

Pennsylvania Potato Research Report, 2014

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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 73 round whites with a few yellow flesh, 36 red-skinned (a few purple skinned) and 52 russet or long white types. The Northampton Co. location had 36 lines and Erie Co. location had 47 lines. Breeding lines were contributed by the USDA-ARS, New York, Maine, Michigan, Idaho, Wisconsin, Colorado and a few other sources. See **Progress report - Pennsylvania Regional Potato Germplasm Evaluation Program, 2014 on pages 1-2 and tables from different locations on pages 3-34, and supplemental progress report on pages 39-40 and tables from different locations on pages 41-53.**

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, 39, 39 and 40 varieties and advanced breeding lines were evaluated for disease resistance to late blight, early blight, and powdery scab, respectively.

Cultivar Kennebec was the moderately late blight resistant check; Rochdale Gold-Doree, NY150 (NYF52-1), Palisade Russet, NY148 (NYE106-4), CO00291-5R, NYH15-17, Dakota Trailblazer, BNC182-5, BNC244-10, NY136 (Strawberry Paw), MSQ086-3, and AF4342-3 were resistant to moderately resistant to late blight. See **Field evaluation of potato cultivars and breeding lines for resistance to late blight in Pennsylvania, 2014 on page 35.**

Dark Red Norland was included as early blight susceptible check cultivar. Nine cultivars/lines were characterized as resistant to moderately resistant to early blight: AF4342-3, Palisade Russet, Dakota Trailblazer, CO00291-5R, BNC182-5, Russet Burbank, AF4347-1, NY148 (NYE106-4), and AF3001-6. See **Field evaluation of**

potato cultivars and breeding lines for resistance to early blight in Pennsylvania, 2014 on page 36.

Kennebec and Shepody were included as powdery scab susceptible check cultivars and Russet Burbank was the moderately resistant check. Under high disease pressure, eight cultivars and breeding lines were classified as moderately resistant to powdery scab, and they include: AF4532-8, Russet Norkotah, AF3362-1, Teton Russet, Dakota Trailblazer, Snowden, AF3001-6, and Katahdin. See **Field evaluation of potato cultivars and breeding lines for resistance to powdery scab in Pennsylvania, 2014 on page 37.**

3. Chemical Control of Potato Late Blight

In the late blight fungicide trial 16 different treatments were compared to an untreated control. Under high disease pressure, all of the treatments significantly suppressed season-long foliar late blight compared to the untreated control. Fungicide programs with A20941, A20942 or Zing! only were the most effective and had among the highest yields. All of the treatments had higher yields than the untreated control. Nine treatments had significantly higher yields than the untreated control. See **Evaluation of foliar fungicides for control of potato late blight in Pennsylvania, 2014 on page 38.**

Progress Report---December 20, 2014

Pennsylvania Regional Potato Germplasm Evaluation Program, 2014

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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 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 had 36 non-replicated lines. The Erie location had 47 lines non-replicate lines. At the Rock Springs location the trials included 49 round whites with a few yellow flesh, 29 red-skinned (a few purple skinned) and 32 russet or long white types in replicated plots, and an additional 24 whites, 7 red-skinned and 20 russet or long white types planted in non-replicated observational plots. At Northampton Co. and Erie Co. 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. Commercial trials of four par-fry varieties (Easton, Norwis, Fontane, and W6234-4RUS) were conducted at three locations: Erie Co., Schuylkill Co. and Rock Springs, Centre Co. (Table 13-14). Another commercial trial of two chipping varieties (Sebec and AF4157-6) was conducted in Rock Springs, Centre Co. (Table 13-14). Early variety trials of five varieties (Superior, Early Valley, Envol, B2890-11, and Dark Red Norland) were conducted at two locations: Northampton Co. and Rock Springs, Centre Co. (Table 15-16). All other pertinent information for individual trials is found within the data tables or in Table 17-18. We assessed yield, tuber size, internal defects and external defects, skin color, texture, tuber shape, specific gravity and overall appearance. Chip quality tests and culinary tests will be conducted over the next few months. Notes on fresh colors of specific potato varieties/lines are provided in Table 17. Management information for each site is provided in Table 18.

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 and Erie county trials:

In the Northampton location the following lines also had marketable yield higher than Atlantic: Chieftain , BNC182-5, and Colomba. In Erie Co. the following also had marketable yield higher than Atlantic: Snowden, Chieftain, Sebec, AF4013-3, AF4442-4, BNC182-5, NY140, NY148, Lanorma, and Easton.

Round White planted 8-inch apart in Rock Springs:

Based on data of replicated trials at Rock Springs, there were 9 round white clones with marketable yields significantly greater than Atlantic: Snowden , AF4013-3, AF4138-8, NYH15-17, B2832-12, B2893-2, B2904-2, NY140, MSS576-05SPL, A00286-3Y, Lanorma, and Vivaldi. There were another 28 round white clones with marketable yields greater than Atlantic: Katahdin, Superior, Yukon Gold, Sebec, AF4157-6, B2833-16, BNC182-5, MSQ086-3, NY148, NY150, AF4386-16, AF4614-2, B2833-8, B2834-8, B2869-28, Lehigh, NY151, ATC00293-1W/Y, MSL007-B, MSR061-1, MI Purple Sport I, W5955-1, W5015-12, W6703-1y, Elfe, Soraya, and HER 01-61.

Red-skinned planted 8-inch apart in Rock Springs:

Based on data of replicated trials at Rock Springs, no red-skinned or purple-skinned clones with marketable yields was significantly greater than Chieftain. There were another 3 red-skinned or purple-skinned clones with marketable yields greater than Chieftain: A05182-7RY, W6002-1R, and A05180-3PY.

Russet-skinned or white planted 10-inch apart in Rock Springs:

Based on data of replicated trials at Rock Springs, there were 2 clones with marketable yields significantly greater than Russet Norkotah: Francisca and Parella. There were another 12 clones with marketable yields greater than Russet Norkotah: Russet Burbank, Teton Russet, Easton, AF4320-17, AF4347-1, CO99045-1W/Y, W9433-1rus, Lady Amarilla, Dione, Taurus, Colomba, and Atlantic.

The results of chipping and French fry quality tests will be available in March 2015.

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 Real 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 Northampton County, Garry Hunsicker Farm, 2014

Variety/Line	Yield (cwt/A) ¹		% US#1	% of Standard ²	% by size class ³					% PO ⁴	Specific Gravity
	Total	>1 7/8"			2	3	4	5			
Atlantic	450	395	88	100	42	40	6	0	4	1.098	
Snowden	346	308	89	78	51	31	7	0	0	1.094	
Reba	408	377	92	95	36	53	3	0	2	1.081	
Katahdin	398	373	94	94	48	46	0	0	0	1.081	
Superior	424	394	93	100	42	44	7	0	3	1.079	
Chieftain	501	464	93	117	43	40	9	0	0	1.077	
Yukon Gold	314	295	94	75	32	52	10	0	3	1.087	
Sebec (AF0338-17)	397	370	93	94	32	49	12	0	2	1.091	
AF4013-3	368	332	90	84	42	43	5	0	0	1.090	
AF4157-6	369	320	87	81	68	19	0	0	1	1.091	
BNC182-5	449	404	90	102	47	38	6	0	0	1.103	
B2152-17	308	236	77	60	70	7	0	0	0	1.085	
B2676-2	267	181	68	46	58	10	0	0	4	1.087	
B2738-3	410	388	95	98	31	46	18	0	0	1.075	
B2832-12	440	392	89	99	29	49	11	0	4	1.097	
NY140	400	367	92	93	35	46	10	0	2	1.089	
NY141	344	291	85	74	41	35	8	0	6	1.083	
NY148	279	239	86	61	44	36	6	0	2	1.098	
NY151	394	356	90	90	52	36	1	0	1	1.077	
Lamoka	375	322	86	81	62	24	0	0	1	1.092	
Waneta	293	271	93	69	44	49	0	0	1	1.084	
MSQ086-3	351	315	90	80	50	32	9	0	0	1.078	
W5955-1	373	318	85	80	38	43	5	0	9	1.094	
W6002-1R	339	248	73	63	56	15	2	0	6	1.073	
W8405-1R	435	350	80	89	55	25	0	0	0	1.076	
Dark Red Chieftain	316	284	90	72	56	30	3	0	3	1.073	
Oriana*	295	182	62	46	47	14	0	0	2	1.073	
Elfe	443	341	77	86	47	26	4	0	13	1.083	

Variety/Line	Yield (cwt/A) ¹		% US#1	% of Standard ²	% by size class ³					% PO ⁴	Specific Gravity
	Total	>1 7/8"			2	3	4	5			
CO098012-5R	275	171	62	43	54	8	0	0	2	1.073	
Colomba*	508	437	86	111	53	32	1	0	1	1.058	
Russet Norkotah*	254	198	78	50	45	33	0	0	7	1.073	
Dakota Trialblazer*	337	287	85	73	48	31	7	0	5	1.103	
Easton*	323	296	92	75	41	36	15	0	4	1.079	
Fontane*	378	284	75	72	52	18	5	0	6	1.089	
Norwis*	255	216	85	55	36	40	9	0	10	1.066	
W6234-4RUS*	400	312	78	79	41	28	9	0	14	1.083	

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

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

³Percentage 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.

⁴Percentage 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.

Table 2. Tuber characteristics, internal and external defects for potato evaluation trial in Northampton County, Garry Hunsicker Farm, 2014

Variety/Line	Tuber Characteristics ¹					Internal Defects ²			External Defects ³							
	TA	C	TX	Sh	TED	TCS	HH	IB	Rhizoc	H	Gr	K	G	Sc	Sp	T
Atlantic	5	6	5	2	5	5	1	0	0	0	0	0	1	0	0	0
Snowden	5	6	5	2	3	5	0	0	0	0	0	0	0	0	0	0
Reba	5	7	7	3	5	5	2	0	1	0	0	0	1	0	0	0
Katahdin	5	7	7	3	5	5	0	0	0	0	0	0	0	0	0	0
Superior	4	6	6	3	3	5	0	0	0	0	0	0	0	0	0	0
Chieftain	5	2	7	3	6	4	0	0	0	0	0	0	0	0	0	0
Yukon Gold	5	6	7	2	5	5	0	0	0	0	0	0	0	0	0	0
Sebec (AF0338-17)	5	6	6	2	6	5	1	0	1	0	0	0	0	0	0	0
AF4013-3	5	7	7	3	6	5	0	0	1	0	0	0	0	0	0	0
AF4157-6	4	6	6	2	6	6	0	0	1	0	0	0	0	0	0	0
BNC182-5	6	6	5	2	5	7	0	0	0	0	0	0	0	0	0	0
B2152-17	6	2	7	2	5	6	0	0	0	0	0	0	0	0	0	0
B2676-2	4	2	6	2	6	7	0	0	0	0	0	0	0	0	0	0
B2738-3	6	6	5	2	6	6	0	0	0	0	0	0	0	0	0	0
B2832-12	4	6	6	2	4	5	0	0	0	0	0	0	1	0	0	0
NY140	5	7	6	3	5	5	0	0	0	0	0	0	1	0	0	0
NY141	5	6	6	3	6	5	0	0	0	0	0	0	1	0	0	0
NY148	5	6	6	2	5	5	1	0	0	0	0	0	0	0	0	0
NY151	7	7	7	2	6	7	0	0	0	0	0	0	0	0	0	0
Lamoka	5	6	6	3	5	5	0	0	0	0	0	0	0	0	0	0
Waneta	6	6	7	2	6	5	0	0	0	0	0	0	0	0	0	0
MSQ086-3	5	7	6	2	4	5	0	0	2	0	0	0	0	0	0	0
W5955-1	6	6	5	2	4	5	0	0	0	0	0	0	1	0	0	0
W6002-IR	6	2	8	3	6	6	0	0	0	0	0	0	0	0	0	0
W8405-IR	6	2	7	3	6	5	0	0	0	0	0	0	0	0	0	0
Dark Red Chieftain	5	2	7	2	5	6	0	0	2	0	0	0	0	0	0	0
Oriana	6	7	8	3	7	5	0	0	0	0	0	0	0	0	0	0
Elfe	4	7	8	3	7	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	Rhizoc	H	Gr	K	G	Sc	Sp	T
CO098012-5R	6	2	8	2	6	7	0	0	1	0	1	0	0	0	0	0
Colomba	6	7	8	2	5	5	0	0	0	0	0	0	0	0	0	0
Russet Norkotah	6	5	3	4	7	5	0	0	2	0	0	0	0	0	0	0
Dakota Trialblazer	6	5	3	4	7	5	2	0	0	0	1	0	0	0	0	0
Easton	5	6	6	4	6	4	0	0	0	0	0	0	0	0	0	0
Fontane	4	6	6	3	7	5	0	0	0	0	0	0	0	0	0	0
Norwis	2	7	7	3	5	5	0	0	0	0	1	0	0	0	0	0
W6234-4RUS	5	6	4	4	6	5	1	0	1	0	0	0	0	0	0	0

¹Tuber 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.

