 a
AF4296-3	458 ijk		

[z] AUDPC = Area under the disease progress curve was calculated from 25 Aug to 20 Sep according to the formula: $\sum^{n}_{i=1}[(R_{i+1} + R_i)/2]\,[t_{i+1} - t_i]$, where R = disease severity rating (% of leaf surface affected) at the ith observation, t_i = time (days) since the previous rating at the ith observation, and n = total number of observations.

[y] Means followed by the same letter are not significantly different at $P = 0.05$ as determined by Fisher's protected least significant difference test (LSD = 202).

POTATO (*Solanum tuberosum*)
Early blight; *Alternaria solani*

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Field evaluation of potato cultivars and breeding lines for resistance to early blight in Pennsylvania, 2016.

Thirty-one potato cultivars and advanced breeding lines were evaluated at the Pennsylvania State University Russell E. Larson Agricultural Research Center in Pennsylvania Furnace, PA. The soil type was a Hagerstown silty clay loam. Entries were planted on 25 May in a randomized complete block design with three replicates. Plots consisted of a single row 4-ft long with five seed pieces planted in each plot with a 4-ft break between plots. Each entry had an adjacent row of the susceptible cv. Dark Red Norland as a spreader row. Precipitation was 3.13, 3.60, 4.59, and 2.66 in. for Jun, Jul, Aug, and Sep, respectively. On 14 Jul, spreader rows were spray-inoculated with a conidial mixture of two isolates of *Alternaria solani*, at a concentration of 5.95×10^4 conidia/ml, to promote uniform spread of the pathogen to all treatment plots. For each plot, the percentage of diseased foliage was visually assessed on 26 Jul, and 1, 5, 10, 14, 18, 22, 26 Aug. Disease data were expressed as the area under the disease progress curve (AUDPC), subjected to an analysis of variance and means separated using Fisher's protected least significant difference test (SAS v. 9.4, SAS Institute, Cary, NC).

Early blight disease pressure was high and the most susceptible cultivar (cv. Dark Red Norland; susceptible check) reached 100% disease severity by the end of the season. Kennebec, Russet Burbank and Snowden were included as moderately resistant check cultivars. Twelve cultivars/lines with AUDPC values of less than 200 were characterized as moderately resistant: Katahdin, Kennebec, Russet Burbank, CO00291-5R, AF4953-6, BNC244-10, AF4648-2, AF4615-5, Snowden, AF4296-3, and Chieftain.

Cultivar/Line	AUDPC[z]	Cultivar/Line	AUDPC
Katahdin	71 g[y]	Atlantic	314 c-g
Kennebec	104 fg	Yukon Gold	332 b-g
Russet Burbank	108 fg	Superior	332 b-g
CO00291-5R	124 fg	AF4831-2	336 b-g
AF4953-6	132 efg	AF5040-8	345 b-g
BNC244-10	150 efg	AF5245-1	348 b-g
AF4648-2	151 efg	Russet Norkotah	382 b-f
AF4615-5	159 efg	AF4552-5	411 b-e
Snowden	163 efg	AF4138-8	467 bcd
AF4296-3	169 efg	AF4985-1	527 bc
Chieftain	173 efg	BNC364-1	547 bc
CO098012-5R	196 d-g	B3005-7	599 b
NY154 (NYH15-17)	209 d-g	AF5280-5	613 b
AF3362-1 (Caribou Russet)	244 d-g	Dark Red Norland	949 a
Teton Russet	272 c-g	ND8068-5Russ	1064 a
NY157	299 c-g		

[z] AUDPC = area under the disease progress curve was calculated from 26 Jul to 26 Aug according to the formula: $\sum^{n}_{i=1}[(R_{i+1} + R_i)/2]\,[t_{i+1} - t_i]$, where R = disease severity rating (% of leaf surface affected) at the ith observation, t_i = time (days) since the previous rating at the ith observation, and n = total number of observations.

[y] Means followed by the same letter are not significantly different at $P = 0.05$ as determined by Fisher's protected least significant difference test (LSD = 281).

POTATO (*Solanum tuberosum*)
Powdery scab; *Spongospora subterranea*

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Field evaluation of potato cultivars and breeding lines for resistance to powdery scab in Pennsylvania, 2016.

Thirty-two potato cultivars and advanced breeding lines were planted in a naturally infested field in Potter Co., PA on 19 May. The soil type was a Mardin silt loam. The experimental design was a randomized complete block design with three replications. The plots were 6-ft long with 8 seed pieces planted in each plot and 5-ft breaks between plots within a row. Precipitation was 2.61, 2.46, 1.95, 4.60 and 2.24 in. for May, Jun, Jul, Aug, and Sep, respectively. Standard crop management practices and a recommended fungicide program for the management of early and late blight in Pennsylvania were followed. Reglone (1.0 oz/A) was applied to vine kill on 10 Sep. Tubers were harvested on 6 Oct and were visually assessed on 1 Nov. The number of tubers with powdery scab was determined from the total number of tubers per plot. Disease incidence was calculated as the percentage of tubers with powdery scab, subjected to an analysis of variance test, and means were separated using Fisher's protected least significant difference test (SAS v. 9.4, SAS Institute, Cary, NC).

Kennebec and Shepody were included as susceptible check cultivars. Russet Burbank is typically considered moderately resistant to powdery scab. Eight cultivars/lines with less than 10% scab incidence were considered resistant or moderately resistant to tuber infection and these included: Teton Russet, AF3362-1 (Caribou Russet), AF4953-6, AF4296-3, AF4615-5, Russet Burbank, NY154 (NYH15-17), and AF4138-8.

