Pennsylvania Potato Research Report, 2015

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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 101 round whites with a few yellow flesh, 37 red-skinned (a few purple skinned) and 56 russet or long white types. The Lehigh Co. location had 38 lines. Breeding lines were contributed by the USDA-ARS, New York, Maine, Michigan, Idaho, Wisconsin, Colorado and a few other sources. See **Pennsylvania Regional Potato Germplasm Evaluation Program, 2015 on pages 1-2, and tables from different locations on pages 3-33, and supplemental progress report on pages 38-39 and tables from different locations on pages 40-54.**

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, 34, 35 and 36 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, AF4648-2, CO00291-5R, NY154 (NYH15-17), AF4953-6, and Katahdin were resistant to moderately resistant to late blight. See **Field evaluation of potato cultivars and breeding lines for resistance to late blight in Pennsylvania, 2015 on page 34.**

Dark Red Norland was included as early blight susceptible check cultivar. Palisade Russet was identified as moderately resistant to early blight in our previous trials. Ten cultivars/lines were characterized as moderately resistant to early blight: CO00291-5R, Palisade Russet, Kennebec, AF4953-6, Russet Burbank, AF4648-2, NY154 (NYH15-17), Snowden, AF4296-3, and AF4975-3. See **Field evaluation of potato cultivars and breeding lines for resistance to early blight in Pennsylvania, 2015 on page 35.**

Kennebec and Shepody were included as powdery scab susceptible check cultivars and Russet Burbank was the moderately resistant check. Seven cultivars and breeding lines were classified as moderately resistant to powdery scab, and they include: Teton Russet, Dark Red Norland, NY154 (NYH15-17), BNC244-10, AF4953-6, Russet Norkotah, and AF3362-1. See **Field evaluation of potato cultivars and breeding lines for resistance to powdery scab in Pennsylvania, 2015 on page 36.**

3. Chemical Control of Potato Late Blight

In the late blight fungicide trial 11 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. See **Evaluation of foliar fungicides for control of potato late blight in Pennsylvania, 2015 on page 37.**

Progress Report---December 10, 2015

Pennsylvania Regional Potato Germplasm Evaluation Program, 2015

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

Replicated and non-replicated variety evaluation plots were established at the following locations: Lehigh Co. (Tables 1- 2), and Rock Springs, Centre Co. (Tables 3-10). The Lehigh location had 38 non-replicated lines. At the Rock Springs location the trials included 51 round whites with a few yellow flesh, 20 red-skinned (a few purple skinned) and 29 russet or long white types in replicated plots, and an additional 60 whites, 17 red-skinned and 27 russet or long white types planted in non-replicated observational plots. At Lehigh 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. An early variety trial of six varieties was conducted at Rock Springs, Centre Co. (Table 11-12). Creamer variety trials were conducted at Schuylkill Co. (Table 13) and at Rock Springs, Centre Co. (Table 14). Commercial trials of eight par-fry varieties were conducted at three locations: Erie Co., Schuylkill Co. and Rock Springs, Centre Co. (Table 15). We assessed yield, tuber size, internal defects and external defects, skin color, texture, tuber shape, specific gravity and overall appearance. French Fry and chip quality tests and culinary tests will be conducted over the next few months. Notes on fresh colors of specific potato varieties/lines are provided in Table 16. Management information for each site is provided in Table 17.

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:

Lehigh county trials:
In the Lehigh location the following lines had marketable yield higher than Atlantic: Reba, Chieftain, AF5225-1, K100-3, Red Endeavor, Easton, and Cal White.

Round White planted 8-inch apart in Rock Springs:
Based on data of replicated trials at Rock Springs, there were 4 round white clones with marketable yields significantly greater than Atlantic: AF4442-4, AF5225-1, A00286-3Y, and Julinka. There were another 12 round white clones with marketable yields greater than Atlantic: AF0338-17 (Sebec), AF4138-8, AF4552-5, B2904-2, NY140, NY141, NY151, NY157 (J105-10), MSS576-05SPL, MI Purple Sport I, W5955-1, and A05182-7Y.

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.

Russet-skinned or white planted 10-inch apart in Rock Springs:
Based on data of replicated trials at Rock Springs, there were 1 clone with marketable yields significantly greater than Russet Norkotah: A08422-2VR. There were another 16 clones with marketable yields greater than Russet Norkotah: Teton Russet, Easton, AF4113-2, AF4172-2, AF4953-6, AF5057-13, AF5164-19, Dakota Trialblazer, AF5203-7, Fontane, Lady Amarilla, Francisca, Taurus, Performer, Ambassador, and Dakota Trialblazer.

The results of chipping, French fry and culinary quality tests will be available in March 2016.

The Pennsylvania Potato Research Program, the Pennsylvania Department of Agriculture and USDA funded this research in conjunction with donations. This research is the result of cooperation of growers, industry and PSU staff. The growers hosting the plots provided contributions (land, fertilizer, pesticides, time, etc.). University of Maine, Cornell University, USDA, Idaho, Colorado State University, University of Wisconsin, Michigan State University potato breeding programs and Parkland Seed 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 Forrest Wessner Farm, Lehigh County, 2015

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5		Gravity
Atlantic	358	302	84	100	28	38	18	0	13	1.087
Snowden	321	261	81	86	31	45	5	0	7	1.086
Reba	352	309	88	102	19	46	22	0	8	1.074
Katahdin	297	228	77	76	23	34	21	0	17	1.067
Superior	299	233	78	77	24	44	10	0	17	1.066
Chieftain	403	328	81	109	28	33	20	0	9	1.064
Yukon Gold [yf]	326	258	79	86	14	32	33	0	16	1.074
Lehigh [yf]	378	300	79	99	25	36	18	0	13	1.072
Francisca [yf]	398	271	68	90	52	16	0	0	8	1.063
AF5215-2	328	206	63	68	35	28	0	0	13	1.061
AF5225-1	466	349	75	116	36	30	9	0	14	1.074
A00286-3Y [yf]	350	253	72	84	41	21	11	0	9	1.074
NY140	355	231	65	77	23	26	10	6	25	1.075
NY141	107	62	58	20	24	21	13	0	21	1.060
NY149 [yf]	351	264	75	88	39	29	7	0	8	1.069
K100-3	437	388	89	128	26	51	12	0	5	1.053
K45-2	299	173	58	57	34	21	3	0	29	1.049
B2152-17 [yf]	366	255	70	84	52	15	2	0	6	1.070
BNC201-1 [yf]	212	127	60	42	31	27	2	0	29	1.067
Red Endeavor	429	325	76	108	37	34	5	0	13	1.061
NY150	251	116	46	38	44	2	0	0	12	1.074
BNC326-14	303	234	77	78	45	25	7	0	4	1.073
B3032-6 [yf]	154	57	37	19	34	4	0	0	0	1.079
B3044-2	249	162	65	54	49	14	2	0	3	1.091
Elkton	320	263	82	87	38	36	7	0	7	1.080
Pinnacle	382	270	71	89	36	22	12	0	13	1.075
W5955-1	298	206	69	68	28	33	8	0	23	1.074
Accumulator	399	298	75	99	23	29	23	0	20	1.081

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific Gravity
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5		
Performer* yf	343	274	80	91	26	43	11	0	17	1.073
Ambassador* yf	407	232	57	77	32	18	7	0	25	1.084
Fontane* yf	387	297	77	98	49	26	2	0	7	1.082
Easton*	434	365	84	121	24	34	26	0	12	1.081
Russet Norkotah*	287	226	79	75	31	36	12	0	14	1.066
Dakota Trailblazer*	308	205	67	68	24	24	18	0	25	1.095
Norwis*	295	279	95	92	26	39	26	4	0	1.063
Cal White*	421	347	82	115	20	35	26	0	14	1.076
Bentje* yf	357	158	44	52	33	9	2	0	35	1.070
Lady Amarilla* yf	312	236	75	78	45	23	7	0	12	1.073

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

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

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

[4]Percentage of total that are pickouts.

Non-replicated trial.