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

³External 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 Erie County, Mark Troyer Farm, 2014

Variety/Line	Yield (cwt/A) ¹		US#1	% of Standard ²	% by size class ³					% PO ⁴	Specific Gravity
	Total	>1 7/8"			2	3	4	5			
Atlantic	386	262	68	100	16	38	15	0	29	1.084	
Snowden	455	332	73	127	19	38	16	0	24	1.091	
Reba	226	172	76	66	17	40	19	0	20	1.079	
Katahdin	275	207	75	79	22	46	8	0	17	1.075	
Superior	278	229	83	88	34	38	11	0	10	1.075	
Yukon Gold	336	217	64	83	12	25	27	0	32	1.075	
Chieftain	315	274	87	105	30	37	17	3	6	1.070	
Dark Red Chieftain	146	127	87	49	31	39	18	0	7	1.067	
Sebec (AF0338-17)	356	293	82	112	12	40	31	0	15	1.080	
AF4013-3	413	271	66	103	24	29	13	0	24	1.091	
AF4157-6	329	197	60	75	35	25	0	0	33	1.081	
AF4442-4	307	268	87	102	13	48	26	0	11	1.072	
BNC182-5	529	406	77	155	17	36	23	0	18	1.088	
B2676-2	216	112	52	43	28	16	8	0	37	1.078	
B2738-3	246	149	61	57	15	28	17	0	35	1.065	
NY140	439	290	66	111	21	22	23	0	29	1.084	
NY141	313	246	78	94	21	29	29	0	17	1.070	
NY148	655	503	77	192	17	37	23	0	20	1.091	
NY151	220	70	32	27	12	13	7	0	62	1.062	
Waneta	281	191	68	73	18	28	22	0	28	1.074	
MSQ086-3	369	237	64	91	14	34	14	3	28	1.070	
W5955-1	133	89	66	34	18	41	7	0	27	1.071	
W6703-1Y	216	156	73	60	36	28	9	0	15	1.071	
W6002-IR	196	150	77	57	34	38	4	0	9	1.063	
W8405-IR	245	200	82	76	26	28	23	4	10	1.069	
W6609-3	264	206	78	79	26	43	9	0	11	1.078	
W5015-12	291	168	58	64	24	24	10	0	35	1.080	
Elfe	314	169	54	64	17	28	9	0	42	1.066	
Lanorma	502	429	85	164	16	32	34	3	10	1.068	
Smiley	186	100	54	38	19	24	11	0	37	1.067	
Soraya	289	197	68	75	22	34	12	0	28	1.057	

Variety/Line	Yield (cwt/A) ¹		% US#1	% of Standard ²	% by size class ³					% PO ⁴	Specific Gravity
	Total	>1 7/8"			2	3	4	5			
Vivaldi	215	141	66	54	28	22	16	0	25	1.059	
Oriana*	239	181	76	69	48	22	5	0	3	1.070	
Francisca*	347	250	72	96	38	30	5	0	15	1.062	
Russet Norkotah*	98	45	45	17	24	17	4	0	43	1.065	
Dakota Trialblazer*	231	139	60	53	14	19	23	4	35	1.095	
Easton*	341	281	83	108	39	31	12	0	16	1.080	
Fontane*	224	159	71	61	40	25	6	0	18	1.074	
W6234-4RUS*	146	62	43	24	19	24	0	0	52	1.070	
Dione*	172	72	42	28	27	15	0	0	42	1.071	
Lady Amarilla*	358	246	69	94	28	25	16	0	18	1.079	
AF4283-1*	300	149	50	57	20	19	10	0	43	1.071	
W8152-1rus*	127	74	58	28	33	21	4	0	27	1.077	
Taurus*	327	233	71	89	28	37	6	0	21	1.086	
Superior	128	102	80	39	39	41	0	0	16	1.064	
Early Valley	102	64	62	24	23	40	0	0	33	1.058	
Envol	104	69	66	26	33	24	9	0	23	1.059	

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

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

³Percentage 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.

⁴Percentage 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.

Table 4. Tuber characteristics, internal and external defects for potato evaluation trial in Erie County, Mark Troyer Farm, 2014

Variety/Line	Tuber Characteristics ¹					Internal Defects ²			External Defects ³							
	TA	C	TX	Sh	TED	TCS	HH	IB	Rhizoc	H	Gr	K	G	Sc	Sp	T
Atlantic	4	6	5	2	4	5	5	0	1	0	1	2	2	0	0	0
Snowden	4	6	5	2	4	6	8	0	1	0	0	0	3	0	0	0
Reba	4	7	7	3	5	5	2	0	0	0	0	0	1	0	0	0
Katahdin	4	6	7	3	5	5	4	0	1	0	0	0	2	1	0	0
Superior	4	6	6	3	4	5	0	0	0	0	1	0	1	0	0	0
Yukon Gold	4	7	7	3	6	5	5	0	0	0	0	1	3	0	0	0
Chieftain	5	2	7	3	5	5	0	0	0	0	1	0	1	0	0	0
Dark Red Chieftain	6	2	7	2	5	6	2	0	0	0	0	0	0	0	0	0
Sebec (AF0338-17)	5	6	6	3	4	5	3	0	1	0	0	1	2	1	0	0
AF4013-3	4	7	7	3	5	5	2	0	1	0	1	0	2	1	0	0
AF4157-6	5	7	6	2	5	5	0	0	0	0	2	0	3	1	0	0
AF4442-4	4	6	6	2	5	4	9	0	0	0	0	0	2	0	0	0
BNC182-5	5	6	6	3	6	5	3	0	1	0	0	0	3	0	0	0
B2676-2	4	2	7	3	6	5	0	0	0	0	1	0	3	0	0	0
B2738-3	5	7	6	2	5	5	2	0	0	0	0	0	2	0	0	0
NY140	4	7	6	3	5	5	3	0	1	0	0	0	4	0	0	0
NY141	4	7	7	3	5	5	0	0	0	0	0	0	1	0	0	0
NY148	4	6	6	2	5	5	0	0	0	0	0	1	3	0	0	0
NY151	6	7	8	2	6	7	0	0	0	0	0	0	4	0	0	0
Waneta	5	7	7	3	5	4	5	0	0	0	0	0	3	0	0	0
MSQ086-3	4	7	6	2	4	5	0	0	1	0	2	0	3	1	0	0
W5955-1	5	6	6	2	5	5	0	0	0	0	0	0	2	0	0	0
W6703-1Y	4	7	7	2	4	5	1	0	0	0	0	0	2	1	0	0
W6002-IR	6	2	7	3	6	6	0	0	0	0	0	0	1	0	0	0
W8405-IR	5	2	7	3	5	5	0	0	0	0	0	0	1	0	0	0
W6609-3	5	7	6	2	5	5	1	0	0	0	0	0	2	0	0	0
W5015-12	4	6	6	2	5	4	5	0	0	0	1	0	3	0	0	0
Elfe	4	7	8	3	6	4	1	0	0	0	0	3	2	0	0	0
Lanorma	5	7	7	4	6	4	0	0	0	0	1	2	0	0	0	0
Smiley	5	2	8	3	7	5	0	0	0	0	0	0	3	0	0	0
Soraya	5	7	7	3	6	5	0	0	0	0	0	1	3	0	0	0

Variety/Line	Tuber Characteristics ¹						Internal Defects ²			External Defects ³						
	TA	C	TX	Sh	TED	TCS	HH	IB	Rhizoc	H	Gr	K	G	Sc	Sp	T
Vivaldi	5	7	7	3	6	5	0	0	0	0	0	1	2	0	0	0
Oriana	6	7	8	3	6	5	0	0	0	0	0	0	1	1	0	0
Francisca	5	7	8	3	6	5	0	0	1	0	0	0	2	0	0	0
Russet Norkotah	3	6	4	4	7	5	0	0	1	0	0	1	1	0	0	0
Dakota Trialblazer	4	5	4	4	5	4	3	0	0	0	1	1	1	0	0	0
Easton	4	7	6	4	6	4	1	0	0	0	0	1	2	0	0	0
Fontane	4	7	6	3	6	5	2	0	0	0	1	0	1	0	0	0
W6234-4RUS	4	6	6	4	7	5	0	0	0	0	0	0	3	1	0	0
Dione	5	6	4	3	7	4	2	0	0	0	2	1	2	0	0	0
Lady Amarilla	4	7	7	4	6	4	2	0	0	0	0	1	1	0	0	0
AF4283-1	3	6	6	4	6	5	0	0	0	0	0	3	1	0	0	0
W8152-1rus	3	5	3	4	6	5	0	0	0	0	1	0	1	1	0	0
Taurus	4	7	7	2	5	5	2	0	0	0	1	0	2	0	0	0
Superior	4	7	6	3	4	5	2	0	0	0	0	0	1	0	0	0
Early Valley	5	7	6	2	6	5	0	0	0	0	1	0	1	0	0	0
Envol	5	7	7	3	5	5	0	0	0	0	0	0	1	0	0	0

¹Tuber 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.

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

³External 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, and specific gravity for round white potato evaluation trial in Rock Springs, Plant Pathology Farm, 2014

Variety/Line	Yield (cwt/A) ¹		% US#1	% of Standard ²		% by size class ³					%PO ⁴	Specific Gravity
	Total	>1 7/8"		%	Standard ²	2	3	4	5			
Atlantic	298	222	72	100	25	32	15	0	23	1.090		
Katahdin	284	234	83	105	30	35	18	0	12	1.080		
Reba	243	213	90	96	32	43	15	0	6	1.075		
Rochdale Gold-Doree	269	221	83	99	23	40	21	0	13	1.081		
Snowden	387	323	83	145	22	44	18	0	13	1.092		
Superior	311	277	88	125	20	41	27	0	6	1.075		
Yukon Gold	260	238	92	107	11	36	41	5	6	1.085		
AF0338-17 (Sebec)	308	267	87	120	19	46	22	0	9	1.086		
AF4013-3	383	341	89	153	22	59	7	0	3	1.090		
AF4138-8	417	369	88	166	30	44	15	0	6	1.067		
AF4157-6	304	259	85	116	28	44	13	0	6	1.073		
B2833-16	355	290	81	131	25	44	13	0	14	1.091		
BNC182-5	346	298	86	134	20	38	26	2	9	1.090		
MSQ086-3	345	286	83	129	35	39	9	0	7	1.085		
NY148	381	301	79	136	15	37	22	5	17	1.092		
NY150	361	249	70	112	46	21	3	0	15	1.081		
NYH15-17	520	419	80	189	13	35	29	3	17	1.087		
AF4386-16	287	244	84	110	28	51	5	0	7	1.087		
AF4442-4	215	192	90	86	30	43	17	0	3	1.085		
AF4614-2	338	290	87	130	14	37	35	0	9	1.075		
AF4730-2	362	244	66	110	22	29	15	0	26	1.079		
B2832-12	418	349	83	157	19	36	27	2	14	1.093		
B2833-8	290	263	90	118	26	58	7	0	4	1.094		
B2834-8	276	256	93	115	19	63	12	0	4	1.084		
B2869-28	334	300	90	135	25	52	13	0	4	1.083		
B2893-2	385	332	87	150	32	42	13	0	8	1.087		
B2904-2	386	331	86	149	21	46	19	0	9	1.076		
BNC326-14	251	201	80	90	34	39	7	0	12	1.076		
Lehigh	324	290	90	131	15	44	29	2	7	1.084		

Variety/Line	Yield (cwt/A) ¹		% US#1	% of Standard ²	% by size class ³					5 % PO ⁴	Specific Gravity
	Total	>1 7/8"			2	3	4	5			
NY140	404	332	83	149	11	30	41	1	15	1.080	
NY141	275	216	83	97	13	44	26	0	12	1.079	
NY151	363	278	79	125	19	44	15	0	15	1.066	
ATC00293-1W/Y	422	306	71	137	24	29	18	0	25	1.070	
Manistee	263	213	81	96	20	41	20	0	15	1.082	
MSL007-B	291	274	94	123	31	53	11	0	0	1.098	
MSR061-1	315	253	80	114	23	38	20	0	15	1.083	
MSS576-05SPL	433	346	80	156	15	37	28	0	16	1.076	
MI Purple Sport I	326	261	80	117	20	30	29	0	14	1.073	
A00286-3Y	573	438	76	197	28	37	11	0	17	1.082	
W5955-1	388	311	81	140	14	42	25	0	16	1.089	
W5015-12	351	291	83	131	26	41	16	0	13	1.088	
W6609-3	266	209	80	94	37	37	7	0	9	1.081	
W6703-1y	284	250	88	112	24	52	12	0	6	1.078	
Oriana	286	214	74	96	54	20	0	0	3	1.068	
Elfe	399	241	61	108	20	38	2	0	34	1.071	
Lanorma	396	329	84	148	18	48	18	0	12	1.077	
Soraya	386	243	63	109	26	32	5	0	32	1.062	
Vivaldi	497	358	74	161	29	30	14	1	19	1.069	
HER 01-61	387	253	65	114	42	21	3	0	20	1.090	
Lamoka*	441	389	88	175	17	46	26	0	8	1.098	
Waneta*	336	270	80	121	16	40	24	0	15	1.082	
NY152 (H15-5)*	444	365	82	164	26	43	13	0	10	1.097	
J21-5*	321	303	94	136	35	59	0	0	1	1.078	
AF5042-8*	408	284	70	128	5	35	29	0	29	1.089	
AF5140-1*	265	256	97	115	8	46	43	0	0	1.077	
AF5142-1*	479	401	84	181	23	51	10	0	9	1.085	
AF5386-4*	287	249	87	112	29	52	6	0	7	1.098	
AF5415-1*	396	253	64	114	7	30	22	6	35	1.078	
AF5426-1*	355	325	92	146	17	44	30	0	5	1.083	
AF5432-5*	470	406	87	183	19	47	16	5	9	1.089	
AF5447-4*	212	168	79	75	3	40	36	0	20	1.085	

Variety/Line	Yield (cwt/A) ¹		% US#1	% of Standard ²	% by size class ³					Specific Gravity
	Total	>1 7/8"			2	3	4	5	PO ⁴	
B2954-11*	251	196	78	88	28	46	4	0	14	1.083
B3005-6*	417	390	93	176	18	46	30	0	5	1.082
B3005-7*	323	273	85	123	38	41	5	0	10	1.094
B3032-6*	268	225	84	101	30	43	11	0	11	1.095
BNC364-1*	243	232	95	104	28	57	10	0	4	1.091
BNC369-4*	364	359	99	161	11	50	38	0	0	1.084
AC00206-2W*	309	257	83	115	20	55	8	0	15	1.085
AC03452-2W*	377	331	88	149	35	42	11	0	7	1.076
CO04099-3W/Y*	478	337	70	151	28	38	4	0	21	1.092
CO02024-9W*	404	343	85	154	35	48	2	0	9	1.091
CO02321-4W*	213	182	85	82	45	31	9	0	2	1.101
AC01151-5W*	512	373	73	168	31	38	4	0	20	1.090
LSD	113	100	13		13	14	12	3	12	

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

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

³Percentage 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.

⁴Percentage of total that are pickouts.