Cultivar/Line	Powdery Scab Incidence (%)	Cultivar/Line	Powdery Scab Incidence (%)
Teton Russet	0.0 l[z]	BNC364-1	33.3 e-i
AF3362-1 (Caribou Russet)	1.5 kl	AF5280-5	33.3 e-i
AF4953-6	1.9 jkl	Dark Red Norland	35.0 d-i
AF4296-3	4.3 i-l	AF4648-2	35.7 d-h
AF4615-5	4.4 i-l	Shepody	36.1 d-h
Russet Burbank	6.2 h-l	ND8068-5Russ	39.0 d-g
NY154 (NYH15-17)	7.1 h-l	BNC244-10	40.3 d-g
AF4138-8	7.4 h-l	CO098012-5R	43.8 c-g
Russet Norkotah	13.0 g-l	Yukon Gold	46.4 b-f
AF4552-5	13.5 g-l	Superior	50.5 b-e
NY157	19.1 f-l	B3005-7	65.7 a-d
Chieftain	19.8 e-l	AF5040-8	72.2 abc
Katahdin	22.4 e-l	AF4985-1	74.6 abc
Atlantic	29.8 e-l	AF5245-1	75.7 ab
Snowden	32.1 e-k	AF4831-2	83.3 a
CO00291-5R	32.6 e-j	Kennebec	84.8 a

[z] Means followed by the same letter are not significantly different at $P = 0.05$ as determined by Fisher's protected least significant difference test (LSD = 31.2).

POTATO (*Solanum tuberosum* 'Atlantic')
Late blight; *Phytophthora infestans*

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Evaluation of foliar fungicides for control of potato late blight in Pennsylvania, 2016.

Fungicides were evaluated on potato cultivar 'Atlantic' at the Pennsylvania State University Russell E. Larson Agricultural Research Center in Pennsylvania Furnace, PA. Potatoes were planted on 15 Jun. The experimental design was a randomized complete block with four replicates. Plots were three-rows wide (36 in. spacing between rows) and 10-ft long with 8 in. seed piece spacing. Precipitation was 3.13, 3.60, 4.59, and 2.66 in. for Jun, Jul, Aug, and Sep, respectively. On 15 Aug, spreader rows were spray-inoculated with a mixture of four isolates of *Phytophthora infestans* clonal lineage US-23, at a concentration of 2.1×10^5 sporangia/ml, to promote a uniform spread of the pathogen to all treatment plots. Overhead sprinklers were used for approximately one hour daily when the weather was dry and hot to increase humidity in the plant canopy after infection. Fungicides were applied with a tractor-mounted, N_2-pressurized side boom sprayer at 30 psi and 44 gal/A. The spray boom was equipped with drop nozzles and boom nozzles so that both sides and the top of each plant were uniformly sprayed. Disease ratings were determined by visually assessing each plot for the percentage of late blight symptomatic foliage. The plots were rated on 25 Aug and 1, 7, 11, 15, 20, 25 Sep and the assessments were used to calculate the area under the disease progress curve (AUDPC). No phytotoxicity was observed. Plants were vine killed on 28 Sep with Reglone (1.0 pt/A) and 5 Oct with Reglone (2.0 pt/A). The middle row of each plot was harvested on 25 Oct. The tubers were visually assessed for late blight symptoms and yield data were collected for asymptomatic tubers on 11 Nov. Tuber disease incidence was calculated as the percentage of tubers with late blight. Disease and yield data were subjected to analysis of variance and Fisher's protected least significant difference test (SAS v. 9.4, SAS Institute, Cary, NC).

All of the treatments significantly suppressed season-long foliar late blight compared to the untreated control. In general, tuber disease incidence was low and all treatments did not significantly reduce tuber late blight disease incidence compared to the untreated control. All of the treatments except treatments 6, 7 and 8 had significantly higher yields than the untreated control.

Treatment and rate/A	Days after first application[z]	AUDPC[y]	Tuber disease incidence (%)[x]	Yield (Cwt/A)[w]
1 Bravo Weather Stik 6 SC 1.5 pt A20942 2.14 pt Revus Top 4.17 SC 7.0 fl oz + Induce 0.125%	0, 14, 21, 34 7, 28 41	21 d[v]	1.4 a	359 a
2 Bravo Weather Stik 6 SC 1.5 pt	0, 7, 14, 21, 28, 34, 41	47 cd	1.3 a	320 abc
3 A20942 2.14 pt	0, 14	78 cd	2.9 a	339 ab
4 A21591 5.5 fl oz + Induce 0.25%	0, 14	90 cd	1.5 a	318 abc
5 A20942 1.71 pt	0, 14	110 c	2.4 a	319 abc
6 A20942 2.14 pt	0	738 b	1.5 a	265 bcd
7 A20942 1.71 pt	0	757 b	2.8 a	250 cd
8 A21591 5.5 fl oz + Induce 0.25%	0	783 b	1.0 a	225 d
9 Untreated Control	NA	1206 a	1.8 a	231 d
LSD (0.05)		73	2.1	84

[z] First fungicide application was 10 Aug.

[y] AUDPC = Area under disease progress curve was calculated from 25 Aug to 25 Sep according to the formula: $\sum^{n}_{i=1}[(R_{i+1} + R_i)/2]\,[t_{i+1} - t_i]$, where R = disease severity rating (% of leaf surface affected) at the ith observation, t_i = time (days) since the previous rating at the ith observation, and n = total number of observations.

[x] Disease incidence was calculated as the percentage of tubers with late blight.

[w] Yield = Total yield not including symptomatic or rotted diseased tubers, cwt/A = hundred weight per acre of asymptomatic tubers.

[v] Means followed by the same letter within columns are not significantly different at $P = 0.05$ as determined by Fisher's protected least significant difference test.

Supplemental Progress Report, 2016----------April 8, 2017

Pennsylvania Regional Potato Germplasm Evaluation Program, 2016

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The objective of this project is to find new breeding lines that are well adapted to Pennsylvania potato growing conditions, and have qualities that are suitable for either processing or tablestock use. We cooperate with the directors of several other potato breeding programs from the Northeast US and a few programs from outside the Northeast by evaluating their potato germplasm. Data from this project helps breeders determine which lines to consider for potential release as new varieties, thereby bringing about new potato varieties for you.