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

Table 2. Tuber characteristics, internal and external defects for potato evaluation trial in Forrest Wessner Farm, Lehigh County, 2015

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	5	5	2	5	6	0	0	1	0	1	0	1	0	0	0
Snowden	5	5	5	2	4	6	0	0	1	0	0	0	1	0	0	0
Reba	4	6	6	3	4	6	0	0	0	0	0	0	2	0	0	0
Katahdin	4	7	7	3	5	4	0	0	0	0	0	0	2	1	0	0
Superior	4	6	5	3	4	5	0	0	2	0	0	0	1	0	0	0
Chieftain	3	2	7	3	6	5	0	0	1	0	0	0	2	0	0	0
Yukon Gold	4	7	6	2	6	5	0	0	0	0	0	0	3	0	0	0
Lehigh	5	5	5	3	5	5	0	0	1	0	0	0	3	0	0	0
Francisca	4	6	7	3	6	4	0	0	0	0	0	0	1	0	0	0
AF5215-2	5	6	6	2	6	5	0	0	0	0	0	0	2	0	0	0
AF5225-1	5	6	5	2	6	4	0	0	1	0	0	0	2	0	0	0
A00286-3Y	5	6	6	3	5	5	0	0	1	0	0	0	2	0	0	0
NY140	5	6	6	3	5	4	0	0	1	0	0	0	3	0	0	0
NY141	4	7	7	2	5	4	0	0	0	0	0	0	1	0	0	0
NY149	5	6	6	2	5	5	0	0	1	0	0	1	1	0	0	0
K100-3	5	2	7	2	5	6	0	0	1	0	1	0	0	0	0	0
K45-2	4	2	7	2	4	6	0	0	0	0	0	0	1	0	0	1
B2152-17	4	2	7	2	6	5	0	0	1	0	0	0	2	0	0	0
BNC201-1	4	2	7	2	5	6	0	0	1	0	1	0	1	0	0	0
Red Endeavor	4	2	7	3	6	6	0	0	1	0	1	0	2	0	0	0
NY150	5	7	7	2	6	6	0	0	0	0	0	0	3	0	0	0
BNC326-14	5	5	5	3	6	5	0	0	0	0	0	0	1	0	0	0
B3032-6	2	6	7	2	7	7	0	0	1	0	0	0	0	0	0	0
B3044-2	5	7	7	2	6	6	0	0	1	0	0	1	0	0	0	0
Elkton	6	6	5	3	6	6	0	0	0	0	0	0	1	0	0	0
Pinnacle	4	6	5	2	7	4	0	0	2	0	1	0	2	0	0	0
W5955-1	5	6	5	2	5	5	0	0	1	0	0	0	3	0	0	0
Accumulator	3	6	5	2	4	4	0	0	1	0	0	0	0	2	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
Performer	4	6	6	3	6	5	0	0	1	0	0	0	0	2	0	0
Ambassador	4	6	6	4	6	5	0	0	0	0	0	0	0	3	0	0
Fontane	4	6	5	3	5	5	0	0	0	0	1	0	0	0	0	1
Easton	5	6	4	5	7	4	0	0	0	0	0	0	1	0	0	0
Russet Norkotah	5	5	3	4	6	5	1	0	1	0	0	0	1	0	0	0
Dakota Trailblazer	3	5	3	4	6	4	1	0	2	0	0	0	2	0	0	0
Norwis	4	6	7	3	5	5	1	0	3	0	0	0	0	0	0	0
Cal White	4	6	6	4	6	5	0	0	1	0	0	0	2	0	0	0
Bentje	2	7	7	3	5	5	0	0	1	0	0	0	1	0	0	2
Lady Amarilla	4	5	6	4	7	4	0	0	1	0	0	0	2	0	0	0

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

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

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

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

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

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

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

Table 3. Total yield, greater than 1 7/8" yield, percent of standard, size distribution, percent pickouts, specific gravity and vine maturity for round white potato evaluation trial in Plant Pathology Farm, Rock Springs, 2015

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]					Specific	Vine
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5	%PO[4]	Gravity	Maturity
Atlantic	484	411	85	100	19	37	29	0	13	1.099	ML
Katahdin	390	341	87	83	24	57	7	0	7	1.079	ML
Norwis	365	347	95	85	29	41	23	2	2	1.080	M
Snowden	393	351	90	85	21	40	24	5	7	1.095	ML
Superior	422	385	91	94	29	44	18	0	7	1.082	ME
Yukon Gold[yf]	463	397	86	96	17	40	29	0	12	1.094	ML
AF0338-17 (Sebec)	474	430	91	105	17	51	21	3	7	1.094	ML
AF4138-8	515	465	90	113	27	43	20	0	4	1.072	ML
AF4157-6	468	398	85	97	40	38	7	0	10	1.094	M
AF4442-4	527	501	95	122	23	45	26	1	1	1.094	ML
AF4648-2	419	356	85	87	22	47	16	0	11	1.094	ML
AF4975-3	443	400	91	97	25	36	27	3	5	1.091	ML
B2833-16	413	342	82	83	18	40	23	0	15	1.096	M
B3005-7	361	278	77	68	45	29	3	0	5	1.094	M
NY154 (H15-17)	366	333	91	81	21	48	18	4	6	1.098	ML
AF4552-5	443	423	96	103	26	50	19	1	0	1.091	ME
AF5033-13	305	274	90	67	31	41	18	0	1	1.093	M
AF5280-5	456	407	89	99	23	48	19	0	7	1.070	M
AF5281-4	410	352	86	86	35	43	7	0	7	1.095	ME
AF5225-1	605	546	90	133	32	47	11	0	1	1.088	ML
AF5320-1	435	347	79	84	27	41	12	0	14	1.094	ML
BNC177-5	437	370	85	90	24	38	21	2	7	1.095	ML
B2832-12	458	386	84	94	20	39	19	5	12	1.091	ME
B2834-8	370	326	88	79	34	44	8	2	5	1.089	E
B2869-28	418	380	91	92	28	46	15	2	4	1.083	ME
B2904-2	452	421	93	102	30	42	21	0	3	1.099	ML
Reba	392	337	86	82	26	43	18	0	7	1.080	ME
NY140	534	468	88	114	19	40	30	0	10	1.092	ML
NY141	497	439	89	107	23	49	16	0	6	1.086	M

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]					Specific	Vine
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5	%PO[4]	Gravity	Maturity
NY149 (F11-1) [yt]	469	395	84	96	34	40	10	0	2	1.084	M
NY150	390	242	61	59	49	11	1	0	2	1.087	ME
NY151	517	431	83	105	33	38	13	0	6	1.075	ME
NY157 (J105-10)	460	421	92	102	35	49	8	0	3	1.093	ME
L30-5 [yt]	445	391	88	95	39	36	13	0	3	1.090	ML
MSR061-1	392	348	89	85	44	37	8	0	2	1.089	M
MSQ086-3	461	394	86	96	37	37	12	0	5	1.084	ML
MSS576-05SPL	520	466	90	113	22	35	30	2	6	1.084	ML
MI Purple Sport I	468	426	91	104	23	45	24	0	5	1.081	ME
Accumulator	526	410	78	100	15	40	16	6	19	1.096	M
Pinnacle	515	391	76	95	27	32	15	1	17	1.094	ML
W5955-1	459	433	94	105	20	39	36	0	3	1.093	ML
W6609-3	386	283	73	69	26	34	14	0	19	1.091	ML
ACO3452-2W	454	387	85	94	24	42	20	0	8	1.076	ML
ACO0206-2W	379	250	66	61	22	35	9	0	25	1.083	ML
CO02024-9W	432	356	82	87	39	38	5	0	9	1.091	ML
A00286-3Y [yt]	605	526	87	128	32	43	12	0	5	1.084	ML
A05182-7Y [yt]	510	414	81	101	31	32	18	0	8	1.091	L
A00188-3C	351	276	79	67	33	35	11	0	16	1.090	M
A02267-1Y [yt]	467	384	82	93	33	38	11	0	8	1.075	ME
Heraclea [yt]	434	273	63	66	39	15	9	0	9	1.095	ME
Julinka [yt]	582	496	85	121	30	37	16	1	8	1.080	ME
AF5403-3*	482	426	88	104	41	41	7	0	1	1.100	ML
AF5416-2*	272	254	93	62	35	43	15	0	0	1.085	E
AF5428-7*	398	340	85	83	29	40	16	0	11	1.084	ME
AF5435-7*	323	312	96	76	34	40	22	0	0	1.095	M
AF5467-13*	345	276	80	67	31	45	3	0	10	1.088	E
NDAF092239CB-2*	325	241	74	59	48	26	0	0	11	1.074	E
AF5484-3*	413	377	91	92	48	38	6	0	1	1.108	ME
AF5505-3* [yt]	426	374	88	91	49	36	2	0	0	1.079	M
AF5558-13*	363	334	92	81	32	54	6	0	3	1.089	ME
AF5561-2*	485	334	69	81	33	29	7	0	29	1.081	E