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

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 Rock Springs, Plant Pathology Farm, 2014

Variety/Line	Tuber Characteristics ¹						Internal Defects ²			External Defects ³						
	TA	C	TX	Sh	TED	TCS	HH	IB	Rhizoc	H	Gr	K	G	Sc	Sp	T
Atlantic	4	6	6	2	4	5	0	0	1	0	1	0	1	0	0	0
Katahdin	4	7	6	3	5	5	3	0	2	0	0	0	1	0	0	0
Reba	5	7	7	3	5	5	0	0	1	0	1	0	1	0	0	0
Rochdale Gold-Dore	4	7	7	2	5	5	0	0	1	0	1	0	1	0	0	1
Snowden	4	6	5	2	4	5	5	0	1	0	1	1	1	0	0	0
Superior	4	7	6	3	4	5	1	0	1	0	0	0	0	0	0	0
Yukon Gold	4	7	7	2	6	6	1	0	1	0	0	0	1	0	0	0
AF0338-17	5	6	6	3	5	5	0	0	2	0	0	0	1	0	0	0
AF4013-3	4	7	7	3	6	5	0	0	2	0	0	0	1	0	0	0
AF4138-8	4	6	6	2	5	6	0	0	1	0	1	0	0	0	0	0
AF4157-6	5	6	6	2	5	5	0	0	1	0	0	0	1	0	0	0
B2833-16	4	6	5	2	4	5	4	0	1	0	1	0	0	0	0	0
BNC182-5	4	7	6	3	6	5	2	0	2	0	0	0	1	0	0	0
MSQ086-3	5	7	7	2	6	5	0	0	2	0	0	0	1	0	0	0
NY148	4	7	6	2	5	5	1	0	2	0	1	0	1	0	0	0
NY150	4	7	8	2	7	6	0	0	1	0	0	0	1	0	0	0
NYH15-17	4	6	6	3	5	4	7	0	1	0	0	0	2	0	0	0
AF4386-16	5	6	5	2	6	6	0	0	1	0	0	0	1	0	0	0
AF4442-4	5	7	6	2	5	5	0	0	1	0	0	0	0	0	0	0
AF4614-2	4	7	7	2	6	4	0	0	0	0	0	0	1	0	0	0
AF4730-2	4	6	7	2	7	5	0	0	1	0	1	0	1	0	0	1
B2832-12	3	7	6	2	5	4	4	0	1	0	0	1	1	0	0	0
B2833-8	5	7	6	2	4	5	2	0	1	0	0	1	1	1	0	0
B2834-8	4	6	5	2	3	5	0	0	1	0	0	0	0	0	0	0
B2869-28	5	7	7	2	3	6	0	0	0	0	1	0	0	0	0	0
B2893-2	4	7	7	3	4	5	1	0	2	0	0	0	1	0	0	0
B2904-2	4	7	6	3	4	5	4	0	2	0	0	0	1	0	0	0
BNC326-14	5	6	6	3	6	5	0	0	1	0	0	1	1	0	0	0
Lehigh	5	6	6	3	5	5	1	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	Rhizoc	H	Gr	K	G	Sc	Sp	T
	NY140	5	6	6	3	5	5	4	0	1	0	0	1	1	1	0
NY141	5	7	7	2	5	5	0	0	1	0	0	0	1	0	0	0
NY151	5	7	7	2	5	5	0	0	1	0	0	0	2	0	0	0
ATC00293-1W/Y	4	7	8	3	6	5	9	0	2	0	1	0	1	0	0	0
Manistee	5	6	5	2	4	5	3	0	1	0	1	0	1	1	0	0
MSL007-B	5	5	5	2	5	5	0	0	1	0	0	0	0	0	0	0
MSR061-1	4	6	5	2	4	5	2	0	1	0	0	1	1	1	0	0
MSS576-05SPL	5	7	7	2	4	5	0	0	1	0	1	0	1	0	0	0
MI Purple Sport I	5	7	7	3	4	4	0	0	0	0	1	0	1	0	0	0
A00286-3Y	4	7	7	3	6	4	2	1	1	0	1	1	1	0	1	0
W5955-1	4	6	6	3	5	5	3	0	1	0	1	0	1	0	0	0
W5015-12	4	6	5	2	5	4	7	0	2	0	1	0	1	0	0	0
W6609-3	5	7	6	2	5	5	2	0	1	0	1	0	1	0	0	0
W6703-1y	4	6	6	2	5	5	0	0	1	0	0	0	1	0	0	0
Oriana	5	8	8	3	7	5	0	0	0	0	0	0	0	0	0	0
Elfe	4	7	7	3	5	5	0	1	1	0	0	1	1	0	0	0
Lanorma	4	7	8	3	6	4	1	0	0	0	0	0	1	0	0	0
Soraya	4	7	7	3	6	5	0	0	1	0	0	2	1	0	0	0
Vivaldi	5	7	6	3	6	5	0	0	1	0	0	0	1	1	0	0
HER 01-61	4	7	7	3	5	5	0	0	1	0	0	0	1	0	0	0
Lamoka*	5	6	6	2	4	5	0	0	1	0	0	0	1	0	0	0
Waneta*	5	6	7	3	5	5	0	0	2	0	0	0	1	0	0	0
NY152 (H15-5)*	4	6	6	2	5	6	3	0	1	0	0	0	1	0	0	0
J21-5*	5	7	7	3	6	5	0	0	1	0	0	0	0	0	0	0
AF5042-8*	3	7	7	2	5	6	1	0	2	0	0	1	1	0	0	0
AF5140-1*	5	6	6	2	5	7	0	0	3	0	0	0	0	0	0	0
AF5142-1*	5	6	6	2	5	5	3	0	1	0	0	1	0	0	0	0
AF5386-4*	4	6	7	3	4	4	0	0	2	0	0	0	0	0	0	0
AF5415-1*	5	6	7	3	6	6	0	0	0	0	3	0	0	0	0	0
AF5426-1*	5	7	7	3	5	5	0	0	1	0	0	0	0	0	0	0
AF5432-5*	5	6	6	3	5	5	2	0	3	0	0	1	1	0	0	0
AF5447-4*	5	6	6	2	5	6	0	0	1	0	1	0	0	0	0	0

Variety/Line	Tuber Characteristics ¹						Internal Defects ²			External Defects ³						
	TA	C	TX	Sh	TED	TCS	HH	IB	Rhizoc	H	Gr	K	G	Sc	Sp	T
B2954-11*	5	6	6	2	5	6	1	0	0	0	0	0	1	0	0	0
B3005-6*	5	5	5	3	5	5	0	0	0	0	0	0	0	0	0	0
B3005-7*	4	6	6	3	6	5	2	0	1	0	0	1	0	0	0	0
B3032-6*	5	6	7	3	6	6	1	0	2	0	1	0	0	0	0	0
BNC364-1*	5	7	7	3	6	5	0	0	0	0	0	0	0	0	0	0
BNC369-4*	5	6	6	3	6	6	2	0	3	0	0	0	0	0	0	0
AC00206-2W*	5	7	7	2	5	7	0	0	2	0	1	0	1	0	0	0
AC03452-2W*	5	7	7	2	5	5	0	0	1	0	0	0	1	0	0	0
CO04099-3W/Y*	4	6	6	3	6	4	2	1	1	0	0	0	1	0	0	0
CO02024-9W*	5	6	7	3	5	5	0	0	2	0	0	0	1	0	0	0
CO02321-4W*	5	6	7	2	5	4	1	0	3	0	0	0	0	0	0	0
AC01151-5W*	5	7	7	2	6	5	2	0	1	0	0	0	2	1	0	0

¹Tuber 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.

²Internal 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.

³External 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, and specific gravity for red or purple skinned potato evaluation trial in Rock Springs, Plant Pathology Farm, 2014

Variety/Line	Yield (cwt/A) ¹		% US#1	% of Standard ²					% PO ⁴	Specific Gravity
	Total	>1 7/8"		2	3	4	5			
Chieftain	402	324	80	100	19	37	24	0	16	1.071
Dark Red Norland	325	211	65	65	22	36	7	0	29	1.069
B2676-2	280	228	82	70	45	30	7	0	9	1.086
BNC244-10	349	281	80	87	43	29	8	0	5	1.087
CO00291-5R	332	279	84	86	29	42	13	0	9	1.072
CO098012-5R	404	301	75	93	33	34	7	0	15	1.079
NY136 (Strawberry Paw)	327	265	82	82	23	40	17	1	12	1.070
SF4550-2	252	209	82	65	27	51	4	0	7	1.076
AF4593-1	278	240	84	74	24	51	9	0	9	1.065
AF4815-1	269	196	71	60	21	41	10	0	24	1.065
AF4831-2	350	305	88	94	40	39	9	0	3	1.071
AF4831-3	354	289	82	89	18	35	26	2	12	1.066
AF4985-1	326	225	70	69	19	39	12	0	25	1.072
B2152-17	418	362	86	112	37	45	4	0	4	1.073
BNC201-1	319	289	91	89	27	55	8	0	3	1.086
BNC315-5	311	254	81	78	26	47	8	0	12	1.066
K100-3	332	274	83	85	21	46	16	0	10	1.055
CO04056-3P/PW	260	137	53	42	42	11	0	0	8	1.079
CO04063-4R/R	300	143	48	44	40	7	0	0	4	1.066
CO00405-IRF	238	108	45	33	30	14	2	0	21	1.077
MSR226-ARR	307	201	66	62	39	25	2	0	20	1.079
MSX007-4RR	345	188	54	58	26	22	7	0	25	1.073
A05182-7RY	547	422	77	130	31	35	11	0	12	1.084
W6002-IR	402	356	89	110	33	45	12	0	3	1.066
W8405-IR	419	312	74	96	36	34	4	0	16	1.072
Smiley	339	236	69	73	28	36	5	0	23	1.083
Dark Red Chieftain	258	217	84	67	20	42	22	0	9	1.072
HZC 01-6087	371	242	65	75	15	34	16	0	31	1.086
A05180-3PY	492	356	73	110	23	45	5	0	16	1.077

Variety/Line	Yield (cwt/A) ¹		% US#1	% of Standard ²					% PO ⁴	Specific Gravity
	Total	>1 7/8"		2	3	4	5			
AF4845-3*	165	124	75	38	17	41	16	0	14	1.063
AF5245-1*	286	173	60	53	42	18	0	0	19	1.081
WAF10209R-8*	405	346	85	107	22	36	27	0	6	1.063
NDAF102568C-2*	313	187	60	58	13	31	15	0	37	1.056
BNC306-3*	309	244	79	75	39	34	6	0	9	1.073
CO04067-8R/Y*	181	110	61	34	32	29	0	0	28	1.089
Purple Heart*	338	285	84	88	33	27	25	0	9	1.072
LSD	117	100	11	9	9	12	11	2	10	

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

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

³Percentage 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.

⁴Percentage 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 15 seed pieces spaced 8-in. apart.

Table 8. Tuber characteristics, internal and external defects for red skinned potato evaluation trial in Rock Springs, Plant Pathology Farm, 2014

Variety/Line	Tuber Characteristics ¹				Internal Defects ²			External Defects ³								
	TA	C	TX	Sh	TED	TCS	HH	IB	Rhizoc	H	Gr	K	G	Sc	Sp	T
Chieftain	4	2	7	3	4	5	0	0	1	0	0	1	0	0	0	0
Dark Red Norland	4	2	7	2	5	5	0	0	1	0	1	0	0	0	0	0
B2676-2	5	2	7	3	6	6	0	0	1	1	0	1	1	0	0	0
BNC244-10	4	1	7	2	6	5	1	0	1	0	0	1	0	0	0	0
CO00291-5R	5	2	8	2	6	6	2	0	1	0	1	0	1	0	0	0
CO098012-5R	4	2	8	2	6	5	3	0	1	0	1	1	1	0	0	0
NY136 (Strawberry Paw)	4	2	7	3	6	6	0	0	1	0	1	0	1	0	0	0
SF4550-2	5	1	7	2	5	5	0	0	0	0	0	0	1	0	0	0
AF4593-1	4	2	8	2	3	5	0	0	1	0	0	0	0	0	0	0
AF4815-1	4	2	8	3	6	5	0	0	1	0	1	1	0	0	0	0
AF4831-2	5	2	7	3	6	5	3	0	1	0	1	0	0	0	0	0
AF4831-3	4	2	7	2	4	5	1	0	1	0	1	0	1	0	0	0
AF4985-1	4	2	7	2	5	5	0	0	1	0	1	0	1	0	0	0
B2152-17	5	2	6	3	5	5	0	0	1	0	0	1	0	0	0	0
BNC201-1	4	2	7	2	4	5	0	0	1	0	0	0	0	0	0	0
BNC315-5	4	2	7	3	5	4	0	0	0	0	0	0	0	0	0	0
K100-3	5	2	7	3	5	6	0	1	1	0	1	0	0	0	0	0
CO04056-3P/PW	5	1	7	3	6	5	5	0	0	0	0	0	0	0	0	0
CO04063-4R/R	5	2	7	3	6	5	0	0	1	0	0	0	0	0	0	0
CO00405-IRF	3	2	7	4	7	4	1	1	1	0	0	0	0	0	0	0
MSR226-ARR	4	2	7	3	5	5	0	0	2	0	1	0	1	0	0	0
MSX007-4RR	3	2	8	4	7	4	0	0	0	0	0	2	1	1	0	0
A05182-7RY	5	7	7	3	6	5	2	0	2	0	0	1	1	0	0	0
W6002-IR	6	2	7	3	6	6	0	0	1	0	0	0	1	0	0	0
W8405-IR	4	2	7	3	5	4	0	0	1	0	0	0	1	0	0	0
Smiley	4	3	7	3	7	5	0	0	1	0	0	0	1	1	0	1
Dark Red Chieftain	5	2	7	2	5	6	1	0	1	0	1	0	0	0	0	1
HZC 01-6087	4	2	7	2	6	4	0	0	1	0	2	0	1	0	0	0
A05180-3PY	5	1	8	2	5	5	1	0	0	0	1	0	1	0	0	0

Variety/Line	Tuber Characteristics ¹						Internal Defects ²			External Defects ³						
	TA	C	TX	Sh	TED	TCS	HH	IB	Rhizoc	H	Gr	K	G	Sc	Sp	T
AF4845-3*	4	2	7	2	5	5	0	0	1	0	0	0	0	0	0	0
AF5245-1*	4	1	8	3	6	5	1	0	0	0	1	0	0	0	0	0
WAF10209R-8*	5	2	8	2	6	5	1	0	0	0	0	0	0	0	0	0
NDAF102568C-2*	3	2	7	3	4	5	0	0	2	0	1	0	0	0	0	0
BNC306-3*	4	1	7	3	6	5	0	0	0	0	0	0	0	0	0	0
CO04067-8R/Y*	5	2	8	2	6	5	0	0	0	0	1	0	0	0	0	0
Purple Heart*	5	2	6	3	6	5	0	0	1	0	0	0	0	0	0	0

¹Tuber 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.