Regional trials were established in three counties across Pennsylvania: Northampton, Erie and the Russell E. Larson Agricultural Research Center at Rock Springs, Centre Co. Please see the Progress Report from December 2016 for details. During the winter months, tests were performed to evaluate germplasm for chip, French fry processing and culinary qualities. Storage ability, sprouting, and other traits were also noted as the tests were conducted. Presented in this report are the chip processing results (Tables 1-4), French fry results (Tables 5-8), and the culinary quality results (Table 9-10). The data are collected from small samples, which may not reflect all possible variations one may see within a commercial harvest.

Materials and Methods

From harvest until November, tuber samples were placed in a pole barn where they were subjected to fluctuating temperatures. We did not perform out of the field chip testing this year. Storage temperatures are listed at the bottom of each table. The chipping procedure at the PSU Lab was as follows. Four tubers from each breeding line/variety were peeled, cut in half, and sliced. Eight slices from the center of each half were used for chipping. Slices were fried at 365°F. The chip samples were rated on a scale of 1-10, which is in accordance with the Snack Food Color Chart. The oil used for chipping was soy-based oil (Bakers Chef heavy-duty oil). French fry tests were conducted as follows. Four tubers were peeled and cut into strips. Center slices (36 over the 4 tubers) were blanched in water for 3 minutes at 185°F then fried for 3 minutes at 365°F. The samples were rated using the USDA scale.

Results

Yield results and listings of noteworthy varieties/lines were provided in the December 2016 progress report.

Chipping (Tables 1-4)
There was no chipping directly out of the field (within two-three days of harvesting). Atlantic and Snowden are the standard varieties to use for comparing the chip color of the other lines.

There were a few noteworthy lines from the short term storage chipping in December: At Rock Springs, AF5568-6, W6822-3 and BNC539-1 had the best color; Atlantic, Snowden, AF5040-8, NY154, NY157, AF4157-6, AF5429-3, WAF10131-11, AF5484-3, AF5563-5, BNC182-5, BNC266-6, NY 152 (H15-5), Reba, MSR127-2, MSV179-1, MSR061-1, CO02024-9W, ACO1151-5W, W8822-1, AF5558-13, AF5585-2, WAF10629-5, WAF10636-1, WAF10636-3, COAF10055-6, AF5615-1, AF5648-5, WAF12080-3, NDAF113394CAB-2, NDAF113490C-6, NDAF113491C-6, BNC426-2, BNC469-9, BNC470-13, BNC470-16, B3175-8, B3176-1, B3222-2, BNC538-3 and BNC543-2 had acceptable color. At Northampton County, Atlantic, Snowden, Norwis, AF4648-2, AF5040-8, AF5225-1, AF5426-3, NY 141, NY 157, B2869-28, BNC182-5, BNC369-4, MSV179-1 and MSR061-1 had acceptable color. At Erie County, Atlantic, Snowden, NY 157, BNC364-1, MSR127-2 and AF5040-8 had acceptable color.

From the results of the 3 week reconditioning the noteworthy lines are: At Rock Springs, Snowden, AF5568-6, Reba, MSV179-1, CO02024-9W, COAF10055-6 and BNC539-1 had the best color; Atlantic, B3005-7, BNC364-1, NY154, NY157, AF4157-6, AF5225-1, AF5429-3, AF5484-3, B2904-2, BNC266-6, NY 141, NY 152 (H15-5), MSR127-2, MSV383-B, MSR061-1, ACO1151-5W, W6822-3, AF5558-13, AF5585-2, WAF10629-5, WAF10636-1, WAF10636-3, AF5615-1, AF5648-5, AF5658-6, AF5677-4, WAF12080-3, WAF12099-6, NDAF113394CAB-2, NDAF113490C-6, NDAF113491C-6, BNC426-2, BNC468-1, BNC469-9, BNC470-13, BNC470-16, B3175-8, B3176-1, B3222-2, BNC538-3 and BNC543-2 had acceptable color. At Northampton County, NY 157 and B3005-7 had the best color; Atlantic, Snowden, Norwis, AF4648-2, AF5040-8, AF5426-3, BNC182-5, BNC369-4, MSV179-1 and MSR061-1 had acceptable color. At Erie, Snowden had the best color; BNC364-1, MSR127-2 and AF4648-2 had acceptable color.

From the results of the 6 week reconditioning the noteworthy lines are: At Rock Springs, Snowden, AF5429-3, AF5563-5, W6822-3, WAF10629-5 and B3175-8 had the best color; Atlantic, AF4552-5, AF4648-2, AF5040-8, B3005-7, NY154, AF4157-6, AF5225-1, AF5426-3, WAF10131-11, AF5568-6, BNC182-5, B2904-2, NCO349-3, NY 152 (H15-5), MSR127-2, MSV383-B, MSR061-1, CO02024-9W, ACO1151-5W, W8822-1, VC1002-3W/Y, VC1002-3W/Y, WAF10636-1, WAF10636-3, COAF10055-6, AF5615-1, AF5648-5, AF5658-6, WAF12080-3, NDAF113490C-6, BNC468-1, BNC470-13, BNC470-16, B3168-3, B3176-1, BNC538-3, BNC539-1 and BNC543-2 had acceptable color. At Northampton County, Snowden and NY 157 had the best color; Atlantic, Norwis, AF5040-8, AF5426-3, NY 141, B3005-7 and MSR061-1 had acceptable color. At Erie County, MSR127-2 had the best color; Atlantic, Snowden, NY 157, AF5040-8 and MSR061-1 had acceptable color.

From the results of the chipping directly from 45°F the noteworthy lines are: At Rock Springs, B3005-7, AF5429-3, MSR127-2 and MSR061-1 had the best color; Atlantic, Snowden, AF5040-8, BNC364-1, NY154, NY157, WAF10131-11, AF5563-5, B2904-2, NCO349-3, NY 152 (H15-5), MSV383-B, CO02024-9W, ACO1151-5W, W6822-3, AF5585-2, COAF10055-6, AF5615-1, AF5658-6, WAF12080-3, BNC426-2, BNC468-1, BNC469-9, BNC470-13, B3175-8, B3176-1 and BNC539-1 had acceptable color. At Northampton County, Snowden and B3005-7 had the best color; Atlantic, AF5426-3, NY 157 and MSR061-1 had acceptable color. At Erie County, Snowden, NY 157 and MSR127-2 had acceptable color.