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]					Specific	Vine
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5	%PO[4]	Gravity	Maturity
AF5563-5*	521	476	91	116	17	36	30	8	7	1.091	M
AF5563-12*	441	368	84	90	28	39	17	0	11	1.093	ML
AF5568-6*	573	470	82	114	14	48	21	0	15	1.088	ME
COAF10102-1* yt	384	297	77	72	52	26	0	0	6	1.100	ME
AF5215-2* yt	594	485	82	118	44	25	12	0	5	1.084	E
BNC266-6*	585	529	91	129	30	46	14	0	3	1.104	ML
BNC318-9*	396	335	85	82	26	39	19	0	9	1.088	E
BNC364-1*	511	440	86	107	51	29	6	0	6	1.092	ME
BNC369-4*	702	664	95	161	32	47	16	0	2	1.090	ML
B3103-4* yt	490	320	65	78	22	30	13	0	29	1.076	ME
NC426-2*	527	456	87	111	42	31	14	0	5	1.106	ML
BNC468-1*	423	401	95	97	30	51	9	5	0	1.096	ML
BNC469-1*	340	285	84	69	56	28	0	0	0	1.090	E
BNC469-2*	431	301	70	73	31	37	2	0	17	1.093	ML
BNC469-5*	392	309	79	75	41	32	5	0	10	1.089	ME
BNC469-9*	406	296	73	72	46	26	0	0	7	1.100	M
BNC469-11*	396	288	73	70	50	23	0	0	6	1.082	ME
BNC469-12*	355	268	76	65	43	32	0	0	4	1.102	E
BNC469-13*	426	356	84	87	56	22	5	0	0	1.084	E
BNC470-13*	448	388	87	94	43	29	15	0	0	1.093	ML
BNC470-16*	522	426	82	104	13	37	32	0	14	1.087	L
BNC471-2*	531	425	80	103	26	36	18	0	15	1.087	ML
BNC472-3*	448	304	68	74	33	23	11	0	21	1.099	ME
BNC476-1*	519	458	88	111	24	43	21	0	6	1.094	ML
BNC478-2*	470	415	88	101	45	33	11	0	1	1.100	ME
B3147-3*	465	390	84	95	44	37	3	0	7	1.096	ME
B3148-12* yt	506	425	84	103	36	36	12	0	10	1.084	ME
B3148-14*	440	285	65	69	40	22	2	0	15	1.091	M
B3148-15*	431	361	84	88	40	34	10	0	6	1.096	ML
B3148-21* yt	303	256	84	62	44	32	9	0	6	1.100	ML
B3148-22*	313	213	68	52	52	16	0	0	13	1.081	ME
B3150-7*	316	176	56	43	28	27	0	0	30	1.087	M

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]					Specific	Vine
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5	%PO[4]	Gravity	Maturity
B3155-1*	343	231	67	56	29	26	12	0	24	1.089	M
B3155-3* yf	384	347	90	84	47	38	6	0	0	1.096	ME
B3156-2* yf	383	300	78	73	51	20	7	0	3	1.082	E
B3156-10*	537	466	87	113	31	43	12	0	2	1.095	M
B3156-11*	290	162	56	40	39	17	0	0	22	1.084	E
B3156-15* yf	392	333	85	81	24	35	22	5	8	1.072	ME
B3159-7*	282	243	86	59	53	24	9	0	4	1.100	ME
B3161-5*	359	298	83	73	58	22	3	0	1	1.108	M
B3161-10* yf	343	283	83	69	30	24	29	0	6	1.097	E
B3168-3*	459	411	90	100	39	34	16	0	2	1.089	E
B3172-3* yf	298	250	84	61	61	23	0	0	0	1.107	E
B3172-9* yf	320	230	72	56	53	19	0	0	3	1.088	E
MSL007-B*	249	231	93	56	45	40	8	0	0	1.096	ME
MSM246-B*	178	123	69	30	41	22	6	0	11	1.099	M
MSQ131-A*	273	198	73	48	13	46	14	0	24	1.081	M
CO04099-3W/Y* yf	318	206	65	50	42	23	0	0	5	1.100	E
ACO01151-5W*	244	172	70	42	63	8	0	0	0	1.100	M
B3150-3*	473	396	84	96	40	34	9	0	9	1.096	ME
LSD	75	79	8		10	10	12	4	6		

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

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

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

[4]Percentage of total that are pickouts.

Planted 8-in. apart with 15 seed pieces per 10-ft plot. Yellow flesh varieties are indicated with yf.

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

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

Table 4. Tuber characteristics, internal and external defects for round white potato evaluation trial in Plant Pathology Farm, Rock Springs, 2015

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	4	6	1	1	1	0	1	0	1	0	0	0
Katahdin	5	8	8	3	6	5	0	0	2	0	0	0	2	0	0	0
Norwis	4	7	7	3	5	5	1	0	1	0	0	0	0	0	0	0
Snowden	4	6	5	2	5	5	1	0	2	0	0	1	1	0	0	0
Superior	5	7	6	3	5	5	0	0	1	0	2	0	1	0	0	0
Yukon Gold	5	7	7	3	5	5	2	0	1	0	0	1	2	0	0	0
Sebec (AF0338-17)	5	7	6	3	5	6	0	0	2	0	0	0	1	0	0	0
AF4138-8	5	7	6	2	6	5	0	0	2	0	0	0	1	0	0	0
AF4157-6	5	7	7	2	5	5	0	0	1	0	2	0	1	0	0	0
AF4442-4	5	7	7	2	5	5	1	0	0	0	0	0	1	0	0	0
AF4648-2	5	8	8	2	6	5	0	0	2	0	1	0	2	0	0	0
AF4975-3	4	7	7	2	5	6	0	0	2	0	1	0	1	0	0	0
B2833-16	5	6	6	2	5	6	0	0	2	0	2	1	1	0	0	0
B3005-7	5	7	7	3	5	6	0	0	1	0	0	1	1	0	0	0
NY154 (H15-17)	5	7	7	3	6	5	0	0	2	0	0	0	1	0	0	0
AF4552-5	5	7	7	2	5	6	1	1	1	0	0	0	0	0	0	0
AF5033-13	5	7	7	2	5	5	1	0	1	0	0	0	1	0	0	0
AF5280-5	5	8	7	3	4	5	1	0	2	0	0	0	1	0	0	0
AF5281-4	3	8	7	2	5	5	0	0	1	0	0	0	1	0	0	0
AF5225-1	6	7	7	3	5	5	0	0	1	0	0	0	1	0	0	0
AF5320-1	6	8	8	2	6	5	2	0	2	0	2	0	1	0	0	0
BNC177-5	5	6	6	3	5	5	0	0	1	0	1	0	2	0	0	0
B2832-12	5	6	6	2	4	6	0	0	2	0	1	1	2	0	0	0
B2834-8	6	7	6	2	5	6	0	0	2	0	1	0	1	0	0	0
B2869-28	6	7	8	2	5	6	0	0	1	0	1	0	1	0	0	0
B2904-2	4	6	6	3	5	6	3	0	1	0	0	0	1	0	0	0
Reba	5	7	7	3	4	5	0	0	3	0	1	0	1	0	0	0
NY140	6	7	7	3	6	5	0	0	1	0	1	0	2	0	0	0
NY141	5	7	8	3	6	5	0	0	1	0	0	0	1	0	0	0