²Internal 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.

³External 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, and specific gravity for russet skinned or white potato evaluation trial in Rock Springs, Plant Pathology Farm, 2014

Variety/Line	Yield (cwt/A) ¹		% of Standard		% by size class ³					%PO ⁴	Specific Gravity
	Total	>1 7/8"	US#1	Standard	2	3	4	5			
Dakota Trailblazer	325	179	54	87	12	19	19	4	41	1.102	
Palsade Russet	232	133	54	64	26	24	4	0	40	1.100	
Russet Burbank	376	220	59	106	17	25	18	0	32	1.079	
Russet Norkotah	321	207	66	100	18	28	18	2	30	1.076	
Teton Russet	394	214	54	103	24	21	9	0	40	1.078	
AF3001-6 (Easton)	410	233	57	113	14	17	24	2	40	1.085	
AF3362-1	358	168	49	81	11	18	17	2	46	1.082	
AF4124-4	317	147	49	71	16	19	13	2	47	1.086	
AF4124-7	260	148	60	71	19	25	16	0	33	1.091	
AF4172-2	269	170	62	82	15	21	23	3	34	1.085	
AF4296-3	304	137	50	66	18	19	13	0	42	1.083	
AF4320-17	376	243	62	118	22	19	20	0	31	1.086	
AF4342-3	276	132	49	64	15	16	18	0	43	1.080	
AF4347-1	405	246	60	119	14	27	19	0	35	1.079	
AF4532-8	205	140	67	68	20	26	20	0	26	1.071	
AF4283-1	320	194	61	94	16	32	13	0	34	1.076	
AF4950-2	312	172	48	83	8	29	11	0	46	1.081	
CO99045-1W/Y	307	210	68	102	28	21	18	0	26	1.095	
AC00395-2RU	265	124	46	60	18	21	6	0	45	1.091	
W8152-1rus	238	157	67	76	23	27	16	0	29	1.091	
W9133-1rus	309	204	65	98	17	23	25	0	31	1.073	
W9433-1rus	325	219	71	106	8	32	24	7	21	1.083	
W6234-4rus	230	138	60	67	23	21	16	0	35	1.083	
Nadine	218	169	79	82	35	38	6	0	16	1.059	
Fontane	327	206	64	100	22	32	9	0	29	1.086	
Francisca	461	404	88	195	23	56	8	0	9	1.070	
Lady Amarilla	261	208	83	100	23	41	19	0	12	1.082	
Parella	522	338	66	163	20	32	13	0	29	1.072	
Dione	356	250	71	121	12	34	25	0	28	1.082	

Variety/Line	Yield (cwt/A) ¹		% US#1	% of Standard	% by size class ³					% PO ⁴	Specific Gravity
	Total	>1 7/8"			2	3	4	5			
Taurus	442	315	73	152	18	39	16	0	22	1.093	
Colomba	404	269	70	130	17	36	17	0	22	1.062	
Atlantic	392	307	79	148	12	31	25	10	18		
AF5072-12*	182	99	54	48	22	24	8	0	38	1.073	
AF5089-3*	137	73	53	35	27	26	0	0	32	1.087	
AF5150-1*	68	43	62	21	38	25	0	0	18	1.066	
AF5164-19*	317	171	54	83	17	29	8	0	41	1.078	
AF5166-2*	178	100	56	48	11	28	17	0	38	1.083	
AF5181-8*	110	90	81	43	29	35	17	0	19	1.092	
AF5205-1*	284	223	78	108	36	33	9	0	11	1.099	
AF5312-1*	326	218	67	105	27	34	7	0	26	1.083	
AF5314-2*	186	132	71	64	43	23	6	0	22	1.076	
AF5373-1*	193	142	73	69	35	11	27	0	19	1.091	
AF5406-10*	164	104	64	50	31	25	8	0	20	1.089	
AAF08065-2*	167	86	52	42	22	23	6	0	41	1.076	
AAF07733-4*	157	96	61	47	24	37	0	0	34	1.096	
A08014-9TE*	114	106	93	51	41	52	0	0	0	1.096	
A03873-3NV*	159	94	59	45	33	26	0	0	29	1.079	
A06914-3CR*	309	176	57	85	17	25	15	0	37	1.085	
A08422-2VR*	283	205	72	99	15	32	26	0	28	1.087	
A07008-4T*	216	121	56	58	23	20	13	0	39	1.090	
A01025-4*	176	117	66	56	32	17	18	0	30	1.088	
A07103-1T*	210	129	62	62	31	19	11	0	32	1.097	
LSD	173	127	20	12	16	18	5	18			

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

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

³Percentage 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.

⁴Percentage 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.

Table 10. Tuber characteristics, internal and external defects for russet skinned or white potato evaluation trial in Rock Springs, Plant Pathology Farm, 2014

Variety/Line	Tuber Characteristics ¹						Internal Defects ²			External Defects ³						
	TA	C	TX	Sh	TED	TCS	HH	IB	Rhizoc	H	Gr	K	G	Sc	Sp	T
Dakota Trailblazer	2	6	4	4	7	5	5	0	1	0	1	1	1	0	0	0
Palisade Russet	3	6	6	4	7	4	0	0	1	0	1	1	1	0	0	0
Russet Burbank	3	6	6	4	6	5	2	0	1	0	0	2	1	0	0	0
Russet Norkotah	4	5	3	4	6	5	6	0	0	0	0	1	1	0	0	0
Teton Russet	5	6	4	4	7	4	2	0	1	0	3	1	1	0	0	0
AF3001-6	4	6	6	4	4	4	1	0	2	0	1	1	1	0	0	0
AF3362-1	4	6	4	4	7	5	1	0	1	0	1	2	1	0	0	0
AF4124-4	3	6	6	4	6	4	2	0	1	0	1	2	0	0	0	0
AF4124-7	4	6	4	4	7	4	1	0	1	0	1	1	0	0	0	1
AF4172-2	4	6	4	4	7	4	3	0	1	0	0	1	1	0	0	0
AF4296-3	2	5	4	4	7	4	1	0	1	0	0	1	1	1	0	0
AF4320-17	4	5	4	4	7	5	3	0	1	0	0	1	1	0	0	0
AF4342-3	3	5	4	4	6	4	5	0	0	0	0	1	1	0	0	0
AF4347-1	3	6	4	4	7	4	2	0	1	0	1	1	1	0	0	0
AF4532-8	4	5	3	4	7	4	5	0	1	0	1	1	1	0	0	0
AF4283-1	4	6	6	4	7	4	0	0	1	0	0	1	0	0	0	0
AF4950-2	3	6	7	4	7	4	5	0	1	0	0	0	3	0	0	0
CO99045-1W/Y	4	7	6	4	6	4	2	0	1	0	0	0	1	0	0	0
AC00395-2RU	3	5	4	4	6	5	3	0	1	0	1	0	1	0	0	0
W8152-Irus	4	5	3	4	7	5	3	1	0	0	1	0	1	1	0	0
W9133-Irus	4	6	4	4	7	5	0	0	0	0	0	1	0	0	0	0
W9433-Irus	4	6	6	4	7	6	1	0	0	0	0	1	1	0	0	0
W6234-4rus	3	7	6	4	7	4	2	0	1	0	1	0	1	0	0	0
Nadine	5	7	7	3	6	5	0	0	0	0	0	0	1	0	0	0
Fontane	4	7	6	3	6	4	4	0	1	0	1	1	1	0	0	0
Francisca	5	7	7	3	5	5	0	0	1	0	0	0	1	0	0	0
Lady Amarilla	4	6	5	4	6	5	0	0	0	0	1	0	1	0	0	0
Parella	4	7	6	3	6	4	0	0	1	0	2	0	1	0	0	1
Dione	4	6	3	4	6	4	10	0	1	0	1	0	1	0	0	0

Variety/Line	Tuber Characteristics ¹						Internal Defects ²			External Defects ³						
	TA	C	TX	Sh	TED	TCS	HH	IB	Rhizoc	H	Gr	K	G	Sc	Sp	T
Taurus	4	7	7	3	6	4	0	0	1	0	1	0	1	0	0	0
Colomba	4	7	7	3	5	5	0	0	0	0	1	0	1	1	0	1
Atlantic	4	6	5	2	5	5	6	0	1	0	1	1	1	0	0	0
AF5072-12*	3	6	4	4	6	4	0	0	0	0	1	0	0	0	0	0
AF5089-3*	4	7	6	4	6	5	0	0	1	0	0	1	0	0	0	0
AF5150-1*	5	7	7	3	5	5	0	0	1	0	0	0	0	0	0	0
AF5164-19*	3	6	5	4	6	5	0	0	0	0	1	0	1	0	0	0
AF5166-2*	4	5	3	4	7	5	3	0	0	0	0	0	0	0	0	0
AF5181-8*	4	6	3	4	6	5	0	0	1	0	0	0	0	0	0	0
AF5205-1*	4	6	4	4	6	5	0	0	1	0	0	0	0	0	0	0
AF5312-1*	4	5	3	4	7	5	0	0	1	0	0	1	0	0	0	0
AF5314-2*	4	5	3	4	6	5	0	0	2	0	0	0	0	0	0	0
AF5373-1*	4	6	4	4	7	4	0	0	0	0	0	0	0	0	0	0
AF5406-10*	3	6	5	4	6	4	0	0	0	0	0	0	0	0	0	0
AAF08065-2*	3	7	7	4	6	4	0	0	0	0	0	1	0	0	0	0
AAF07733-4*	3	6	4	4	7	5	0	0	0	0	0	0	0	0	0	0
A08014-9TE*	4	7	6	2	6	6	0	0	0	0	0	0	0	0	0	0
A03873-3NV*	3	6	7	4	6	5	0	0	0	0	0	0	0	0	0	0
A06914-3CR*	3	7	7	4	6	4	0	0	0	0	0	1	1	0	0	0
A08422-2VR*	4	6	4	4	6	4	0	0	0	0	0	0	0	0	0	0
A07008-4T*	3	6	4	4	6	4	0	0	0	0	0	0	1	0	0	0
A01025-4*	4	7	6	4	6	4	0	0	0	0	0	0	0	0	0	0
A07103-1T*	4	6	4	4	6	5	1	0	0	0	1	0	0	0	0	0

¹Tuber 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.

²Internal 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.

³External 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, and specific gravity for NE1231 potato evaluation trial in Rock Springs, Plant Pathology Farm, 2014

Variety/Line	Yield (cwt/A) ¹		% US#1	% of Standard ²	% by size class ³					%PO ⁴	Specific Gravity
	Total	>1 7/8"			2	3	4	5			
Atlantic	328	250	74	100	24	34	15	0	21	1.090	
Chieftain	403	329	81	132	18	38	25	0	15	1.071	
Dakota Trailblazer	284	159	56	64	15	24	14	3	38	1.102	
Dark Red Norland	330	234	71	94	20	38	13	0	24	1.069	
Katahdin	307	254	83	102	27	39	17	0	12	1.080	
Palisade Russet	247	135	52	54	23	22	7	0	41	1.100	
Rochdale Gold-Doree	277	229	83	91	21	40	22	0	12	1.081	
Russet Burbank	362	209	58	84	18	22	18	0	34	1.079	
Russet Norkotah	343	233	69	93	15	31	20	3	28	1.076	
Snowden	372	292	78	117	22	44	12	0	17	1.092	
Superior	297	265	89	106	20	41	25	2	6	1.075	
Teton Russet	338	197	60	79	25	22	13	0	35	1.078	
Yukon Gold	268	238	89	95	11	40	35	4	8	1.085	
AF0338-17 (Sebec)	345	296	86	118	14	49	23	0	10	1.086	
AF3001-6 (Easton)	388	219	56	88	16	16	23	1	41	1.085	
AF3362-1	345	172	52	69	12	21	18	2	44	1.082	
AF4013-3	386	336	87	134	24	55	8	0	5	1.090	
AF4124-4	295	148	54	59	17	19	17	1	42	1.086	
AF4124-7	237	140	63	56	22	24	16	0	32	1.091	
AF4138-8	400	354	88	142	27	43	18	0	6	1.067	
AF4157-6	304	259	85	103	28	44	13	0	6	1.073	
AF4172-2	255	160	62	64	14	23	23	2	34	1.085	
AF4296-3	332	160	51	64	17	19	15	0	41	1.083	
AF4320-17	373	242	63	97	21	21	20	0	30	1.086	
AF4342-3	261	142	57	57	18	20	18	0	36	1.080	
AF4347-1	393	246	62	98	13	27	22	0	33	1.079	
AF4532-8	205	140	67	56	24	25	19	0	26	1.071	
B2676-2	287	241	84	96	41	35	7	0	7	1.086	

Variety/Line	Yield (cwt/A) ¹		% US#1	% of Standard ²	% by size class ³					%PO ⁴	Specific Gravity
	Total	>1 7/8"			2	3	4	5			
B2833-16	355	290	81	116	25	44	13	0	14	1.091	
BNC182-5	341	288	84	115	21	39	24	2	9	1.090	
BNC244-10	342	281	82	112	44	32	6	0	4	1.087	
CO00291-5R	334	284	85	113	32	41	12	0	8	1.072	
CO098012-5R	404	310	77	124	34	35	8	0	14	1.079	
MSQ086-3	345	286	83	114	35	39	9	0	7	1.085	
NY136 (Strawberry Paw)	345	286	83	114	19	37	24	4	11	1.070	
NY148	409	338	82	135	13	38	26	5	15	1.092	
NY150	370	250	68	100	41	21	6	0	16	1.081	
NYH15-17	489	405	83	162	12	37	33	2	14	1.087	
LSD	109	80	14		11	13	12	4	12		

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

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

³Percentage 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.

⁴Percentage of total that are pickouts.

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.