French fry Tests (Tables 5-8)
At Rock Springs, AF4296-3, AF4615-5, ND8068-5Russ, AF5071-2, AF5407-13, W9433-1rus, A06030-23, A061070-3CSR, A071012-4BF, AF5494-3, AF5521-1, AF5522-5 and WAF10612-1 had the best French fry color. At Northampton County, Dakota Trailblazer had the best color. At Erie County, CO05175-1RU and A07088-6 had the best color.

Tablestock Culinary Tests (Table 9-10)
Of the 102 lines tested for culinary characteristics, only 13 were unacceptable for color and sloughing or soggy. All lines in early season evaluation trial were acceptable for color and sloughing or soggy.

The Pennsylvania Potato Research Program, the Pennsylvania Department of Agriculture and USDA funded this research in conjunction with donations. This research is the result of cooperation of growers, industry and PSU staff. The growers hosting the plots provided contributions (land, fertilizer, pesticides, time, etc.). University of Maine, Cornell University, USDA, Idaho, Colorado State University, University of Wisconsin, Michigan State University potato breeding programs and Parkland Seed Potato, Sunrain, Solanum International, HZPC companies provided seed. Special thanks to Bob Leiby and Andy Muza who made sure this project was completed.

Table 1. Chip color results of potato evaluation at Rock Springs, Centre County, 2016 - 2017.

Variety/ Line	Specific Gravity	Chip Color			
		Dec.[1]	Feb.[2]	Feb.[3]	Feb.[4]
Atlantic	1.089	5	4	4	5
Katahdin	1.074	7	7	8	9
Snowden	1.088	4	3	3	4
Superior	1.072	8	8	8	8
Yukon Gold[YF]	1.081	7	7	8	8
AF4138-8	1.065	7	7	7	7
AF4552-5	1.074	7	6	5	7
AF4648-2	1.090	6	6	5	6
AF5040-8[YF]	1.090	5	6	4	5
AF5280-5	1.062	6	6	6	6
B3005-7	1.088	6	4	4	3
BNC364-1	1.081	7	5	6	5
NY154	1.089	4	4	5	4
NY157	1.084	5	5	6	5
Norwis[YF]	1.067	6	6	6	6
AF4157-6	1.083	5	5	5	6
AF5225-1	1.078	7	5	4	6
AF5426-3	1.081	7	6	5	6
AF5429-3	1.084	4	5	3	3
AF5432-5	1.081	7	6	6	7
WAF10131-11	1.086	5	6	5	5
AF5484-3	1.093	5	5	7	6
AF5563-5	1.077	4	6	3	4
AF5568-6	1.077	3	3	5	6
BNC182-5	1.094	5	6	5	6
B2869-28	1.077	6	6	7	8
B2904-2	1.091	6	5	4	5
BNC266-6	1.090	4	4	6	6
NCO349-3	1.087	7	6	5	5
BNC369-4	1.084	6	6	7	7
NY 141	1.077	7	5	7	7
NY 149[YF]	1.075	7	7	7	7
NY 151 (G73-1)	1.067	8	7	8	8
L30-5[YF]	1.079	6	7	6	7
NY 152 (H15-5)	1.086	5	4	5	5
Reba	1.075	4	3	6	6
MSR127-2	1.088	5	4	4	3
MST252-1Y[YF]	1.071	6	6	8	7
MSV383-B	1.086	6	4	4	4
MSW509-5	1.085	6	6	6	7
MSU383-A	1.057	7	6	6	8
MSV179-1	1.067	4	3	6	6
MSR061-1	1.083	5	4	4	3
CO02024-9W	1.088	4	3	5	5
ACO1151-5W	1.085	5	5	4	4
W6822-3	1.089	3	4	3	5
W9576-11Y[YF]	1.061	7	8	8	8
W8822-1[YF]	1.091	5	6	5	6
A10419-3Yadg[YF]	1.087	7	8	8	7
A06336-2Y[YF]	1.071	7	7	7	6

Table 1. Continued.

Variety/ Line	Specific Gravity	Chip Color Dec.[1]	Feb.[2]	Feb.[3]	Feb.[4]
A06336-5Y[YF]	1.063	8	7	8	8
Malou[YF]	1.065	9	-	-	-
Connect[YF]	1.077	10	-	-	-
VC1002-3W/Y[YF]	1.079	6	6	5	6
AF5540-2	1.073	6	6	5	6
AF5558-13	1.078	5	4	6	7
AF5584-1	1.082	6	7	7	8
AF5585-2	1.085	5	4	6	5
WAF10629-5	1.074	5	5	3	6
WAF10636-1	1.071	4	4	5	6
WAF10636-3	1.083	4	5	4	6
COAF10055-6	1.076	5	3	5	5
AF5615-1	1.078	4	5	4	5
AF5648-5	1.076	5	4	5	6
AF5658-6[YF]	1.076	6	5	5	4
AF5677-4	1.089	6	5	6	6
WAF12080-3	1.087	4	5	4	4
WAF12099-6	1.073	6	5	7	6
NDAF113371CAB-2	1.084	8	7	9	10
NDAF113394CAB-2	1.094	4	5	7	7
NDAF113490C-6	1.084	5	5	4	4
NDAF113491C-6	1.085	4	5	6	6
B3103-4[YF]	1.070	7	8	6	7
BNC426-2	1.098	4	5	6	5
BNC468-1	1.084	6	5	4	5
BNC469-9	1.089	4	4	6	4
BNC469-11	1.079	7	7	7	7
BNC470-13	1.088	4	5	5	5
BNC470-16	1.080	5	6	4	6
B3148-12[YF]	1.077	7	7	8	8
B3148-22[YF]	1.067	6	7	8	8
B3156-2[YF]	1.080	10	8	8	10
B3156-10	1.091	8	8	8	8
B3156-15[YF]	1.067	7	7	8	8
B3168-3	1.079	6	6	5	6
B3175-8[YF]	1.093	4	4	3	4
B3175-15	1.086	6	6	6	7
B3176-1	1.090	5	4	4	4
B3177-9	1.070	8	9	8	8
B3195-8	1.070	8	7	8	8
B3215-17	1.065	8	10	8	10
B3222-2	1.092	5	5	6	6
BNC538-3	1.079	5	6	5	7
BNC539-1	1.086	3	3	5	4
BNC543-2	1.084	5	5	4	7