Variety/Line	Tuber Characteristics[1]						Internal Defects[2]		External Defects[3]							
	TA	C	TX	Sh	TED	TCS	HH	IB	Rhizoc	H	Gr	K	G	Sc	Sp	T
NY149 (F11-1)	5	6	7	3	6	5	0	0	2	0	0	1	1	0	0	0
NY150	6	8	8	2	7	7	0	0	0	0	0	0	1	0	0	0
NY151	6	7	8	2	6	6	0	0	0	0	0	0	2	0	0	0
NY157 (J105-10)	5	7	6	3	5	5	0	0	1	0	0	0	1	0	0	0
L30-5	5	6	7	3	6	5	1	0	1	0	0	0	1	0	0	0
MSR061-1	6	6	6	3	5	7	0	0	1	0	0	0	1	0	0	0
MSQ086-3	5	7	6	2	4	6	0	0	1	0	0	0	1	1	0	0
MSS576-05SPL	5	7	7	2	4	6	0	0	2	0	1	0	1	0	0	0
MI Purple Sport I	5	7	7	3	4	4	0	0	1	0	0	0	1	0	0	0
Accumulator	3	6	7	3	3	6	2	0	1	0	1	2	1	1	0	0
Pinnacle	4	6	5	2	5	4	2	0	1	0	2	0	1	1	0	0
W5955-1	6	6	5	2	4	6	3	0	2	0	0	0	1	0	0	0
W6609-3	5	7	7	2	6	5	0	0	1	0	1	0	1	0	0	0
ACO3452-2W	5	7	8	2	5	5	0	0	2	0	0	0	1	0	0	0
ACO0206-2W	5	7	7	2	6	6	4	0	1	0	2	0	2	0	0	0
CO02024-9W	4	7	7	2	5	5	0	0	1	0	1	0	1	0	0	0
A00286-3Y	5	7	7	3	6	5	1	0	2	0	0	1	1	1	0	0
A05182-7Y	4	7	7	3	4	5	0	0	2	0	0	1	1	0	0	0
A00188-3C	5	7	7	3	6	6	0	0	1	0	2	0	1	0	0	0
A02267-1Y	6	7	8	2	5	6	0	0	1	0	0	0	2	0	0	0
Heraclea	5	7	7	3	7	5	0	0	1	0	1	0	1	0	0	1
Julinka	5	7	8	4	7	5	0	0	2	0	0	1	1	0	0	0
AF5403-3*	5	7	6	3	5	6	0	0	1	0	0	0	0	0	0	0
AF5416-2*	5	7	7	3	5	5	0	0	0	0	0	0	0	0	0	0
AF5428-7*	3	8	8	2	3	6	0	0	1	0	1	0	1	0	0	0
AF5435-7*	4	7	7	3	5	5	0	0	0	0	0	0	0	0	0	0
AF5467-13*	4	7	7	2	5	5	0	0	2	0	1	0	1	0	0	0
NDAF092239CB-2*	5	7	7	3	6	5	1	0	1	0	0	0	0	0	0	0
AF5484-3*	6	7	7	2	6	6	0	0	1	0	0	0	0	0	0	0
AF5505-3*	6	7	7	3	7	6	0	0	1	0	0	0	0	0	0	0
AF5558-13*	5	7	6	2	5	6	0	0	1	0	0	0	0	0	0	0
AF5561-2*	4	7	7	3	5	4	2	0	1	0	1	1	1	0	0	0

Variety/Line	Tuber Characteristics[1]						Internal Defects[2]		External Defects[3]							
	TA	C	TX	Sh	TED	TCS	HH	IB	Rhizoc	H	Gr	K	G	Sc	Sp	T
AF5563-5*	5	8	7	3	4	5	1	0	0	0	0	0	1	0	0	0
AF5563-12*	5	7	7	2	5	5	2	0	1	0	1	0	0	0	0	0
AF5568-6*	4	7	7	3	5	5	0	0	2	0	1	0	1	0	0	0
COAF10102-1*	5	7	7	2	4	6	0	0	3	0	0	0	1	0	0	0
AF5215-2*	5	7	7	3	6	5	0	0	1	0	0	0	1	0	0	0
BNC266-6*	4	7	6	3	4	6	0	0	0	0	0	0	1	0	0	0
BNC318-9*	5	6	5	3	6	6	1	0	0	0	0	0	1	0	0	0
BNC364-1*	5	7	7	3	6	5	0	0	1	0	0	0	1	0	0	0
BNC369-4*	4	6	6	3	5	4	1	0	1	0	0	0	1	0	0	0
B3103-4*	3	6	7	3	5	6	0	0	1	0	3	0	2	0	0	0
NC426-2*	5	6	6	2	6	5	0	0	2	0	0	0	1	0	0	0
BNC468-1*	5	6	5	2	5	5	0	0	0	0	0	0	0	0	0	0
BNC469-1*	5	6	5	2	6	6	0	0	0	0	0	0	0	0	0	0
BNC469-2*	5	6	5	2	6	5	0	0	2	0	0	0	1	0	0	0
BNC469-5*	5	7	6	2	6	6	0	0	1	0	1	0	0	0	0	0
BNC469-9*	4	6	6	2	5	6	2	0	2	0	0	0	0	1	0	0
BNC469-11*	4	6	6	2	4	6	0	0	2	0	0	0	1	0	0	0
BNC469-12*	5	6	6	2	6	6	0	0	0	0	0	0	0	0	0	0
BNC469-13*	5	6	5	3	6	5	0	0	0	0	0	0	0	0	0	0
BNC470-13*	5	7	7	3	6	5	0	0	0	0	0	0	0	0	0	0
BNC470-16*	5	6	5	3	4	5	0	1	1	0	0	0	2	0	0	0
BNC471-2*	5	6	5	3	5	6	3	0	0	0	0	0	2	0	0	0
BNC472-3*	4	6	6	3	6	6	1	0	1	0	1	0	2	0	0	0
BNC476-1*	4	7	6	3	6	5	0	0	1	0	0	0	1	0	0	0
BNC478-2*	5	6	6	3	5	6	1	0	3	0	0	0	1	0	0	0
B3147-3*	5	7	7	3	6	5	0	0	0	0	0	0	0	0	0	0
B3148-12*	5	7	7	2	6	6	0	0	0	0	1	0	0	0	0	0
B3148-14*	4	7	7	3	6	5	3	0	1	0	0	1	1	0	0	0
B3148-15*	6	6	6	2	6	7	0	0	1	0	0	0	1	0	0	0
B3148-21*	4	7	8	3	6	5	0	0	0	0	0	0	0	0	0	0
B3148-22*	4	7	6	3	6	5	3	0	1	0	0	0	1	0	0	0
B3150-7*	3	6	6	3	6	5	0	0	2	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
B3155-1*	5	7	7	2	6	4	0	0	1	0	1	0	1	0	0	0
B3155-3*	5	7	8	3	6	5	0	0	1	0	0	0	0	0	0	0
B3156-2*	3	7	8	3	4	5	0	0	4	0	0	0	0	0	0	0
B3156-10*	5	8	8	3	5	5	0	0	0	0	0	0	0	0	0	0
B3156-11*	5	7	7	3	7	4	0	0	1	0	1	0	0	0	0	0
B3156-15*	5	8	8	2	5	4	0	0	3	0	0	0	1	0	0	0
B3159-7*	4	7	6	3	6	6	0	0	0	0	0	0	0	0	0	0
B3161-5*	5	6	6	2	6	6	0	0	1	0	0	0	0	0	0	0
B3161-10*	4	6	6	3	5	5	0	0	1	0	0	0	1	0	0	0
B3168-3*	5	7	6	2	5	4	0	0	1	0	0	0	0	0	0	0
B3172-3*	5	6	6	2	5	6	0	0	1	0	0	0	0	0	0	0
B3172-9*	4	6	6	2	4	6	0	0	2	0	0	0	0	0	0	0
MSL007-B*	5	5	5	2	6	6	3	0	0	0	0	0	0	0	0	0
MSM246-B*	4	6	6	2	5	5	0	0	1	0	1	0	0	0	0	0
MSQ131-A*	5	7	6	2	5	6	0	0	0	0	1	0	0	1	0	0
CO04099-3W/Y*	5	6	7	3	5	5	0	0	2	0	0	0	1	0	0	0
ACO01151-5W*	6	7	7	2	6	5	0	0	0	0	0	0	0	0	0	0
B3150-3*	5	7	6	3	5	6	2	0	0	0	0	0	2	0	0	0

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

[2]Internal Defects: HH = hollow heart, IB = internal browning. Total number observed out of 8 tubers for replicated trials and total number out of 4 for non replicated trials (marked with *). 0 = not observed.