Table 12. Tuber characteristics, internal and external defects for NE1231 potato evaluation trial in Rock Springs, Plant Pathology Farm, 2014

Variety/Line	Tuber Characteristics ¹						Internal Defects ²			External Defects ³						
	TA	C	TX	Sh	TED	TCS	HH	IB	Rhizoc	H	Gr	K	G	Sc	Sp	T
Atlantic	4	6	6	2	4	5	0	0	1	0	1	0	1	0	0	0
Chieftain	4	2	7	3	4	5	0	0	1	0	0	1	0	0	0	0
Dakota Trailblazer	2	6	4	4	7	5	5	0	1	0	1	1	1	0	0	0
Dark Red Norland	4	2	7	2	5	5	0	0	1	0	1	0	0	0	0	0
Katahdin	4	7	6	3	5	5	5	0	2	0	0	0	1	0	0	0
Palisade Russet	3	6	6	4	7	4	0	0	1	0	1	1	1	0	0	0
Rochdale Gold-Doree	4	7	7	2	5	5	0	0	1	0	1	0	1	0	0	1
Russet Burbank	3	6	6	4	6	5	2	0	1	0	0	2	1	0	0	0
Russet Norkotah	4	5	3	4	6	5	7	0	0	0	0	1	1	0	0	0
Snowden	4	6	5	2	4	5	7	0	1	0	1	1	1	0	0	0
Superior	4	7	6	3	4	5	1	0	1	0	0	0	0	0	0	0
Teton Russet	5	6	4	4	7	4	2	0	1	0	3	1	1	0	0	0
Yukon Gold	4	7	7	2	6	6	2	0	1	0	0	0	1	0	0	0
AF0338-17	5	6	6	3	5	5	0	0	2	0	0	0	1	0	0	0
AF3001-6	4	6	6	4	4	4	2	0	2	0	1	1	1	0	0	0
AF3362-1	4	6	4	4	7	5	1	0	1	0	1	2	1	0	0	0
AF4013-3	4	7	7	3	6	5	1	0	2	0	0	0	1	0	0	0
AF4124-4	3	6	6	4	6	4	2	0	1	0	1	2	0	0	0	0
AF4124-7	4	6	4	4	7	4	1	0	1	0	1	1	0	0	0	1
AF4138-8	4	6	6	2	5	6	0	0	1	0	1	0	0	0	0	0
AF4157-6	5	6	6	2	5	5	0	0	1	0	0	0	1	0	0	0
AF4172-2	4	6	4	4	7	4	3	0	1	0	0	1	1	0	0	0
AF4296-3	2	5	4	4	7	4	1	0	1	0	0	1	1	1	0	0
AF4320-17	4	5	4	4	7	5	3	0	1	0	0	1	1	0	0	0
AF4342-3	3	5	4	4	6	4	6	0	0	0	0	1	1	0	0	0
AF4347-1	3	6	4	4	7	4	2	0	1	0	1	1	1	0	0	0
AF4532-8	4	5	3	4	7	4	7	0	1	0	1	1	1	0	0	0
B2676-2	5	2	7	3	6	6	0	0	1	1	0	1	1	0	0	0

Variety/Line	Tuber Characteristics ¹						Internal Defects ²			External Defects ³						
	TA	C	TX	Sh	TED	TCS	HH	IB	Rhizoc	H	Gr	K	G	Sc	Sp	T
B2833-16	4	6	5	2	4	5	4	0	1	0	1	0	0	0	0	0
BNC182-5	4	7	6	3	6	5	2	0	2	0	0	0	1	0	0	0
BNC244-10	4	1	7	2	6	5	1	0	1	0	0	1	0	0	0	0
CO00291-5R	5	2	8	2	6	6	3	0	1	0	1	0	1	0	0	0
CO098012-5R	4	2	8	2	6	5	3	0	1	0	1	1	1	0	0	0
MSQ086-3	5	7	7	2	6	5	0	0	2	0	0	0	1	0	0	0
NY136 (Strawberry Paw)	4	2	7	3	6	6	0	0	1	0	1	0	1	0	0	0
NY148	4	7	6	2	5	5	1	0	2	0	1	0	1	0	0	0
NY150	4	7	8	2	7	6	0	0	1	0	0	0	1	0	0	0
NYH15-17	4	6	6	3	5	4	10	0	1	0	0	0	2	0	0	0

¹Tuber 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.

²Internal Defects: HH = hollow heart, IB = internal browning. Total number observed out of 16 tubers for replicated trials and total number out of 4 for non replicated trials (marked with *). 0 = not observed.

³External 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" yield, size distribution, percent pick outs and specific gravity for potato commercial trials of four varieties in: A) Erie County, Kevin Troyer Farm, B) Schuykill County, Nolan Masser Farm; and six varieties in: C) Rock Springs, Plant Pathology Farm. About 200 lbs of each variety were planted in each location in 2014

Location	Variety/Line	Space between potatoes in a row (inch)	Yield (cwt/A) ¹		% by size class ²					% PO ³	Specific Gravity
			Total	>1 7/8"	US#1	2	3	4	5		
Kevin Troyer Farm	Easton	12	416	330	79	23	35	21	0	18	1.093
	Norwis	9	423	365	86	20	37	29	0	11	1.072
	Fontane	12	426	336	79	39	32	7	0	9	1.091
	W6234-4RUS	12	293	235	80	32	38	11	0	11	1.086
Nolan Masser Farm	Easton	11	442	248	56	16	27	14	0	41	1.085
	Norwis	11	158	108	68	17	42	9	0	24	1.064
	Fontane	11	401	227	57	31	26	0	0	31	1.080
	W6234-4RUS	11	313	218	69	20	27	17	6	29	1.079
Rock Springs	Easton	12	545	374	69	10	21	29	9	30	1.080
	Norwis	10	289	254	88	9	51	25	3	10	1.067
	Fontane	12	439	385	88	36	47	5	0	9	1.083
	W6234-4RUS	12	317	222	70	10	33	28	0	27	1.074
	Sebec	8	406	400	98	18	53	27	0	0	1.082
	AF4157-6	8	272	242	89	50	33	6	0	2	1.083

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

²Percentage 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.

³Percentage of total that are pickouts.

Table 14. Tuber characteristics, internal and external defects for potato commercial trials of four varieties in: A) Erie County, Kevin Troyer Farm, B) Schuykill County, Nolan Masser Farm; and six varieties in: C) Rock Springs, Plant Pathology Farm. About 200 lbs of each variety were planted in each location in 2014.

Location	Variety/Line	Tuber Characteristics ¹						Internal Defects ²			External Defects ³						
		TA	C	TX	Sh	TED	TCS	HH	IB	Rhizoc	H	Gr	K	G	Sc	Sp	T
Kevin Troyer Farm	Easton	5	6	6	4	6	4	4	0	0	0	0	2	1	0	0	0
	Norwis	4	7	7	3	4	4	6	0	1	0	1	0	1	0	0	0
	Fontane	4	6	6	3	5	5	8	0	0	0	1	0	0	0	0	0
	W6234-4RUS	5	6	6	4	6	5	3	0	0	0	0	1	0	0	0	0
Nolan Masser Farm	Easton	4	6	6	4	6	5	3	0	0	0	4	2	3	0	0	0
	Norwis	4	7	7	2	5	5	0	0	0	1	0	1	1	0	0	0
	Fontane	4	6	5	3	6	5	0	0	0	0	0	2	2	0	3	0
	W6234-4RUS	3	6	6	3	6	5	1	0	0	0	0	1	2	0	0	0
Rock Springs	Easton	5	6	4	4	6	4	3	0	0	0	2	1	0	0	0	0
	Norwis	4	7	7	3	5	5	0	0	2	0	1	0	0	2	0	0
	Fontane	5	6	5	3	6	6	0	0	1	0	0	0	0	0	1	0
	W6234-4RUS	3	6	6	4	6	5	2	0	1	0	0	1	3	0	0	0
	Sebec	6	6	6	2	5	6	0	0	2	0	0	0	0	0	0	0
	AF4157-6	5	7	6	3	6	5	1	0	1	0	0	0	0	2	0	0

¹Tuber 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.

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

³External 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, greater than 1 7/8" yield, size distribution, percent pick outs and specific gravity for potato early variety trials of four varieties in Northampton County, Garry Hunsicker Farm, and four varieties in Rock Springs, Plant Pathology Farm in 2014.

Location	Variety/Line	Yield (cwt/A) ¹		% US#1	% by size class ²					% PO ³	Specific Gravity
		Total	>1 7/8"		2	3	4	5			
Garry Hunsicker Farm	Superior	215	179	83	66	18	0	0	0	0	1.067
	Early Valley	256	248	97	26	48	20	3	0	0	1.059
	Envol	259	228	88	34	38	16	0	3	0	1.071
	B2890-11	201	159	79	63	16	0	0	3	0	1.070
Rock Springs	Superior	231	192	82	20	48	14	0	12	0	1.078
	Early Valley	278	200	71	18	29	25	0	24	0	1.067
	Envol	201	145	72	17	39	16	0	20	0	1.075
	Dark Red Norland	249	198	81	30	47	4	0	12	0	1.069
LSD		110	112	22	14	20	16	0	21	0	

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

²Percentage 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.

³Percentage of total that are pickouts.

The trial in Schuylkill County was non-replicated trial and planted on May 8 and harvested on July 13, 2014.

The trial in Rock Springs was replicated trial with 3 replications and planted on June 4 & 6 and harvested on August 28, 2014.

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

Table 16. Tuber characteristics, internal and external defects for potato early variety trials of four varieties in Northampton County, Garry Hunsicker Farm, and four varieties in Rock Springs, Plant Pathology Farm in 2014.

Location	Variety/Line	Tuber Characteristics ¹						Internal Defects ²				External Defects ³					
		TA	C	TX	Sh	TED	TCS	HH	IB	Rhizoc	H	Gr	K	G	Sc	Sp	T
Garry Hunsicker Farm	Superior	5	7	7	2	4	5	0	0	0	0	0	0	0	0	1	1
	Early Valley	6	7	7	3	6	4	0	0	0	0	0	0	0	1	0	0
	Envol	5	7	6	3	5	5	1	0	0	0	0	0	0	0	0	0
	B2890-11	3	6	8	2	6	6	0	0	0	0	1	0	0	4	0	0
Rock Springs	Superior	4	7	6	3	5	5	0	0	1	0	1	1	1	0	0	0
	Early Valley	4	7	7	2	4	5	0	0	1	0	2	1	1	0	0	0
	Envol	5	7	7	3	5	4	0	0	0	0	1	0	1	0	0	0
	Dark Red Norland	4	2	7	2	5	5	0	0	1	0	1	1	1	0	0	0

¹Tuber 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.

²Internal Defects: HH = hollow heart, IB = internal browning. Total number observed out of 8 tubers. 0 = not observed.

³External Defects: R = Rhizoctonia, H = hairline 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 17: Notes on fresh colors of potato varieties/lines

Yellow Flesh Varieties

We rated the yellow flesh in December.

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

Rock Springs:	<u>YF1</u>	<u>YF2</u>	<u>YF3</u>
	B2152-17 (Red skin)	Yukon Gold	Smiley (Red skin)
	AF5142-1	Rochdale Gold – Doree	Soraya
	WAF10209R-8 (Red skin)	Lehigh	W6703-1y
	Vivaldi	Lanorma	Elfe
	Dione	Fontane	Francisca
	HZC 01-6087 (Red skin)	Taurus	CO04096-3W/Y
	HER 01-61	Colomba	CO99045-1W/Y
		Lady Amarilla	CO04067-8R/Y (Red skin)
		BNC201-1 (Red skin)	
		AF4013-3	
		AF5150-1	
		AF5447--4	
		AAF07733-4	
		ATCO0293-1W/Y	
		A05180-3PY (Purple skin)	
		A00286-3Y (Red splash on skin)	

Red Flesh Varieties

1. MSX007-4RR (Red skin)
2. CO04063-4R/R (Red skin)
3. MSR226-ARR (Red skin)

Purple Flesh Varieties

1. CO04056-3P/PW (Purple skin)
2. Purple Heart (Red skin)

BNC244-10: Purple skin variety with a unique purple and white color flesh.

Table 18: Management of evaluation trials, 2014

Northampton Co.

Planting Date: 8 May
 Harvest Date: 19 September
 Previous Crop: Soybeans
 Fertilizer Rate/A: 6 May: 170 lb/A Urea. 8 May: 650 lb/A 13-13-13 (N-P-K). 2 June: 100 lb/A Urea
 Herbicide: Sencor, Dual, Prowl H₂O
 Fungicide: Bravo SC, Manzate ProStik
 Insecticide: Admire Pro, Radiant SC, Dimethoate
 Vine Kill: Natural
 Rainfall (inches): May (9.05), June (6.05), July (4.55), August (2.95), September (1.75)
 Irrigation (inches): None

Erie Co.

Planting Date: 30 May
 Harvest Date: 30 September
 Previous Crop: Wheat
 Fertilizer Rate/A: At planting: 25 gal 32% Potash. 20 June: 15 gal 32% Potash.
 Herbicide: Dual, Prowl
 Fungicide: Curzate
 Insecticide: Montana, Assana
 Vine Kill: N/A
 Rainfall (inches): June (2.5), July (4.0), August (4.5), September (2.0)
 Irrigation (inches): None

Rock Springs

Planting Date: 4 & 8 June
 Harvest Date: 13, 14 & 20 September
 Previous Crop: Wheat
 Fertilizer Rate/A: 24 April: 185 topress 0-0-60 (N-P-K). At planting: 1164 lb/A 10-5-5 (N-P-K)
 1 July: 33 lb/A liquid N for reds and whites, 16.5 lb/A liquid N for russets
 Herbicide: Eptam 7E, Dual Magnum II, Sencor 75DF, Matrix
 Fungicide: Gavel 75DF, Manzate ProStik, Tanos, Bravo WS, Curzate 60 DF, Endura
 Insecticide: Mocap, Admire Pro, Radiant, Baythroid XL, Fufill, Movento
 Vine Kill: 17 and 23 Sep
 Rainfall (inches): June (5.71), July (3.84), August (5.52), September (1.38)
 Irrigation (inches): None

Field evaluation of potato cultivars and breeding lines for resistance to late blight in Pennsylvania, 2014.