[1] Dec. = Stored at 55^{0}F from November 30, 2016 and chipped on December 13 & 14, 2016.
[2] Feb. = Stored at 45^{0}F from November 30, 2016 than transferred to 55^{0}F three weeks prior to chipping on February 6 & 7, 2017.
[3] Feb. = Stored at 45^{0}F from November 30, 2016 than transferred to 55^{0}F six weeks prior to chipping on February 28 & March 1, 2017.
[4] Feb. = Stored at 45^{0}F from December 7, 2016 and chipped on March 3 & 8, 2017.
Chip color is based on a 1 – 10 scale with 1 = lightest, 10 = darkest, 1 – 5 = acceptable chip color.

YF = Yellow Flesh

Table 2. Chip color results of potato evaluation in Erie County, Kevin Troyer Farm, 2016 - 2017.

Variety/ Line	Specific Gravity	Chip Color			
		Dec.[1]	Feb.[2]	Feb.[3]	Feb.[4]
Atlantic	1.079	5	6	5	7
Snowden	1.074	5	3	5	5
Superior	1.059	8	-	-	-
Yukon Gold[YF]	1.068	7	-	-	-
NY 141	1.069	7	8	7	8
NY 149	1.069	7	7	8	8
NY 157	1.073	4	6	4	4
BNC364-1	1.074	5	5	7	7
MSR127-2	1.076	4	4	3	4
MSU383-A	1.048	6	9	9	10
AF4138-8	1.058	7	8	8	8
AF4648-2	1.082	6	5	6	7
AF5040-8	1.083	4	6	5	6
AF5426-3	1.070	7	8	7	8
MSR061-1	1.065	6	6	4	6

[1] Dec. = Stored at 55^0F from November 30, 2016 and chipped on December 12, 2016.
[2] Feb. = Stored at 45^0F from November 30, 2016 than transferred to 55^0F three weeks prior to chipping on February 8, 2017.
[3] Feb. = Stored at 45^0F from November 30, 2016 than transferred to 55^0F six weeks prior to chipping on February 27, 2017.
[4] Feb. = Stored at 45^0F from December 7, 2016 and chipped on March 6, 2017.

Chip color is based on a 1 – 10 scale with 1 = lightest, 10 = darkest, 1 – 5 = acceptable chip color.

YF = Yellow Flesh

Table 3. Chip color results of potato evaluation in Northampton County, Clearview Farm, 2016 - 2017.

Variety/ Line	Specific Gravity	Chip Color			
		Dec.[1]	Feb.[2]	Feb.[3]	Feb.[4]
Atlantic	1.085	4	4	4	5
Snowden	1.083	4	5	3	3
Norwis[YF]	1.064	4	5	5	6
Superior	1.062	8	-	-	-
Yukon Gold[YF]	1.075	7	-	-	-
AF4138-8	1.059	7	6	7	7
AF4648-2	1.086	4	5	6	7
AF5040-8	1.084	4	5	4	6
AF5225-1	1.071	5	7	7	7
AF5426-3	1.073	4	5	4	5
NY 141	1.075	4	7	5	8
NY 149	1.072	7	7	6	8
NY 151	1.054	9	10	10	10
NY 157	1.082	5	3	3	4
B2869-28	1.070	4	7	6	7
B3005-7	1.076	6	3	5	3
BNC182-5	1.082	4	5	6	6
BNC369-4	1.074	5	5	6	6
MSV179-1	1.066	4	5	6	7
MSR061-1	1.077	5	4	5	5

[1] Dec. = Stored at 55^0F from November 30, 2016 and chipped on December 12, 2016.
[2] Feb. = Stored at 45^0F from November 30, 2016 than transferred to 55^0F three weeks prior to chipping on February 8, 2017.
[3] Feb. = Stored at 45^0F from November 30, 2016 than transferred to 55^0F six weeks prior to chipping on February 27, 2017.
[4] Feb. = Stored at 45^0F from December 7, 2016 and chipped on March 6, 2017.

Chip color is based on a 1 – 10 scale with 1 = lightest, 10 = darkest, 1 – 5 = acceptable chip color.

YF = Yellow Flesh

Table 4. Chip color results of NE1231 potato evaluation at Rock Springs, Centre County, 2016 - 2017.

Variety/ Line	Specific Gravity	Chip Color			
		Dec.[1]	Feb.[2]	Feb.[3]	Feb.[4]
Atlantic	1.089	5	4	4	5
Katahdin	1.074	7	7	8	9
Snowden	1.088	4	3	3	4
Superior	1.072	8	8	8	8
Yukon Gold[YF]	1.081	7	7	8	8
AF4138-8	1.065	7	7	7	7
AF4552-5	1.074	7	6	5	7
AF4648-2	1.090	6	6	5	6
AF5040-8	1.090	5	6	4	5
AF5280-5	1.062	6	6	6	6
B3005-7	1.088	6	4	4	3
BNC364-1	1.081	7	5	6	5
NY154	1.089	4	4	5	4
NY157	1.084	5	5	6	5

[1] Dec. = Stored at 55^{0}F from November 30, 2016 and chipped on December 13 & 14, 2016.
[2] Feb. = Stored at 45^{0}F from November 30, 2016 than transferred to 55^{0}F three weeks prior to chipping on February 6 & 7, 2017.
[3] Feb. = Stored at 45^{0}F from November 30, 2016 than transferred to 55^{0}F six weeks prior to chipping on February 28 & March 1, 2017.
[4] Feb. = Stored at 45^{0}F from December 7, 2016 and chipped on March 3 & 8, 2017.