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

Table 5. Total yield, greater than 1 7/8" yield, percent of standard, size distribution, percent pickouts, specific gravity and vine maturity for red or purple skinned potato evaluation trial in Plant Pathology Farm, Rock Springs, 2015

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific	Vine
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5		Gravity	Maturity
Chieftain	538	475	88	100	27	45	17	0	7	1.077	M
Dark Red Norland	395	334	85	70	46	34	4	0	6	1.068	E
AF4985-1	442	312	70	66	25	34	11	0	23	1.075	ME
BNC244-10	389	323	83	68	50	30	2	0	2	1.092	E
CO00291-5R	342	318	93	67	22	51	20	0	3	1.074	VL
CO98012-5R	425	357	84	75	39	36	8	0	7	1.080	M
AF4831-2	467	369	79	78	46	29	3	0	5	1.074	ME
B1816-5 (Peter Wilcox) yf	352	300	85	63	58	25	2	0	1	1.083	E
B2152-17 yf	490	406	83	86	44	33	6	0	3	1.084	E
BNC201-1 yf	417	374	90	79	41	43	5	0	3	1.086	E
K100-3	461	348	76	73	18	44	14	0	20	1.067	ME
K45-2	403	343	85	72	45	39	1	0	2	1.058	E
L27-2	468	363	77	76	52	24	2	0	3	1.080	ME
Red Endeavor	457	407	89	86	38	43	9	0	2	1.075	ME
CO04056-3P/PW pur & yf	282	151	53	32	43	10	0	0	2	1.088	M
A05180-3PY yf	526	392	75	83	36	35	3	0	14	1.079	ME
Fenway Red	519	395	76	83	28	37	10	0	17	1.081	M
Carolina	575	436	76	92	31	32	13	0	16	1.072	M
Elmo	498	409	81	86	37	40	5	0	10	1.070	M
Purple Magic pur & yf	439	298	68	63	40	22	6	0	6	1.098	L
NDAF102571B-5*	441	344	78	72	59	19	0	0	0	1.079	E
NDAF102573-2*	447	385	86	81	46	27	13	0	5	1.080	ME
NDAF102691B-7*	392	337	86	71	48	35	3	0	1	1.080	ME
NDAF102696C-1*	450	382	85	80	46	34	5	0	0	1.082	ME
NDAF102766-1*	448	372	83	78	46	34	3	0	4	1.075	E
B3074-10*	365	308	84	65	28	48	8	0	10	1.091	ME
BNC480-1*	277	171	62	36	52	10	0	0	4	1.075	ME
BNC480-2*	474	362	76	76	29	39	8	0	11	1.070	E
BNC481-2*	416	276	66	58	54	12	0	0	3	1.081	E

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific	Vine
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5		Gravity	Maturity
BNC481-4*	408	352	86	74	34	40	12	0	2	1.076	E
BNC481-6*	327	256	78	54	63	16	0	0	1	1.065	E
BNC483-2* [yf]	438	354	81	75	52	25	4	0	0	1.077	E
BNC484-3* [yf]	331	287	87	61	40	37	10	0	0	1.083	E
BNC485-1*	432	371	86	78	68	18	0	0	0	1.072	E
MSR226-ARR* [pk]	173	65	38	14	38	0	0	0	0	1.089	ME
CO04067-8RY* [yf]	151	73	48	15	48	0	0	0	19	1.092	E
CO00405-1RF*	151	38	25	8	25	0	0	0	0	1.095	E
LSD	78	75	8		11	11	8	0	6		

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

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

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

[4]Percentage of total that are pickouts.

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

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

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

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

Table 6. Tuber characteristics, internal and external defects for red skinned potato evaluation trial in Plant Pathology Farm, Rock Springs, 2015

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	5	2	7	3	5	5	0	0	1	0	1	1	1	0	0	0
Dark Red Norland	3	2	7	3	6	5	0	0	2	0	1	0	1	0	0	0
AF4985-1	4	2	7	2	4	5	0	0	2	0	2	0	2	0	0	0
BNC244-10	4	1	7	2	6	6	0	0	0	0	0	0	1	0	0	0
CO00291-5R	6	2	8	2	5	6	0	0	1	0	1	0	1	0	0	0
CO98012-5R	5	2	7	2	5	6	0	0	1	0	1	0	1	0	0	0
AF4831-2	6	2	8	3	6	5	0	0	1	0	1	0	1	0	0	0
B1816-5 (Peter Wilcox)	5	1	6	3	6	5	0	0	1	0	1	0	0	0	0	0
B2152-17	5	2	7	3	6	5	0	0	1	0	0	0	1	0	0	0
BNC201-1	5	2	7	2	4	7	0	0	2	0	0	0	1	0	0	0
K100-3	4	2	7	3	6	6	0	0	1	0	0	2	0	0	0	0
K45-2	5	2	8	2	6	6	0	0	1	0	0	0	1	0	0	0
L27-2	6	3	7	3	6	5	0	0	1	0	0	0	0	0	0	0
Red Endeavor	6	2	8	3	6	6	0	1	1	0	0	0	1	0	0	0
CO04056-3P/PW	5	1	6	3	6	5	0	0	0	0	0	0	0	0	0	0
A05180-3PY	4	1	8	2	5	6	0	0	1	0	2	1	1	0	0	0
Fenway Red	6	2	7	2	5	6	0	0	1	0	1	0	2	0	0	0
Carolina	4	2	7	3	7	5	0	0	2	0	0	1	2	0	0	0
Elmo	5	2	7	4	4	5	0	0	1	0	0	0	1	0	0	0
Purple Magic	3	1	8	4	7	4	0	0	0	0	0	0	0	0	0	0
NDAF102571B-5	5	2	7	2	6	5	0	0	0	0	0	0	0	0	0	0
NDAF102573-2	5	2	7	2	6	5	0	0	0	0	0	0	0	0	0	0
NDAF102691B-7	5	2	7	3	5	6	0	0	0	0	0	0	0	0	0	0
NDAF102696C-1	4	2	7	3	4	5	0	0	2	0	0	0	0	0	0	0
NDAF102766-1	5	2	8	2	6	6	0	0	0	0	1	0	0	0	0	0
B3074-10*	4	2	7	2	5	4	0	0	0	0	1	0	0	0	0	0
BNC480-1*	5	1	7	2	5	6	0	1	0	0	0	0	0	0	0	0
BNC480-2*	4	1	8	3	6	5	0	0	1	0	0	0	0	0	0	0
BNC481-2*	5	1	8	3	6	4	0	0	0	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
BNC481-4*	4	1	7	3	6	5	0	0	0	0	0	0	0	0	0	0
BNC481-6*	5	1	7	2	5	5	0	0	0	0	0	0	0	0	0	0
BNC483-2*	5	2	8	3	6	5	0	0	1	0	0	0	0	0	0	0
BNC484-3*	4	2	7	3	6	5	0	0	0	0	0	0	0	0	0	0
BNC485-1*	5	1	8	3	4	5	0	0	0	0	0	0	0	0	0	0
MSR226-ARR*	3	2	8	4	6	5	0	0	1	0	0	0	0	0	0	0
CO04067-8RY*	3	2	7	2	6	6	1	0	1	0	1	0	0	0	0	0
CO00405-1RF*	3	2	7	5	7	4	0	0	1	0	0	0	0	0	0	0

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

[2]Internal Defects: HH = hollow heart, IB = internal browning. Total number observed out of 8 tubers for replicated trials and total number out of 4 for non replicated trials (marked with *). 0 = not observed.