Thirty-nine potato cultivars and advanced breeding lines were evaluated at the Russell E. Larson Agricultural Research Center in Rock Springs, PA. The soil type was a Hagerstown silty clay loam. The previous crop was wheat. Potatoes were planted on 23 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. At planting, 966 lb/A of 20-10-10 (N-P-K) was banded in the row. Liquid N fertilizer was applied at 33 lb/A on 1 Aug during hilling. Precipitation was 5.71, 3.84, 5.52, and 1.38 in. for Jun, Jul, Aug, and Sep, respectively. Natural infection of *Phytophthora infestans* clonal lineage US-23 occurred in the middle of August. Overhead irrigation was applied at 1.5 in. on 23 Jul. 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 17, 24, 30 Aug and 3 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; Rochdale Gold-Doree, NY150 (NYF52-1), Palisade Russet, NY148 (NYE106-4), CO00291-5R, NYH15-17, Dakota Trailblazer, BNC182-5, BNC244-10, NY136 (Strawberry Paw), MSQ086-3, and AF4342-3 were resistant to moderately resistant.

Cultivar/Line	AUDPC ^z	Cultivar/Line	AUDPC
Rochdale Gold-Doree	0 n ^y	Yukon Gold	568 e-h
NY150 (NYF52-1)	0 n	AF4347-1	584 d-g
Palisade Russet	22 mn	Teton Russet	585 d-g
NY148 (NYE106-4)	56 lmn	Russet Norkotah	591 d-g
CO00291-5R	99 lmn	Atlantic	598 c-g
Kennebec	161 k-n	B2833-16	608 c-f
NYH15-17	169 klm	AF4124-7	612 c-f
Dakota Trailblazer	185 klm	CO098012-5R	613 c-f
BNC182-5	205 kl	AF4532-8	623 c-f
BNC244-10	268 jk	Superior	639 b-f
NY136 (Strawberry Paw)	279 ijk	AF3001-6	646 b-f
MSQ086-3	294 ijk	AF4157-6	647 b-f
AF4342-3	322 ijk	AF0338-17	651 b-f
Katahdin	405 hij	AF4172-2	681 b-e
Snowden	409 hij	AF4124-4	690 b-e
AF4320-17	437 ghi	Dark Red Norland	734 a-d
AF4296-3	490 fgh	AF4138-8	759 abc
AF3362-1	499 fgh	B2676-2	795 ab
Russet Burbank	510 fgh	AF4013-3	863 a
Chieftain	542 e-h		

^z AUDPC = Area under the disease progress curve was calculated from 17 Aug to 3 Sep according to the formula: $\sum_{i=1}^n [(R_{i+1} + R_i)/2] [t_{i+1} - t_i]$, where R = disease severity rating (% of leaf surface affected) at the i th observation, t_i = time (days) since the previous rating at the i th 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 = 164).

Field evaluation of potato cultivars and breeding lines for resistance to early blight in Pennsylvania, 2014.

Thirty-nine potato cultivars and advanced breeding lines were evaluated at the Russell E. Larson Agricultural Research Center in Rock Springs, PA. The soil type was a Hagerstown silty clay loam. The previous crop was wheat. Entries were planted on 20 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. Fertilization was 1015 lb/A of 10-10-10 (N-P-K) banded in row at planting. Precipitation was 5.71, 3.84, 5.52, and 1.38 in. for Jun, Jul, Aug, and Sep, respectively. On 23 Jul, spreader rows were spray-inoculated with a conidial mixture of two isolates of *Alternaria solani*, at a concentration of 4.77×10^4 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 4, 11, 17, 22 and 28 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).

Dark Red Norland was included as susceptible check cultivar. Early blight disease pressure was high and the most susceptible plots reached 100% disease severity by the end of the season. Nine cultivars/lines were characterized as resistant to moderately resistant: AF4342-3, Palisade Russet, Dakota Trailblazer, CO00291-5R, BNC182-5, Russet Burbank, AF4347-1, NY148 (NYE106-4), and AF3001-6.

Cultivar/Line	AUDPC ^z	Cultivar/Line	AUDPC
AF4342-3	92 v ^y	AF4532-8	610 i-n
Palisade Russet	99 v	BNC244-10	659 h-m
Dakota Trailblazer	113 uv	AF3362-1	694 g-m
CO00291-5R	148 tuv	AF4320-17	734 f-l
BNC182-5	180 s-v	Teton Russet	739 e-l
Russet Burbank	237 s-v	Superior	776 d-k
AF4347-1	253 s-v	AF4124-4	789 d-j
NY148 (NYE106-4)	290 r-v	Rochdale Gold-Doree	827 d-i
AF3001-6	314 q-v	AF4013-3	828 d-i
Kennebec	329 q-u	CO098012-5R	849 d-h
MSQ086-3	364 p-t	AF0338-17	895 c-g
NYH15-17	376 o-s	Yukon Gold	928 c-f
NY136 (Strawberry Paw)	389 n-s	AF4138-8	934 c-f
Chieftain	491 m-r	Russet Norkotah	962 cde
Snowden	498 m-r	NY150 (NYF52-1)	972 cd
AF4296-3	526 l-q	B2833-16	1110 bc
Katahdin	559 k-p	AF4157-6	1290 ab
Atlantic	584 j-p	Dark Red Norland	1312 ab
AF4172-2	594 j-o	B2676-2	1401 a
AF4124-7	607 i-n		

^z AUDPC = area under the disease progress curve was calculated from 4 Aug to 28 Aug according to the formula: $\sum_{i=1}^n [(R_{i+1} + R_i)/2] [t_{i+1} - t_i]$, where R = disease severity rating (% of leaf surface affected) at the i th observation, t_i = time (days) since the previous rating at the i th 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 = 224).

Field evaluation of potato cultivars and breeding lines for resistance to powdery scab in Pennsylvania, 2014.

Forty potato cultivars and advanced breeding lines were planted in a naturally infested field in Potter Co., PA on 17 Jun. The soil type was a Mardin silt loam. The previous crop was hay. 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. Fertilizer was banded in-furrow at a rate of 1200 lb/A 8.5-8.5-11.4-19.0-5.68 (N-P-K-S-Mg) at planting. Precipitation was 6.04, 3.38, 5.77, and 2.25 in. for Jun, Jul, Aug, and Sep, respectively. The summer was cool and wet. Standard crop management practices and a recommended fungicide program for the management of early and late blight were followed. Reglone (1.0 oz/A) was applied to vine kill on 3, 10, 12, 19 Sep. Tubers were harvested on 9 Oct. The tubers were visually assessed, and 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. Data were 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 was the moderately resistant check. Under high disease pressure, eight cultivars and breeding lines were classified as moderately resistant, and they include: AF4532-8, Russet Norkotah, AF3362-1, Teton Russet, Dakota Trailblazer, Snowden, AF3001-6, and Katahdin.

Cultivar/Line	Powdery Scab Incidence (%)	Cultivar/Line	Powdery Scab Incidence (%)
Russet Burbank	2.0 p ^z	NY148 (NYE106-4)	63.0 b-h
AF4532-8	2.7 p	B2676-2	63.8 b-h
Russet Norkotah	3.9 p	BNC244-10	64.2 a-h
AF3362-1	4.4 op	Yukon Gold	64.4 a-h
Teton Russet	5.7 op	Chieftain	66.1 a-g
Dakota Trailblazer	7.9 nop	NYH15-17	67.3 a-g
Snowden	11.5 m-p	MSQ086-3	68.3 a-g
AF3001-6	15.9 l-p	Atlantic	71.0 a-f
Katahdin	28.3 k-p	Dark Red Norland	73.2 a-e
Palisade Russet	31.3 j-o	AF0338-17	74.2 a-e
AF4347-1	34.6 i-n	CO098012-5R	77.1 a-d
AF4157-6	38.0 h-m	NY150 (NYF52-1)	81.5 a-d
BNC182-5	38.7 h-m	B2833-16	82.4 a-d
AF4124-4	41.2 g-l	AF4013-3	84.4 abc
Superior	43.5 g-k	NY136 (Strawberry Paw)	85.3 abc
AF4172-2	45.2 f-k	AF4342-3	85.8 abc
AF4124-7	47.8 e-k	AF4320-17	86.5 abc
CO00291-5R	55.3 d-k	Shepody	87.3 abc
Rochdale Gold-Doree	56.9 d-j	AF4296-3	87.7 ab
AF4138-8	59.9 c-i	Kennebec	91.3 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 = 27.4).

Evaluation of foliar fungicides for control of potato late blight in Pennsylvania, 2014.

Fungicides were evaluated on potato cv. Atlantic at the Penn State Russell E. Larson Agricultural Research Center in Rock Springs, PA. The soil type was a Hagerstown silty clay loam. The previous crop was wheat. Potatoes were planted on 16 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. Fertilization was 966 lb/A of 20-10-10 (N-P-K) banded in row at planting. Liquid N fertilizer was applied at 33 lb/A on 18 Jul during hilling. Precipitation was 5.71, 3.84, 5.52, and 1.38 in. for Jun, Jul, Aug, and Sep, respectively. Natural infection of *Phytophthora infestans* clonal lineage US-23 occurred in the middle of August. 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, N₂-pressurized side boom sprayer at 30 psi and 45 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 diseased foliage. The plots were rated on 17, 24, 30 Aug and 3, 7, 12, 18 Sep and the assessments were used to calculate the area under the disease progress curve (AUDPC). Plants were vine killed on 23 and 26 Sep with Reglone (2.0 pt/A). The middle row of each plot was harvested on 10 Oct. Tubers were sorted for marketability and yield data was collected. 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).

Under high disease pressure, all of the treatments significantly suppressed season-long foliar late blight compared to the untreated control. Fungicide programs with A20941, A20942 or Zing! only were the most effective and had among the highest yields. All of the treatments had higher yields than the untreated control. Nine treatments had significantly higher yields than the untreated control.

Treatment and rate/A	Days after first application ^z	AUDPC ^y	Yield (cwt/A) ^x
Bravo Weather Stik 6 SC 1.5 pt A20941 OD 2.05 fl oz	0, 15, 29, 36 7, 22	5 f ^w	338 ab
Bravo Weather Stik 6 SC 1.5 pt A20942 SC 2.5 pt	0, 15, 29, 36 7, 22	5 f	338 ab
Bravo Weather Stik 6 SC 1.5 pt A20941 OD 2.05 fl oz Revus 2.09 SC 8.2 fl oz	0, 15, 29, 36 7, 22 7, 22	7 f	396 a
Bravo Weather Stik 6 SC 1.5 pt A20941 OD 2.05 fl oz Revus 2.09 SC 8.2 fl oz	0, 7, 15, 29 22, 36 22, 36	15 f	289 b-e
ZING! 34 fl oz + Induce 0.5%	0, 7, 15, 22, 29, 36	31 f	314 a-d
Bravo Weather Stik 6SC 1.5 pt	0, 7, 15, 22, 29, 36	78 ef	321 abc
GWN-10243 25 oz + Induce 0.5%	0, 7, 15, 22, 29, 36	82 ef	285 b-e
Bravo Weather Stik 6 SC 1.5 pt Zampro 4.38 SL 14 oz	0, 15, 29, 36 7, 22	93 ef	235 c-f
GWN-10237 25 oz + Induce 0.5%	0, 7, 15, 22, 29, 36	117 ef	286 b-e
GWN-9790 6.4 oz + Induce 0.5%	0, 7, 15, 22, 29, 36	150 de	194 ef
GWN-10236 6.4 oz + Induce 0.5%	0, 7, 15, 22, 29, 36	235 cd	223 def
CX-10250 4.5 oz/100 gal Bravo Weather Stik 6SC 1.5 pt	0, 15, 29 7, 22, 36	292 c	179 f
CX-10470 1.75 pt Bravo Weather Stik 6SC 1.5 pt	0, 15, 29 7, 22, 36	295 c	212 ef
Bravo Weather Stik 6 SC 1.5 pt	0, 15, 29	301 c	286 b-e
CX-10470 1.75 pt	0, 7, 15, 22, 29, 36	981 b	167 f
CX-10470 1.5 pt	0, 7, 15, 22, 29, 36	1077 b	198 ef
Untreated Control		1376 a	160 f
LSD (0.05)		115	96

^z First fungicide application was 11 Aug.

^y AUDPC = Area under disease progress curve was calculated from 17 Aug to 18 Sep according to the formula: $\sum_{i=1}^n [(R_{i+1} + R_i)/2] [t_{i+1} - t_i]$, where R = disease severity rating (% of leaf surface affected) at the i th observation, t_i = time (days) since the previous rating at the i th observation, and n = total number of observations.

^x cwt/A = hundred weight per acre of healthy tubers with a diameter greater than 1.875 inches.

^w 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, 2014-----March 20, 2015

Pennsylvania Regional Potato Germplasm Evaluation Program, 2014

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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 2014 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 1-3), French fry results (Tables 4-8), and the culinary quality results (Table 9). 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 sliced. 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 2014 progress report.

Chipping (Tables 1-3)

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, Snowden, AF4442-4, B2904-2, MSL007-B, MSR061-1, W5955-1, Lamoka, NY152 (H15-5), AC03452-2W and CO02321-4W had the best color; Atlantic, Reba, AF4157-6, B2833-16, NY148, NY154 (H15-17), AF4386-16, B2833-8, B2869-28, BNC326-14, Lehigh, NY141, Manistee, A00286-3Y, Pinnacle (W5015-12), W6609-3, HER 01-61, Taurus, Waneta, J21-5, AF5042-8, AF5142-1, AF5386-4, B3005-7, B3032-6, BNC364-1, AC00206-2W, CO04099-3W/Y and CO02024-9W had acceptable color. At Northampton County, Atlantic, Reba, BNC182-5, B2832-12, NY141 and Waneta had the best color; Snowden, Sebec (AF0338-17), AF4013-3, AF4157-6, NY140, NY148, NY151, Lamoka, MSQ086-3 and W5955-1 had

acceptable color. At Erie County, Atlantic and MSQ086-3 had the best color; Snowden, Reba, AF4013-3, AF4157-6, AF4442-4, NY140, NY141, NY148, Waneta, W6609-3 and Pinnacle had acceptable color.