Chip color is based on a 1 – 10 scale with 1 = lightest, 10 = darkest, 1 – 5 = acceptable chip color.

YF = Yellow Flesh

Table 5. Total yield, greater than 1 7/8" yield, specific gravity, and French fry color for russet skinned or long white potato evaluation trial at Rock Springs Plant Pathology Farm, 2016.

Variety/ Line	Yield (cwt/A) [1] Total	>1 7/8"	% of Standard[2]	Percent[3] Pickouts	Specific Gravity	French Fry Color[4] Dec.[5]	Jan.[6]	Feb.[7]
Russet Burbank	526	145	45	66	1.076	1	1	1
Russet Norkotah	441	324	100	24	1.070	1	2	2
Teton Russet	486	251	78	45	1.070	1	1	1
Caribou Russet	477	338	105	29	1.078	0	1	0
AF4296-3	516	277	86	39	1.087	0	0	00
AF4615-5	378	267	82	25	1.091	0	0	0
AF4953-6	427	204	63	47	1.086	1	0	0
ND8068-5Russ	274	199	61	24	1.078	0	0	0
AF4113-2	379	235	73	27	1.072	1	0	1
AF5071-2	490	300	93	36	1.092	00	00	00
AF5091-8	447	213	66	50	1.066	1	1	1
AF5406-7	433	216	67	49	1.079	0	0	1
AF5468-5	458	286	88	28	1.079	1	1	1
AF5406-10	312	189	58	35	1.077	0	1	1
AF5407-13	496	343	106	26	1.077	0	0	0
CO05175-1RU	282	101	31	59	1.082	1	0	0
CO98067-7RU	528	330	102	33	1.066	1	1	1
W9133-1rus	501	348	108	26	1.066	1	2	2
W9433-1rus	476	319	99	30	1.088	0	0	00
A08422-2VR	503	398	123	19	1.076	2	2	1
A06021-1T	392	257	79	31	1.081	1	2	1
A06030-23	272	184	57	23	1.085	00	00	0
A061070-3CSR	464	258	80	36	1.087	0	0	0
A08009-2TE	371	160	50	50	1.085	0	1	0
A07088-6	344	221	68	32	1.084	0	1	0
A071012-4BF	414	162	50	56	1.096	0	0	0
Dione[YF]	533	273	84	47	1.081	1	1	1
Svenja[YF]	349	180	56	41	1.090	2	2	1
Maris Piper	396	169	52	50	1.075	1	0	1
Non Rep								
Russet Norkotah*	360	245	100	29	1.070	1	2	2
AF5312-1*	467	199	81	49	1.071	1	1	1
AF5494-3*	340	159	65	49	1.071	0	0	0
AF5521-1*	340	212	86	28	1.090	0	00	00
AF5522-5*	296	159	65	43	1.077	0	0	0
AF5525-2*	413	207	84	49	1.084	1	0	0
AAF10237-4*	421	135	55	62	1.072	1	1	1
WAF10612-1*	472	249	101	42	1.080	0	0	0

[1] Yield Total = all yield including pickouts. Yield >1 7/8" = categories 2, 3, 4 and 5 excluding pickouts.
[2] Percentage of the standard, Atlantic for >1 7/8" yield.
[3] Percentage of total that are pickouts.
[4] French Fry Color: USDA Scale Color Standers for Frozen Fried Potatoes with 000 = lightest, 4 = darkest.
[5] Dec. = Stored at 55^0F from November 30, 2016 and fried on December 19 & 20, 2016.
[6] Jan. = Stored at 45^0F from December 7, 2016 than transferred to 55^0F three weeks prior to frying on January 30 & 31, 2017.
[7] Feb. = Stored at 45^0F from December 7, 2016 than transferred to 55^0F six weeks prior to frying on February 20 & 21, 2017.
Replicated trials are the average of 3 replicates except for those lines with * which were non-replicated.

[YF] = Yellow flesh

Table 6. Total yield, greater than 1 7/8" yield, specific gravity, and French fry color for russet skinned or long white potato evaluation trial in Erie County, Kevin Troyer Farm, 2016.

Variety/ Line	Yield (cwt/A) [1] Total	>1 7/8"	% of Standard[2]	Percent[3] Pickouts	Specific Gravity	French Fry Color[4] Dec.[5]	Jan.[6]	Feb.[7]
Atlantic	240	190	100	18	1.079	-	-	-
Svenja*[YF]	366	259	136	25	1.070	1	1	1
Norkotah Russet*	139	98	52	20	1.054	1	1	1
Caribou Russet*	327	206	109	33	1.057	1	1	1
CO05175-1RU*	167	95	50	31	1.069	0	0	0
A08422-2VR*	306	245	129	15	1.065	2	2	2
W9133-1Rus*	207	137	72	20	1.057	1	1	1
W9433-1Rus*	337	185	97	41	1.066	1	1	0
A07088-6*	245	149	78	27	1.074	0	0	0
Dione*[YF]	384	255	134	29	1.068	1	1	1

[1] Yield Total = all yield including pickouts. Yield >1 7/8" = categories 2, 3, 4 and 5 excluding pickouts.
[2] Percentage of the standard, Atlantic for >1 7/8" yield.
[3] Percentage of total that are pickouts.
[4] French Fry Color: USDA Scale Color Standers for Frozen Fried Potatoes with 000 = lightest, 4 = darkest.
[5] Dec. = Stored at 55^0F from November 30, 2016 and fried on December 16, 2016.
[6] Jan. = Stored at 45^0F from December 7, 2016 than transferred to 55^0F three weeks prior to frying on January 30, 2017.
[7] Feb. = Stored at 45^0F from December 7, 2016 than transferred to 55^0F six weeks prior to frying on February 20, 2017.