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

Table 7. Total yield, greater than 1 7/8" yield, percent of standard, size distribution, percent pickouts, specific gravity and vine maturity for russet skinned or white potato evaluation trial in Plant Pathology Farm, Rock Springs, 2015

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific	Vine
	Total	>1 7/8"	US#1	Standard	2	3	4	5		Gravity	Maturity
Palisade Russet	353	220	63	77	26	30	7	0	30	1.104	L
Russet Burbank	403	252	61	88	27	28	7	0	31	1.086	ML
Russet Norkotah	369	287	77	100	32	33	12	0	9	1.081	E
Teton Russet	442	316	71	110	24	24	2	20	21	1.081	M
Easton	414	358	87	124	27	40	20	0	5	1.096	ML
Caribou Russet	324	227	70	79	14	22	27	7	24	1.090	ML
AF4113-2	429	361	84	126	20	40	24	0	10	1.087	M
AF4124-7	359	242	68	84	33	24	10	0	18	1.090	M
AF4172-2	428	381	89	133	28	39	22	0	3	1.096	M
AF4296-3	389	257	66	89	25	26	15	0	20	1.101	ML
AF4953-6	474	403	86	140	13	37	30	5	13	1.094	ML
AF5057-13	515	392	76	136	27	27	22	0	16	1.106	ML
AF5091-2	312	212	66	74	33	28	5	0	17	1.083	M
AF5164-19	477	384	80	134	23	41	17	0	13	1.088	ML
Dakota Trialblazer	387	345	89	120	37	37	15	0	4	1.116	ML
AF5203-7	456	315	69	110	27	35	7	0	17	1.091	ML
A08422-2VR	474	412	87	143	28	36	23	0	10	1.087	M
A06021-1T	366	274	74	95	32	30	13	0	14	1.091	ME
Fontane [yt]	387	309	80	108	44	28	8	0	4	1.099	ML
Lady Amarilla [yt]	368	304	82	106	44	33	5	0	6	1.087	M
Francisca [yt]	489	384	79	134	52	21	6	0	3	1.080	M
Taurus [yt]	384	315	82	110	51	30	0	0	2	1.095	M
Bintje [yt]	395	242	56	84	29	21	6	0	28	1.086	ML
Performer [yt]	382	332	87	116	25	32	30	0	9	1.085	ML
Ambassador	452	317	66	110	34	24	5	3	15	1.092	M
Norwis [yt]	261	226	86	79	41	25	17	3	9	1.075	M
Atlantic	391	285	71	99	25	36	9	0	24	1.099	ML
Svenja [yt]	385	282	73	98	24	34	15	0	19	1.097	ML

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific	Vine
	Total	>1 7/8"	US#1	Standard	2	3	4	5		Gravity	Maturity
AF4283-1*	456	290	64	101	26	30	8	0	26	1.088	ML
AF5060-27*	395	345	87	120	27	49	5	5	4	1.081	ML
AF5071-2*	421	335	80	117	32	32	10	5	8	1.097	ML
W9133-1rus*	365	326	89	113	19	39	32	0	10	1.078	ME
W9433-1rus*	407	337	83	117	5	36	35	7	15	1.088	ML
A06084-1TE*	295	187	63	65	36	20	7	0	12	1.085	M
Dione*	558	482	86	168	10	38	39	0	12	1.096	ML
Cal White*	501	403	80	140	15	35	22	8	17	1.092	ML
AF4950-2*	392	321	82	112	42	24	15	0	9	1.089	M
AF5312-1*	491	353	72	123	32	26	14	0	24	1.084	ME
AF5487-8*	283	226	80	79	51	22	6	0	0	1.082	ME
AF5488-10*	435	334	77	116	41	21	15	0	10	1.080	M
AF5494-2*	381	333	87	116	24	27	30	6	11	1.091	ME
AF5511-4*	361	250	69	87	16	32	22	0	28	1.099	ME
AF5518-1*	348	287	82	100	20	33	28	0	9	1.081	ME
AF5521-1*	400	347	87	121	12	26	43	6	10	1.104	ML
AF5521-6*	362	268	74	93	24	23	26	0	16	1.099	M
AF5522-5*	334	304	91	106	26	42	23	0	2	1.086	ME
AF5550-11*	364	260	72	91	26	19	26	0	22	1.082	ML
COAF10004-3*	437	247	57	86	16	17	24	0	32	1.091	M
A08014-9TE*	297	273	92	95	28	40	23	0	1	1.080	ML
A03873-3NV*	362	254	70	88	44	24	2	0	11	1.080	ML
A06914-3CR*	449	278	62	97	24	29	9	0	31	1.093	ML
A01025-4*	279	240	86	84	17	26	42	0	5	1.097	ML
A07103-1T*	285	248	87	86	51	32	5	0	0	1.100	ML
Maris Piper*	469	382	82	133	48	19	15	0	9	1.094	ML
AAF10237-4*	374	334	89	116	21	47	22	0	6	1.106	E
LSD	134	124	15		18	17	12	15	13		

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

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

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

[4] Percentage of total that are pickouts.

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

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

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

Table 8. Tuber characteristics, internal and external defects for russet skinned or white potato evaluation trial in Plant Pathology Farm, Rock Springs, 2015