From the results of the 3 week reconditioning the noteworthy lines are: At Rock Springs, MSQ086-3, BNC326-14, MSL007-B, Lamoka, AF5386-4 and AC03452-2W had the best color; Reba, Snowden, AF4157-6, NY148, NY154 (H15-17), AF4386-16, AF4442-4, B2904-2, Lehigh, NY141, Manistee, MSR061-1, W5955-1, Pinnacle (W5015-12), W6609-3, HER 01-61, Parella, Taurus, Waneta, NY152 (H15-5), J21-5, AF5042-8, AF5426-1, B3005-7, B3032-6, BNC364-1, AC00206-2W, CO02024-9W, CO02321-4W and AC01151-5W had acceptable color. At Northampton County, Atlantic, BNC182-5, NY140, NY148, Lamoka and MSQ086-3 had the best color; Snowden, Reba, AF4013-3, AF4157-6, NY141, Waneta and W5955-1 had acceptable color. At Erie, Reba, AF4442-4, NY140, NY148 and W6609-3 had the best color; Atlantic, Snowden, AF4013-3, AF4157-6, BNC182-5, Waneta, MSQ086-3, W5955-1, Pinnacle (W5015-12) and Taurus had acceptable color.

From the results of the 6 week reconditioning the noteworthy lines are: At Rock Springs, Snowden, MSQ086-3, AF4442-4, Lamoka, NY152 (H15-5) and AC01151-5W had the best color; Atlantic, Reba, AF4013-3, AF4157-6, B2833-16, NY148, NY154 (H15-17), AF4386-16, B2833-8, B2904-2, BNC326-14, Lehigh, NY141, MSL007-B, W5955-1, HER 01-61, Waneta, AF5142-1, AF5386-4, B3032-6, AC00206-2W, AC03452-2W, CO02024-9W and CO02321-4W had acceptable color. At Northampton County, NY140, MSQ086-3 and W5955-1 had the best color; Atlantic, Snowden, Reba, Sebec (AF0338-17), AF4013-3, BNC182-5, NY141, NY148, Lamoka and Waneta had acceptable color. At Erie County, Atlantic, Snowden, Reba, NY140, NY148 and W6609-3 had the best color; AF4157-6, AF4442-4, Waneta, MSQ086-3, W5955-1 and Taurus had acceptable color.

From the results of the chipping directly from 45°F the noteworthy lines are: At Rock Springs, MSR061-1, W5955-1, Waneta, AC03452-2W and CO02024-9W had the best color; Atlantic, Snowden, AF4157-6, MSQ086-3, NY154 (H15-17), AF4386-16, AF4442-4, B2904-2, BNC326-14, Manistee, MSL007-B, Pinnacle, W6609-3, HER 01-61, Taurus, Lamoka, NY152, AF5386-4, B3005-7, B3032-6, BNC364-1, AC00206-2W and AC01151-5W had acceptable color. At Northampton County, Reba, NY140, Lamoka and MSQ086-3 had the best color, Atlantic, Snowden, Sebec, AF4157-6, B2832-12, NY148, Waneta and W5955-1 had acceptable color. At Erie County, NY148 and W6609-3 had the best color; Atlantic, Snowden, AF4157-6, AF4442-4, NY140, Waneta, MSQ086-3 and Taurus had acceptable color.

French fry Tests (Tables 4-8)

At Rock Springs, Easton (AF3001-6), AF4296-3, W8152-1rus, W6234-4rus, AF5072-12, AF5164-19, AF5205-1, AF5406-10 and A03873-3NV had the best French fry color. At Northampton County, Russet Norkotah, Dakota Trialblazer, Easton, Norwis and W6234-4rus had the best color. At Erie County, Easton, W6234-4rus, AF4283-1 and W8152-1rus had the best color.

Tablestock Tests (Table 9)

Of the 110 lines tested for culinary characteristics, only 6 were unacceptable for 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 Real 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. Chip color results of potato evaluation at Rock Springs, Centre County, 2014 - 2015.

Variety/ Line	Specific Gravity	Chip Color			
		Dec. ¹	Feb. ²	Feb. ³	Mar. ⁴
Atlantic	1.090	5	6	5	5
Katahdin	1.080	6	7	7	7
Reba	1.075	4	5	4	6
Rochdale Gold-Doree ^{YF}	1.081	7	7	7	7
Snowden	1.092	3	4	3	4
Superior	1.075	7	8	6	7
Yukon Gold ^{YF}	1.085	7	7	7	8
Sebec (AF0338-17)	1.086	7	6	6	6
AF4013-3 ^{YF}	1.090	6	6	5	6
AF4138-8	1.067	6	7	7	7
AF4157-6	1.073	4	5	5	5
B2833-16	1.091	4	6	4	6
BNC182-5	1.090	6	7	6	7
MSQ086-3	1.085	6	3	3	5
NY148	1.092	4	5	5	6
NY150	1.081	6	-	-	-
NY154 (H15-17)	1.087	4	5	5	5
AF4386-16	1.087	4	4	4	5
AF4442-4	1.085	3	5	3	4
AF4614-2	1.075	8	7	7	6
AF4730-2	1.079	6	6	7	7
B2832-12	1.093	6	6	6	7
B2833-8	1.094	4	6	5	6
B2834-8	1.084	6	6	6	7
B2869-28	1.083	5	7	6	7
B2893-2	1.087	7	6	7	7
B2904-2	1.076	3	5	5	4
BNC326-14	1.076	5	3	4	5
Lehigh ^{YF}	1.084	5	5	5	6
NY141	1.079	5	6	5	7
NY151	1.066	8	7	7	8
ATC00293-1W/Y ^{YF}	1.070	6	6	6	6
Manistee	1.082	5	4	6	5
MSL007-B	1.098	3	3	4	4
MSR061-1	1.083	3	5	6	3
MSS576-05SPL	1.076	6	7	6	8
MI Purple Sport I	1.073	7	8	8	8
A00286-3Y ^{YF}	1.082	5	6	6	7
W5955-1	1.089	3	4	4	3
Pinnacle (W5015-12)	1.088	4	5	6	4
W6609-3	1.081	4	4	4	5
Oneida Gold ^{YF} (W6703-1Y)	1.078	6	6	6	7
HER 01-61 ^{YF}	1.090	5	4	4	4
Parella	1.072	7	5	6	8
Taurus ^{YF}	1.093	4	5	6	5
Lamoka	1.098	3	3	3	5
Waneta	1.082	4	5	5	3
NY152 (H15-5)	1.097	3	5	3	4
J21-5	1.078	5	5	6	6
AF5042-8	1.089	5	5	6	6

Table 1. Continued.

Variety/ Line	Specific Gravity	Chip Color			
		Dec. ¹	Feb. ²	Feb. ³	Mar. ⁴
AF5140-1	1.077	6	6	6	8
AF5142-1 ^{YF}	1.085	5	7	5	6
AF5386-4	1.098	4	3	5	4
AF5415-1	1.078	8	7	7	7
AF5426-1	1.083	6	4	6	6
AF5432-5	1.089	7	6	6	7
AF5447-4 ^{YF}	1.085	6	6	6	6
B3005-6	1.082	7	6	6	7
B3005-7	1.094	4	4	6	5
B3032-6	1.095	5	5	5	4
BNC364-1	1.091	5	4	6	5
BNC369-4	1.084	6	6	6	7
AC00206-2W	1.085	4	3	5	5
AC03452-2W	1.076	3	3	4	3
CO04099-3W/Y ^{YF}	1.092	5	6	6	6
CO02024-9W	1.091	5	4	4	3
CO02321-4W	1.101	3	4	5	6
AC01151-5W	1.090	6	5	3	5

¹ Dec. = Stored at 55⁰F from November 21, 2014 and chipped on December 16 & 17, 2014

² Feb. = Stored at 45⁰F from December 2, 2014 than transferred to 55⁰F three weeks prior to chipping on February 2 & 3, 2015.

³ Feb. = Stored at 45⁰F from December 2, 2014 than transferred to 55⁰F six weeks prior to chipping on February 23 & 24, 2015.

⁴ Mar. = Stored at 45⁰F from December 2, 2014 and chipped on March 2 & 3, 2015.

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 Northampton County, Garry Hunsicker Farm, 2014 - 2015.

Variety/ Line	Specific Gravity	Chip Color			
		Dec. ¹	Feb. ²	Feb. ³	Mar. ⁴
Atlantic	1.098	3	3	4	4
Snowden	1.094	4	4	4	4
Reba	1.081	3	4	4	3
Superior	1.079	6	6	6	7
Yukon Gold ^{YF}	1.087	6	7	6	7
Sebec (AF0338-17)	1.091	4	6	5	5
AF4013-3 ^{YF}	1.090	5	5	5	6
AF4157-6	1.091	4	4	6	4
BNC182-5	1.103	3	3	5	6
B2832-12	1.097	3	6	6	5
NY140	1.089	4	3	3	3
NY141	1.083	3	5	4	7
NY148	1.098	5	3	4	4
NY151	1.077	4	6	6	6
Lamoka	1.092	4	3	4	3
Waneta	1.084	3	5	5	5
MSQ086-3	1.078	4	3	3	3
W5955-1	1.094	4	5	3	4

¹ Dec. = Stored at 55⁰F from November 21, 2014 and chipped on December 15, 2014

² Feb. = Stored at 45⁰F from December 2, 2014 than transferred to 55⁰F three weeks prior to chipping on February 4, 2015.

³ Feb. = Stored at 45⁰F from December 2, 2014 than transferred to 55⁰F six weeks prior to chipping on February 25, 2015.

⁴ Mar. = Stored at 45⁰F from December 2, 2014 and chipped on March 5, 2015.

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 Erie County, Mark Troyer Farm, 2014 - 2015.

Variety/ Line	Specific Gravity	Chip Color			
		Dec. ¹	Feb. ²	Feb. ³	Mar. ⁴
Atlantic	1.084	3	4	3	5
Snowden	1.091	5	4	3	5
Reba	1.079	4	3	3	6
Superior	1.075	6	7	7	7
Yukon Gold ^{YF}	1.075	7	6	8	8
Sebec (AF0338-17)	1.080	6	7	7	7
AF4013-3 ^{YF}	1.091	5	5	6	6
AF4157-6	1.081	5	4	4	4
AF4442-4	1.072	4	3	4	5
BNC182-5	1.088	6	5	7	7
NY140	1.084	5	3	3	4
NY141	1.070	4	7	7	7
NY148	1.091	5	3	3	3
NY151	1.062	8	8	9	-
Waneta	1.074	5	4	4	5
MSQ086-3	1.070	3	4	5	4
W5955-1	1.071	6	4	4	-
Oneida Gold ^{YF} (W6703-1Y)	1.071	7	7	7	8
W6609-3	1.078	4	3	3	3
Pinnacle (W5015-12)	1.080	4	4	6	6
Taurus ^{YF}	1.086	6	5	5	5

¹ Dec. = Stored at 55⁰F from November 21, 2014 and chipped on December 15, 2014

² Feb. = Stored at 45⁰F from December 2, 2014 than transferred to 55⁰F three weeks prior to chipping on February 4, 2015.

³ Feb. = Stored at 45⁰F from December 2, 2014 than transferred to 55⁰F six weeks prior to chipping on February 24, 2015.

⁴ Mar. = Stored at 45⁰F from December 2, 2014 and chipped on March 5, 2015.

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

^{YF} = Yellow Flesh

Table 4. 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, 2014 - 2015.

Variety/ Line	Yield (cwt/A) ¹		% of Standard ²	Percent ³ Pickouts	Specific Gravity	French Fry Color ⁴		
	Total	>1 7/8"				Dec. ⁵	Jan. ⁶	Feb. ⁷
Dakota Trailblazer	325	179	87	41	1.102	00	0	1
Palisade Russet	232	133	64	40	1.100	1	1	0
Russet Burbank	376	220	106	32	1.079	0	1	2
Russet Norkotah	321	207	100	30	1.076	1	1	2
Teton Russet	394	214	103	40	1.078	1	1	1
Easton (AF3001-6)	410	233	113	40	1.085	0	00	0
AF3362-1	358	168	81	46	1.082	0	0	1
AF4124-4	317	147	71	47	1.086	1	1	1
AF4124-7	260	148	71	33	1.091	0	1	1
AF4172-2	269	170	82	34	1.085	1	1	0
AF4296-3	304	137	66	42	1.083	00	00	0
AF4320-17	376	243	118	31	1.086	0	0	1
AF4342-3	276	132	64	43	1.080	1	1	0
AF4347-1	405	246	119	35	1.079	1	2	1
AF4532-8	205	140	68	26	1.071	1	1	1
AF4283-1	320	194	94	34	1.076	1	1	2
AF4950-2	312	172	83	46	1.081	1	00	0
CO99045-1W/Y ^{YF}	307	210	102	26	1.095	1	1	1
AC00395-2RU	265	124	60	45	1.091	1	2	2
W8152-1rus	238	157	76	29	1.091	00	00	00
W9133-1rus	309	204	98	31	1.073	1	2	2
W9433-1rus	325	219	106	21	1.083	1	1	1
W6234-4rus	230	138	67	35	1.083	0	0	00
Fontane ^{YF}	327	206	100	29	1.086	1	1	1
Lady Amarilla ^{YF}	261	208	100	12	1.082	1	1	1
Parella	522	338	163	29	1.072	-	0	1
Dione ^{YF}	356	250	121	28	1.082	1	1	0
AF5072-12*	182	99	48	38	1.073	1	-	1
AF5089-3*	137	73	35	32	1.087	0	-	0
AF5150-1 ^{YF*}	68	43	21	18	1.066	1	-	-
AF5164-19*	317	171	83	41	1.078	00	0	00
AF5166-2*	178	100	48	38	1.083	1	-	1
AF5181-8*	110	90	43	19	1.092	1	-	0
AF5205-1*	284	223	108	11	1.099	0	0	0
AF5312-1*	326	218	105	26	1.083	1	1	0
AF5314-2*	186	132	64	22	1.076	1	1	1
AF5373-1*	193	142	69	19	1.091	1	0	1
AF5406-10*	164	104	50	20	1.089	0	-	0
AAF08065-2*	167	86	42	41	1.076	0	-	1
AAF07733-4 ^{YF*}	157	96	47	34	1.096	1	1	1
A03873-3NV*	159	64	45	29	1.079	00	-	00
A06914-3CR*	309	176	85	37	1.085	1	1	1
A08422-2VR*	283	205	99	28	1.087	1	1	1
A07008-4T*	216	121	58	39	1.090	1	1	1
A01025-4*	176	117	56	30	1.088	0	1	0
A07103-1T*	210	129	62	32	1.097	0	0	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, 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 55⁰F from November 21, 2014 and fried on December 10, 2014.