Non – replicated trial.
[YF] = Yellow flesh
*= Russets and long whites were planted 10-in. apart with 24 seed pieces per 20-ft plot, Atlantic were spaced 8-in. apart with 30 seed pieces per 20-ft plot.

Table 7. Total yield, greater than 1 7/8" yield, specific gravity, and French fry color for russet skinned or long white potato evaluation trial in Northampton County, Clearview Farm, 2016.

Variety/ Line	Yield (cwt/A) [1] Total	>1 7/8"	% of Standard[2]	Percent[3] Pickouts	Specific Gravity	French Fry Color[4] Dec.[5]	Jan.[6]	Feb.[7]
Atlantic	343	319	100	5	1.085	-	-	-
Svenja*[YF]	287	239	83	7	1.069	1	1	1
Dakota Trialblazer*	211	157	49	19	1.096	0	00	00

[1] Yield Total = all yield including pickouts. Yield >1 7/8" = categories 2, 3, 4 and 5 excluding pickouts.
[2] Percentage of the standard, Atlantic for >1 7/8" yield.
[3] Percentage of total that are pickouts.
[4] French Fry Color: USDA Scale Color Standers for Frozen Fried Potatoes with 000 = lightest, 4 = darkest.
[5] Dec. = Stored at 55^0F from November 30, 2016 and fried on December 16, 2016.
[6] Jan. = Stored at 45^0F from December 7, 2016 than transferred to 55^0F three weeks prior to frying on January 30, 2017.
[7] Feb. = Stored at 45^0F from December 7, 2016 than transferred to 55^0F six weeks prior to frying on February 20, 2017.

Non – replicated trial.
[YF] = Yellow flesh
*= Russets and long whites were planted 10-in. apart with 24 seed pieces per 20-ft plot, Atlantic were spaced 8-in. apart with 30 seed pieces per 20-ft plot.

Table 8. Total yield, greater than 1 7/8" yield, specific gravity, and French fry color for russet skinned or long white NE1231 potato evaluation trial at Rock Springs Plant Pathology Farm, 2016.

Variety/ Line	Yield (cwt/A) [1] Total	>1 7/8"	% of Standard[2]	Percent[3] Pickouts	Specific Gravity	French Fry Color[4] Dec.[5]	Jan.[6]	Feb.[7]
Atlantic	326	299	100	6	1.089	-	-	-
Russet Burbank	479	132	44	66	1.076	1	1	1
Russet Norkotah	419	300	100	26	1.070	1	2	2
Teton Russet	474	245	82	44	1.070	1	1	1
Caribou Russet	477	324	108	26	1.078	0	1	0
AF4296-3	499	258	86	41	1.087	0	0	00
AF4615-5	356	251	84	25	1.091	0	0	0
AF4953-6	405	205	68	44	1.086	1	0	0
ND8068-5Russ	261	197	66	20	1.078	0	0	0

[1] Yield Total = all yield including pickouts. Yield >1 7/8" = categories 2, 3, 4 and 5 excluding pickouts.
[2] Percentage of the standard, Russet Norkotah for >1 7/8" yield.
[3] Percentage of total that are pickouts.
[4] French Fry Color: USDA Scale Color Standers for Frozen Fried Potatoes with 000 = lightest, 4 = darkest.
[5] Dec. = Stored at 55^0F from November 30, 2016 and fried on December 19 & 20, 2016.
[6] Jan. = Stored at 45^0F from December 7, 2016 than transferred to 55^0F three weeks prior to frying on January 30 & 31 , 2017.
[7] Feb. = Stored at 45^0F from December 7, 2016 than transferred to 55^0F six weeks prior to frying on February 20 & 21, 2017.

Replicated trials are the average of 4 replicates.

Table 9. Baking, boiling, microwaving results of tablestock test for Germplasm evaluation trial in Rock Springs, Plant Pathology Farm, 2016.

Variety/	Boil[1]			Microwave[2]	
Line	Color[3]	Texture[4]	Sloughing[5]	Color	Texture
Atlantic	1	2		1	1
Katahdin	1	2		1	2
Snowden	1	1		1	1
Superior	1	3		1	3
Yukon Gold[YF]	3	2		3	2
AF4138-8	1	3		1	3
AF4552-5	1	2		1	2
AF4648-2	1	2		1	2
AF5040-8[YF]	3	2		3	2
AF5280-5	1	3		1	3
B3005-7	1	2		1	1
BNC364-1	1	2		1	1
NY154	1	2		1	1
NY157	1	2		1	1
Norwis[YF]	2	3		2	2
AF4157-6	1	2		1	2
AF5225-1	1	2		1	1
AF5426-3	1	2		1	2
AF5429-3	1	2		1	2
AF5432-5	1	2		1	1
WAF10131-11	1	2	1	1	1
AF5484-3	1	1		1	1
AF5563-5	1	3		1	2
AF5568-6	1	2		1	2
BNC182-5	1	2		1	1
B2869-28	1	3		1	2
B2904-2	1	2		1	1
BNC266-6	1	2		1	2
NCO349-3	1	2		1	2
BNC369-4	1	2		1	2
NY 141	1	3		1	2
NY 149[YF]	3	2		3	2
NY 151 (G73-1)	1	3		1	3
L30-5[YF]	3	2		3	1
NY 152 (H15-5)	1	2		1	2
Reba	1	2		1	2
MSR127-2	1	2		1	2
MST252-1Y[YF]	3	3		2	2
MSV383-B	1	2		1	2
MSW509-5	1	1	1	1	1
MSU383-A	1	3		1	2
MSV179-1	1	3		1	2
MSR061-1	1	2		1	1
CO02024-9W	1	2		1	2
ACO1151-5W	1	2		1	1
W6822-3	1	2	1	1	2
W9576-11Y[YF]	3	3		3	2
W8822-1[YF]	3	2		3	1
A10419-3Yadg[YF]	3	2		3	1
A06336-2Y[YF]	3	3		3	2

Table 9. Continued.