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
Palisade Russet	5	7	6	4	7	5	2	0	2	0	0	2	2	0	0	0
Russet Burbank	4	6	5	4	7	5	2	0	1	0	1	2	1	0	0	0
Russet Norkotah	5	5	4	4	7	5	3	0	1	0	0	0	1	0	0	0
Teton Russet	4	6	5	5	7	5	0	0	1	0	2	0	1	0	0	0
Easton	5	7	6	4	7	4	5	0	2	0	0	0	0	0	0	0
Caribou Russet	4	6	4	4	6	5	0	1	1	0	0	2	1	0	0	0
AF4113-2	6	7	6	5	6	5	0	0	1	0	1	0	0	0	0	0
AF4124-7	4	6	6	5	6	5	0	0	0	0	0	1	1	0	0	0
AF4172-2	5	6	7	5	6	5	1	0	1	0	0	0	1	0	0	0
AF4296-3	4	6	6	5	6	4	0	0	2	0	0	1	1	0	0	0
AF4953-6	5	6	5	5	7	5	1	0	0	0	0	1	1	0	0	0
AF5057-13	4	7	7	4	7	5	0	0	1	0	0	0	1	0	0	0
AF5091-2	3	6	5	4	7	5	0	0	0	0	0	0	1	0	0	0
AF5164-19	4	6	5	5	6	5	0	0	1	0	0	0	2	0	0	0
Dakota Trialblazer	5	5	4	5	7	4	0	0	1	0	0	0	1	0	0	0
AF5203-7	4	7	6	4	7	4	0	0	0	0	1	1	1	0	0	0
A08422-2VR	5	6	4	4	7	4	0	0	1	0	0	0	1	0	0	0
A06021-1T	5	6	4	4	7	4	0	0	1	0	0	0	1	0	0	0
Fontane	4	7	6	3	5	5	0	0	1	0	0	0	1	0	0	0
Lady Amarilla	5	7	6	4	6	4	0	0	1	0	0	0	1	0	0	0
Francisca	4	7	7	3	5	5	0	0	1	0	0	0	1	0	0	0
Taurus	5	7	7	2	5	5	0	0	1	0	0	0	0	0	0	0
Bintje	3	7	8	3	7	5	0	0	2	0	0	1	1	0	0	0
Performer	4	6	6	4	7	4	0	0	2	0	0	0	1	0	0	0
Ambassador	4	7	7	4	7	5	0	0	1	0	0	0	2	0	0	0
Dakota Trialblazer	5	5	3	5	7	5	0	0	2	0	1	0	1	0	0	0
Norwis	5	7	7	3	5	5	1	0	2	0	1	0	1	0	0	0
Atlantic	5	6	5	2	5	6	0	0	2	0	1	0	1	0	0	0
Svenja	5	7	8	4	6	5	1	0	2	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
AF4283-1*	4	6	6	4	6	5	0	0	1	0	0	0	2	0	0	0
AF5060-27*	4	6	5	5	7	5	0	0	0	0	0	0	0	0	0	0
AF5071-2*	4	5	5	5	7	5	0	0	0	0	0	0	0	0	0	0
W9133-1rus*	5	7	6	5	7	5	0	0	0	0	0	0	1	0	0	0
W9433-1rus*	4	7	6	5	7	4	0	0	1	0	0	0	2	0	0	0
A06084-1TE*	3	6	4	5	5	4	0	0	2	0	0	0	1	0	0	0
Dione*	5	6	4	5	5	5	0	0	0	0	0	1	1	0	0	1
Cal White*	4	7	6	5	6	4	1	0	1	0	0	1	1	0	0	0
AF4950-2*	5	6	6	5	6	5	1	1	0	0	0	0	1	0	0	0
AF5312-1*	5	4	3	5	6	5	0	0	1	0	1	0	1	0	0	0
AF5487-8*	5	5	3	5	6	5	0	0	1	0	0	0	0	0	0	0
AF5488-10*	5	5	3	5	6	5	0	0	1	0	1	0	1	0	0	0
AF5494-2*	5	6	6	5	6	5	0	0	1	0	0	0	1	0	0	0
AF5511-4*	5	6	3	4	6	4	0	0	1	0	0	1	1	0	0	0
AF5518-1*	4	5	4	4	6	5	0	0	1	0	1	0	0	0	0	0
AF5521-1*	4	6	4	4	6	4	0	0	1	0	0	0	0	0	0	0
AF5521-6*	3	6	6	4	6	5	0	0	0	0	0	0	0	0	0	0
AF5522-5*	4	5	4	4	6	4	0	0	1	0	0	0	0	0	0	0
AF5550-11*	3	6	6	4	6	4	0	0	2	0	1	0	1	0	0	0
COAF10004-3*	3	6	6	4	6	4	0	0	1	0	0	2	1	0	0	0
A08014-9TE*	4	5	4	5	6	5	0	0	2	0	0	0	0	0	0	0
A03873-3NV*	4	6	6	5	7	5	0	0	0	0	0	0	1	0	0	0
A06914-3CR*	3	6	6	4	7	5	0	0	1	0	0	2	1	0	0	0
A01025-4*	4	6	6	5	7	5	1	0	1	0	0	0	1	0	0	0
A07103-1T*	4	5	4	3	6	5	0	0	1	0	0	0	0	0	0	0
Maris Piper*	4	7	6	3	6	5	0	2	1	0	0	0	1	0	0	0
AAF10237-4*	4	6	4	5	7	4	0	0	1	0	0	0	1	0	0	0

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

[2]Internal Defects: HH = hollow heart, IB = internal browning. Total number observed out of 8 tubers for replicated trials and total number out of 4 for non replicated trials (marked with *). 0 = not observed.

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

Table 9. Total yield, greater than 1 7/8", percent of standard, size distribution, percent pickouts, specific gravity and vine maturity for NE1231 potato evaluation trial in Plant Pathology Farm, Rock Springs, 2015

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific	Vine
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5		Gravity	Maturity
Atlantic	488	424	87	100	18	40	29	0	11	1.099	ML
Katahdin	391	349	89	82	22	58	9	0	6	1.079	ML
Snowden	407	367	90	87	19	40	25	7	6	1.095	ML
Superior	403	356	88	84	29	43	16	0	9	1.082	ME
Yukon Gold [yf]	478	412	86	97	15	39	31	1	12	1.094	ML
AF0338-17 (Sebec)	483	439	91	104	17	51	22	2	7	1.094	ML
AF4138-8	510	466	91	110	29	42	20	0	3	1.072	ML
AF4157-6	451	379	84	89	37	41	6	0	10	1.094	M
AF4442-4	511	484	95	114	20	46	27	1	2	1.094	ML
AF4648-2	415	356	86	84	21	50	15	0	10	1.094	ML
AF4975-3	442	393	89	93	25	37	23	4	6	1.091	ML
B2833-16	411	332	80	78	18	40	23	0	16	1.096	M
B3005-7	347	266	76	63	44	30	3	0	5	1.094	M
NY154 (H15-17)	384	348	91	82	20	46	22	3	7	1.098	ML
Chieftain	548	485	88	114	25	44	19	0	7	1.077	M
Dark Red Norland	398	321	81	76	41	35	4	0	9	1.068	E
AF4985-1	475	325	69	77	22	33	13	0	25	1.075	ME
BNC244-10	384	316	82	74	53	28	1	0	3	1.092	E
CO00291-5R	340	312	92	74	22	52	18	0	5	1.074	VL
CO98012-5R	412	346	84	82	40	36	7	0	7	1.080	M
Palisade Russet	353	220	63	52	26	30	7	0	30	1.104	L
Russet Burbank	403	252	61	59	27	28	7	0	31	1.086	ML
Russet Norkotah	369	287	77	68	32	33	12	0	9	1.081	E
Teton Russet	442	316	71	74	24	24	2	20	21	1.081	M
Easton	414	370	89	87	25	41	23	0	4	1.096	ML
Caribou Russet	324	227	70	53	14	22	27	7	24	1.090	ML
AF4113-2	429	361	84	85	20	40	24	0	10	1.087	M

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific	Vine
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5		Gravity	Maturity
AF4124-7	359	242	68	57	33	24	10	0	18	1.090	M
AF4172-2	428	381	89	90	28	39	22	0	3	1.096	M
AF4296-3	389	257	66	61	25	26	15	0	20	1.101	ML
AF4953-6	474	403	86	95	13	37	30	5	13	1.094	ML
LSD	87	82	9		11	11	12	9	8		

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

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

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

[4]Percentage of total that are pickouts.

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.

Yellow flesh varieties are indicated with [yf].

Table 10. Tuber characteristics, internal and external defects for NE1231 potato evaluation trial in Plant Pathology Farm, Rock Springs, 2015