⁶ Jan. = Stored at 45⁰F from December 2, 2014 than transferred to 55⁰F three weeks prior to frying on January 27 , 2015.

⁷ Feb. = Stored at 45⁰F from December 2, 2013 than transferred to 55⁰F six weeks prior to frying on February 17 & 18, 2015.

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

^{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 in Northampton County, Garry Hunsicker Farm, 2014 - 2015.

Variety/ Line	Yield (cwt/A) ¹		% of Standard ²	Percent ³ Pickouts	Specific Gravity	French Fry Color ⁴		
	Total	>1 7/8"				Dec. ⁵	Jan. ⁶	Feb. ⁷
Atlantic	450	395	100	4	1.098	-	-	-
Russet Norkotah*	254	198	50	7	1.073	0	0	0
Dakota Trialblazer*	337	287	73	5	1.103	00	00	00
Easton*	323	296	75	4	1.079	00	00	00
Fontane ^{YF*}	378	284	72	6	1.089	1	1	1
Norwis*	255	216	55	10	1.066	0	0	0
W6234-4rus*	400	312	79	14	1.083	00	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 55⁰F from November 21, 2014 and fried on December 9, 2014.

⁶ Jan. = Stored at 45⁰F from December 2, 2014 than transferred to 55⁰F three weeks prior to frying on January 28, 2015.

⁷ Feb. = Stored at 45⁰F from December 2, 2014 than transferred to 55⁰F six weeks prior to frying on February 17, 2015.

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 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, Mark Troyer Farm, 2014 - 2015.

Variety/ Line	Yield (cwt/A) ¹		% of Standard ²	Percent ³ Pickouts	Specific Gravity	French Fry Color ⁴		
	Total	>1 7/8"				Dec. ⁵	Jan. ⁶	Feb. ⁷
Atlantic	386	262	100	29	1.084	-	-	-
Russet Norkotah*	98	45	17	43	1.065	1	1	1
Dakota Trialblazer*	231	139	53	35	1.095	0	1	1
Easton*	341	281	108	16	1.080	00	00	00
Fontane ^{YF*}	224	159	61	18	1.074	1	1	1
W6234-4rus*	146	62	24	52	1.070	0	0	0
Dione ^{YF*}	172	72	28	42	1.071	1	1	1
Lady Amarilla ^{YF*}	358	246	94	18	1.079	1	1	1
AF4283-1*	300	149	57	43	1.071	00	0	0
W8152-1rus*	127	74	28	27	1.077	00	00	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 55⁰F from November 21, 2014 and fried on December 9, 2014.

⁶ Jan. = Stored at 45⁰F from December 2, 2014 than transferred to 55⁰F three weeks prior to frying on January 30, 2015.

⁷ Feb. = Stored at 45⁰F from December 2, 2014 than transferred to 55⁰F six weeks prior to frying on February 17, 2015.

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 NE1231 potato evaluation trial at Rock Springs Plant Pathology Farm, 2014 - 2015.

Variety/ Line	Yield (cwt/A) ¹		% of Standard ²	Percent ³ Pickouts	Specific Gravity	French Fry Color ⁴		
	Total	>1 7/8"				Dec. ⁵	Jan. ⁶	Feb. ⁷
Atlantic	328	250	100	21	1.090	-	-	-
Dakota Trailblazer	284	159	64	38	1.102	00	0	1
Palisade Russet	247	135	54	41	1.100	1	1	0
Russet Burbank	362	209	84	34	1.079	0	1	2
Russet Norkotah	343	233	93	28	1.076	1	1	2
Teton Russet	338	197	79	35	1.078	1	1	1
Easton (AF3001-6)	388	219	88	41	1.085	0	00	0
AF3362-1	345	172	69	44	1.082	0	0	1
AF4124-4	295	148	59	42	1.086	1	1	1
AF4124-7	237	140	56	32	1.091	0	1	1
AF4172-2	255	160	64	34	1.085	1	1	0
AF4296-3	332	160	64	41	1.083	00	00	0
AF4320-17	373	242	97	30	1.086	0	0	1
AF4342-3	261	142	57	36	1.080	1	1	0
AF4347-1	393	246	98	33	1.079	1	2	1
AF4532-8	205	140	56	26	1.071	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 55⁰F from November 21, 2014 and fried on December 10, 2014.

⁶ Jan. = Stored at 45⁰F from December 2, 2014 than transferred to 55⁰F three weeks prior to frying on January 27 , 2015.

⁷ Feb. = Stored at 45⁰F from December 2, 2014 than transferred to 55⁰F six weeks prior to frying on February 17 & 18, 2015.

Replicated trials are the average of 4 replicates.

Table 8. Total yield, greater than 1 7/8" yield, specific gravity, and French fry color for potato commercial trials of four varieties in 2014 - 2015 at: A) Erie County, Kevin Troyer Farm; B) Schuylkill County, Nolan Masser Farm; C) Rock Springs, Plant Pathology Farm. 200 lbs of each variety were planted in each location.

	Variety/ Line	Yield (cwt/A) ¹		Percent ² Pickouts	Specific Gravity	French Fry Color ³		
		Total	>1 7/8"			Dec. ⁴	Jan. ⁵	Feb. ⁶
Kevin Troyer	Easton	416	330	18	1.093	00	00	00
	Norwis	423	365	11	1.072	0	0	0
	Fontane ^{YF}	426	336	9	1.091	1	1	1
	W6234-4rus	293	235	11	1.086	0	0	0
Nolan Masser	Easton	442	248	41	1.085	00	00	00
	Norwis	158	108	24	1.064	0	0	0
	Fontane ^{YF}	401	227	31	1.080	1	1	1
	W6234-4rus	313	218	29	1.079	0	00	00
Rock Springs	Easton	545	374	30	1.080	00	00	00
	Norwis	289	254	10	1.067	0	1	0
	Fontane ^{YF}	439	385	9	1.083	1	1	1
	W6234-4rus	317	222	27	1.074	00	00	0

¹ Yield Total = all yield including pickouts. Yield >1 7/8"

² Percentage of total that are pickouts.

³ French Fry Color: USDA Scale Color Standers for Frozen Fried Potatoes with 000 = lightest, 4 = darkest.

⁴ Dec. = Stored at 55⁰F from November 21, 2014 and fried on December 9, 2014.

⁵ Jan. = Stored at 45⁰F from December 2, 2014 than transferred to 55⁰F three weeks prior to frying on January 29, 2015.

⁶ Feb. = Stored at 45⁰F from December 2, 2014 than transferred to 55⁰F six weeks prior to frying on February 17, 2015.

^{YF} = Yellow flesh

Planting spacing for trial

Kevin Troyer Easton - 12 inches
 Norwis - 9 inches
 Fontane - 12 inches
 W6224-4rus - 12 inches

Nolan Masser Easton - 11 inches
 Norwis - 11 inches
 Fontane - 11 inches
 W6224-4rus - 11 inches

Rock Springs Easton - 12 inches
 Norwis - 12 inches
 Fontane - 12 inches
 W6224-4rus - 12 inches

Table 9. Baking, boiling, microwaving results of tablestock test for Germplasm evaluation trial in Rock Springs, Plant Pathology Farm, 2014 - 2015.

Variety/ Line	Boil ¹			Bake ²		Microwave ³	
	Color ⁴	Texture ⁵	Sloughing ⁶	Color	Texture	Color	Texture
Atlantic	1	2		1	2	1	2
Katahdin	1	2		1	2	1	2
Reba	1	3		1	3	1	2
Rochdale Gold-Doree ^{YF}	3	3		3	1	3	2
Snowden	1	3		1	2	1	1
Superior	1	3		1	3	1	3
Yukon Gold ^{YF}	3	2		3	2	3	2
Sebec (AF0338-17)	1	3		1	3	1	3
AF4013-3 ^{YF}	3	3		3	2	3	2
AF4138-8	1	3		1	3	1	2
AF4157-6	1	3		1	3	1	3
B2833-16	1	3	1	1	2	1	2
BNC182-5	1	2		1	2	1	2
MSQ086-3	1	2		1	2	1	2
NY148	1	2		1	2	1	2
NY150	1	2		1	1	1	2
NY154 (H15-17)	3	2		2	2	3	2
AF4386-16	1	3		1	1	1	2
AF4442-4	1	3		1	2	1	3
AF4614-2	1	3		1	3	1	3
AF4730-2	1	3		1	3	1	3
B2832-12	1	3		1	2	1	3
B2833-8	1	2		1	2	1	2
B2834-8	1	2		1	2	1	2
B2869-28	1	2		1	2	1	3
B2893-2	1	3		1	2	1	2
B2904-2	1	2	1	1	2	1	2
BNC326-14	1	2		1	2	1	2
Lehigh ^{YF}	3	2		3	2	3	2
NY141	1	3		1	3	1	3
NY151	2	3		1	3	1	3
ATC00293-1W/Y ^{YF}	3	3		3	2	3	1
Manistee	1	3		1	2	1	2
MSL007-B	1	3		1	2	1	2
MSR061-1	1	3		1	2	1	3
MSS576-05SPL	2	3		1	3	1	2
MI Purple Sport I	1	3		1	3	1	3
A00286-3Y ^{YF}	3	2		3	2	3	2
W5955-1	1	2		1	1	1	1
W5015-12	1	2		1	2	1	2
W6609-3	1	2		1	2	1	2
W6703-1y ^{YF}	3	4	1	3	1	3	1
Early Valley	1	4		1	3	1	3
Oriana ^{YF}	3	3		3	2	3	2
Elfe ^{YF}	3	3		3	2	3	2
Lanorma ^{YF}	3	3		2	3	2	2
Soraya ^{YF}	3	3		3	2	3	2
Envol	1	3		1	2	1	3
Vivaldi ^{YF}	3	3		2	2	2	4
HER 01-61 ^{YF}	2	2		2	1	2	1

Table 9. Continued.

Variety/ Line	Boil ¹		Sloughing ⁶	Bake ²		Microwave ³	
	Color ⁴	Texture ⁵		Color	Texture	Color	Texture
Reds							
Chieftain	1	3		1	3	1	2
Dark Red Norland	1	3		1	3	1	3
B2676-2 ^{YF}	3	3		1	3	3	3
BNC244-10	*	3		*	3	*	3
CO00291-5R	1	2		1	2	1	2
CO098012-5R	1	3		1	2	1	3
Strawberry Paw (NY136)	1	3		1	2	1	2
SF4550-2	1	3		1	3	1	2
AF4593-1	1	3		1	3	1	3
AF4815-1	1	3		1	3	1	3
AF4831-2	1	2		1	2	1	2
AF4831-3	1	3		1	2	1	3
AF4985-1	1	2		1	2	1	3
B2152-17 ^{YF}	3	3		3	3	3	3
BNC201-1 ^{YF}	3	3		3	2	3	2
BNC315-5	1	3		1	2	1	2
K100-3	1	3		1	3	1	2
CO04056-3P/PW	P	3		P	3	P	3
CO04063-4R/R	P	2		P	3	P	2
CO00405-1RF	1	2		1	2	1	2
MSR226-ARR	R	3		R	2	R	3
MSX007-4RR	R	3		R	3	R	2
A05182-7RY ^{YF}	3	3		3	2	3	1
W6002-1R	1	3		1	3	1	3
W8405-1R	1	2	1	1	2	1	3
Smiley ^{YF}	3	3		3	3	3	3
Dark Red Chieftain	1	3		1	2	1	2
HZC 01-6087 ^{YF}	3	2		3	2	3	2
A05180-3PY ^{YF}	3	3		3	2	3	2
Russets							
Dakota Trailblazer	1	3		1	2	1	3
Palisade Russet	1	3		1	2	1	2
Russet Burbank	1	3		1	2	1	2
Russet Norkotah	1	3		1	2	1	3
Teton Russet	1	3		1	3	1	3
Easton (AF3001-6)	1	3		1	3	1	3
AF3362-1	1	3		1	1	1	2
AF4124-4	1	3		1	1	1	1
AF4124-7	1	3		1	2	1	2
AF4172-2	1	3		1	1	1	2
AF4296-3	1	3		1	3	1	2
AF4320-17	1	2		1	1	1	3
AF4342-3	1	2		1	3	1	2
AF4347-1	1	3		1	2	1	2
AF4532-8	1	3		1	3	1	3
AF4283-1	1	3		1	1	1	2
AF4950-2	1	3		1	2	1	1
CO99045-1W/Y ^{YF}	3	3		3	2	3	2
AC00395-2RU	1	3		1	1	1	3
W8152-1rus	1	2		1	2	1	1

Table 9. Continued.

Variety/ Line	Boil ¹		Sloughing ⁶	Bake ²		Microwave ³	
	Color ⁴	Texture ⁵		Color	Texture	Color	Texture
W9133-1rus	1	3		1	2	1	3
W9433-1rus	1	3		1	2	1	2
W6234-4rus	1	3		1	2	1	1
Nadine	1	3		1	3	1	2
Fontane ^{YF}	3	2		3	2	3	2
Francisca ^{YF}	3	3		3	3	3	2
Lady Amarilla ^{YF}	3	3		3	3	3	1
Parella	1	2		1	2	1	2
Taurus ^{YF}	2	2	1	2	2	3	1
Colomba ^{YF}	3	3		3	3	3	2

Tested: January 20 - 23, 2014 and February 9 – 13, 2015

¹ Boil 20 minutes.

² Bake 45 min. – 1 hr.

³ Microwave 4 – 8 minutes.

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

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

⁶ Sloughing scored as follows: 1=some sloughing, 2= severe sloughing.

^{YF} = Yellow Flesh

* = Purple and white flesh

P = Purple flesh

R = Red flesh