Variety/ Line	Boil[1] Color[3]	Texture[4]	Sloughing[5]	Microwave[2] Color	Texture
A06336-5Y[YF]	3	3		3	2
Malou[YF]	3	3		3	2
Connect[YF]	3	2		3	2
VC1002-3W/Y[YF]	3	2		3	2
Reds					
Chieftain	1	3		1	2
Dark Red Norland	1	4		1	2
AF4831-2	1	3		1	4
AF4985-1	1	3		1	2
AF5245-1	1	3		1	1
BNC244-10	*	2		*	2
CO00291-5R	1	3		1	3
CO098012-5R	1	3		1	2
Peter Wilcox[YF]	3	3		3	2
BNC201-1[YF]	3	2		3	2
NY159 (K100-3)	1	3		1	2
Colorado Rose	1	3		1	3
W8405-1R	1	2	1	1	3
W8890-1R	1	3		1	3
A05180-3PY[YF]	3	3		3	2
Fenway Red	1	2		1	2
Elmo	1	3		1	2
Canberra[YF]	3	2		3	2
Russets					
Russet Burbank	1	2		1	2
Russet Norkotah	1	3		1	2
Teton Russet	1	2		1	2
Caribou Russet	1	2	1	1	2
AF4296-3	1	2	1	1	2
AF4615-5	1	2	1	1	2
AF4953-6	1	2	1	1	2
ND8068-5Russ	1	3		1	3
AF4113-2	1	2		1	3
AF5071-2	1	2	1	1	2
AF5091-8	1	3		1	3
AF5406-7	1	2		1	2
AF5468-5	1	3		1	2
AF5406-10	1	2		1	2
AF5407-13	1	3		1	3
CO05175-1RU	1	2		1	2
CO98067-7RU	1	3		1	3
W9133-1rus	1	3		1	2
W9433-1rus	1	3		1	1
A08422-2VR	1	3		1	2
A06021-1T	1	3		1	2
A06030-23	1	2		1	2
A061070-3CSR	1	2		1	2
A08009-2TE	1	3		1	2
A07088-6	1	2	1	1	2
A071012-4BF	1	2	1	1	1
Dione[YF]	3	3		3	2

Table 9. Continued.

Variety/ Line	Boil[1] Color[3]	Texture[4]	Sloughing[5]	Microwave[2] Color	Texture
Svenja[YF]	3	3		3	2
Barcelona[YF]	3	3		3	3
Maris Piper	1	3		1	3

Tested: January 17 - 25, 2017
[1] Boil 20 minutes.
[2] Microwave 4 – 8 minutes.
[3] Color scored as follows: 1=white, 2=slightly yellow, 3=yellow, 4=white with gray edges, 5=gray with dark edges.
[4]Texture scored as follows: 1=dry (mealy, 3= medium, 5=soggy.
[5]Sloughing scored as follows: 1=some sloughing, 2= severe sloughing.

YF = Yellow Flesh

* = Purple and white flesh

Table 10. Baking, boiling, microwaving results of tablestock test for Early Season evaluation trial in Rock Springs, Plant Pathology Farm, 2016.

Variety/ Line	Boil[1] Color[3]	Texture[4]	Sloughing[5]	Microwave[2] Color	Texture
Superior	1	3		1	2
Dark Red Norland	1	3		1	3
AF5215-2[YF]	3	2		3	3
NDAF102573-2	1	3		1	3
B2152-17[YF]	3	3		3	3
B2834-8	1	2		1	3
BNC320-2	1	3		2	3
NY 150	1	3		-	-
K45-2	1	3		1	3
Purple Soul	*	3		*	3
Envol	1	3		1	3
CO04099-3W/Y[YF]	3	2		3	2
CO00277-2R	1	3		1	3
Smart[YF]	3	3		3	2
Colomba[YF]	3	3		3	3
Nobless[YF]	3	2		3	3
Viviana[YF]	3	3		3	3
Julinka[YF]	3	3		3	2
Oriana[YF]	2	3		2	3
Erika[YF]	3	3		3	2
Goldeye[YF]	3	3		3	3
Musica[YF]	3	3		3	3
Bordeaux[YF]	3	3		3	3
AF5412-3	P	3		P	3
AF5414-1	pink	3		pink	3
AF5533-2	2	3		2	3
Masquerade[YF]	3	3		3	3
Natascha[YF]	3	3		3	2
AF5682-9	3	3		3	2
AF5633-2	*	3		*	3
AF5658-2[YF]	3	3		3	3
NDAF113458-2	1	3		1	2

Tested: February 13 - 14, 2017

[1] Boil 20 minutes.

[2] Microwave 4 – 8 minutes.

[3] Color scored as follows: 1=white, 2=slightly yellow, 3=yellow, 4=white with gray edges, 5=gray with dark edges.

[4]Texture scored as follows: 1=dry (mealy, 3= medium, 5=soggy.

[5]Sloughing scored as follows: 1=some sloughing, 2= severe sloughing.

YF = Yellow Flesh

* = Purple and white flesh

P = Purple flesh

Yellow Flesh Notes

We rated the yellow flesh in February.
We used Yukon Gold that was grown at Rock Springs

Scale:
YF1 - lighter than Yukon Gold
YF2 – equal to Yukon Gold
YF3 - darker than Yukon Gold

	YF 1	YF 2	YF 3
Rock Springs	Norwis	Peter Wilcox (Purple skin)	W9576-11Y
Germplasm Trial	B3156-15	BNC201-1 (Red skin)	A06336-5Y
	B3175-8	B3103-4	A05180-3PY (Purple skin)
	AF5040-8	B3148-12	Svenja
	NY 149	B3148-22	Connect
	MST252-1Y	B3156-2	
	Barcelona	BNC483-2 (Red skin)	
		BNC484-3 (Red skin)	
		AF5658-6	
		L30-5	
		W8822-1	
		A10419-3Yadg	
		A06336-2Y	
		VC1002-3W/Y	
		Malou	
		Canberra (Red skin)	
		Dione	