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	4	6	1	1	1	0	1	0	1	0	0	0
Katahdin	5	8	8	3	6	5	0	0	2	0	0	0	2	0	0	0
Snowden	4	6	5	2	5	5	1	0	2	0	0	1	1	0	0	0
Superior	5	7	6	3	5	5	0	0	1	0	2	0	1	0	0	0
Yukon Gold	5	7	7	3	5	5	2	0	1	0	0	1	2	0	0	0
Sebec (AF0338-17)	5	7	6	3	5	6	0	0	2	0	0	0	1	0	0	0
AF4138-8	5	7	6	2	6	5	0	0	2	0	0	0	1	0	0	0
AF4157-6	5	7	7	2	5	5	0	0	1	0	2	0	1	0	0	0
AF4442-4	5	7	7	2	5	5	1	0	0	0	0	0	1	0	0	0
AF4648-2	5	8	8	2	6	5	0	0	2	0	1	0	2	0	0	0
AF4975-3	4	7	7	2	5	6	0	0	2	0	1	0	1	0	0	0
B2833-16	5	6	6	2	5	6	0	0	2	0	2	1	1	0	0	0
B3005-7	5	7	7	3	5	6	0	0	1	0	0	1	1	0	0	0
NY154 (H15-17)	5	7	7	3	6	5	0	0	2	0	0	0	1	0	0	0
Chieftain	5	2	7	3	5	5	0	0	1	0	1	1	1	0	0	0
Dark Red Norland	3	2	7	3	6	5	0	0	2	0	1	0	1	0	0	0
AF4985-1	4	2	7	2	4	5	0	0	2	0	2	0	2	0	0	0
BNC244-10	4	1	7	2	6	6	0	0	0	0	0	0	1	0	0	0
CO00291-5R	6	2	8	2	5	6	0	0	1	0	1	0	1	0	0	0
CO98012-5R	5	2	7	2	5	6	0	0	1	0	1	0	1	0	0	0
Palisade Russet	5	7	6	4	7	5	2	0	2	0	0	2	2	0	0	0
Russet Burbank	4	6	5	4	7	5	2	0	1	0	1	2	1	0	0	0
Russet Norkotah	5	5	4	4	7	5	3	0	1	0	0	0	1	0	0	0
Teton Russet	4	6	5	5	7	5	0	0	1	0	2	0	1	0	0	0
Easton	5	7	6	4	7	4	5	0	2	0	0	0	0	0	0	0
Caribou Russet	4	6	4	4	6	5	0	1	1	0	0	2	1	0	0	0
AF4113-2	6	7	6	5	6	5	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
AF4124-7	4	6	6	5	6	5	0	0	0	0	0	1	1	0	0	0
AF4172-2	5	6	7	5	6	5	1	0	1	0	0	0	1	0	0	0
AF4296-3	4	6	6	5	6	4	0	0	2	0	0	1	1	0	0	0
AF4953-6	5	6	5	5	7	5	1	0	0	0	0	1	1	0	0	0

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

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

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

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

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

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

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

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

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 11. Total yield, greater than 1 7/8", size distribution, percent pickouts, and specific gravity for potato early variety trial in Plant Pathology Farm, Rock Springs, 2015

Variety/Line	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific
	Total	>1 7/8"	US#1	Standard[2]	2	3	4	5		Gravity
Superior	406	331	81	100	30	39	11	0	14	1.085
Goldeye [yf]	378	308	82	93	41	28	13	0	3	1.067
Erika [yf]	516	364	70	110	50	14	7	0	6	1.080
Novella [yf]	469	367	78	111	45	30	3	0	8	1.080
Musica [yf]	508	384	76	116	45	29	2	0	9	1.080
Viviana [yf]	473	334	70	101	28	29	13	0	21	1.072
LSD	111	124	12		11	10	6	0	9	

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

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

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

[4]Percentage of total that are pickouts.

The trial was replicated trial with 3 replications and planted on May 20 and vine killed on August 17, 2015.

LSD indicates least significant difference (P = 0.05).

Yellow flesh varieties are indicated with [yf].

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

Table 12. Tuber characteristics, internal and external defects for potato early variety trial in Plant Pathology Farm, Rock Springs, 2015

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
Superior	4	7	6	3	4	5	0	0	2	0	0	0	1	0	0	0
Goldeye	5	6	7	3	7	5	0	0	1	0	0	0	1	0	0	0
Erika	6	7	8	4	7	4	0	0	2	0	0	0	1	0	0	0
Novella	5	7	8	4	6	5	0	0	2	0	0	0	1	0	0	0
Musica	5	6	7	3	5	5	0	0	1	0	0	0	2	0	0	0
Viviana	5	7	8	3	6	5	0	0	2	0	2	0	1	0	0	0

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

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

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

Table 13. Total yield, size distribution, and external characteristic for potato creamer variety trial in Nolan Masser Farm, Schuylkill County, 2015

Variety/Line	Space between potatoes in a row (inch)	Yield (cwt/A)[1]	% by size class[2]			Tuber Characteristics[3]			
		Total	1	2	3	TA	C	TX	Sh
Rose Marie	6	230	25	75	0	5	2	7	7
Gemson	6	242	4	68	28	6	7	6	2
Noelle	6	222	5	73	21	7	7	7	6
NY150	6	141	8	76	16	4	8	7	2
Isabelia	6	270	2	35	63	4	7	7	4
Jester	6	275	7	52	41	4	7	7	3
Jennifer	6	196	2	41	57	6	7	7	3
Jazzy	6	210	8	81	10	4	7	8	6
Little Giant	6	62	22	77	1	3	2	7	4
BNC 201-1	8.5	228	3	16	81	6	2	7	2
B2152-17	8.5	331	1	26	73	7	2	7	2
LSD		68	6	13	13				

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

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

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

The trial was replicated trial with 3 replications. LSD indicates least significant difference (P = 0.05).

Table 14. Total yield, size distribution, and external characteristic for potato creamer variety trial in Plant Pathology Farm, Rock Springs, 2015

Variety/Line	Space between potatoes in a row (inch)	Yield (cwt/A)[1]	% by size class[2]			Tuber Characteristics[1]			
		Total	1	2	3	TA	C	TX	Sh
Rose Marie	6	114	39	61	0	5	3	8	4
Smart	6	142	0	54	46	8	9	8	3
AF4659-12	6	133	7	74	19	4		8	3
AF5275-1	6	132	0	49	51	7	2	8	2
AF5278-3	6	111	0	23	77	5	2	7	2
Gemson	6	156	2	61	37	6	7	7	2
Noelle	6	189	2	47	51	4	9	8	4
NY150	6	131	6	66	27	7	8	8	2
Isabelia	6	171	6	68	26	5	7	7	3
Jester	6	179	2	47	51	6		8	2
Goldeye	6	263	0	11	89	7	7	7	3
Jennifer	6	157	2	26	72	5	7	7	3
CO0405-1R	6	77	8	88	4	4	2	7	4
Jazzy	6	180	6	72	22	6	9	8	4
B2152-17	6	196	2	34	64	6	2	8	2
AF5215-2	6	183	3	36	61	6	7	7	2
Little Giant	6	86	39	61	0	6	2	8	4
LSD		37	5	11	11				

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

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

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

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

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

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 =

The trial was replicated trial with 3 replications. LSD indicates least significant difference (P = 0.05).

Table 15. Total yield, greater than 1 7/8" yield, size distribution, percent pick outs, specific gravity and internal defects for potato commercial trials of eight par fry varieties in A) Rock Springs, Plant Pathology Farm; and seven varieties in B) Erie County, Kevin Troyer Farm, and C) Schuylkill County, Nolan Masser Farm. About 200 lbs of each variety were planted in each location in 2015

Location	Variety/Line	Space between potatoes in a row (inch)	Yield (cwt/A)[1]		%	% of	% by size class[3]				%PO[4]	Specific Gravity	Internal Defects[5]	
			Total	>1 7/8"	US#1	Standard[2]	2	3	4	5			HH	IB
Rock Springs	Dakota Trailblazer	12	374	347	93	76	12	31	46	4	5	1.104	0	0
	Easton	12	402	363	90	80	27	39	24	0	5	1.088	0	0
	Cal White	12	437	337	77	74	8	25	34	10	21	1.080	1	0
	Norwis	10	476	455	96	100	20	34	41	0	3	1.081	0	0
	Bintje[yf]	10	356	282	79	62	41	31	7	0	7	1.085	0	0
	Lady Amarilla[yf]	10	367	306	83	67	32	39	12	0	4	1.083	0	0
	Performer[yf]	10	362	322	89	71	30	37	22	0	8	1.080	0	0
	Ambassador[yf]	10	383	314	82	69	37	31	13	0	8	1.091	0	0
Erie County	Dakota Trailblazer	12	305	279	91	105	24	38	29	0	4	1.106	0	0
	Cal White	12	423	351	83	133	12	32	28	11	14	1.091	0	0
	Norwis	12	287	264	92	100	22	37	33	0	4	1.074	0	0
	Bintje[yf]	12	317	237	75	90	48	27	0	0	6	1.085	0	0
	Lady Amarilla[yf]	12	254	226	89	85	33	45	10	0	2	1.082	0	0
	Performer[yf]	12	273	257	94	97	23	45	27	0	0	1.074	0	0
	Ambassador[yf]	12	314	240	76	91	40	33	3	0	4	1.095	0	0
Schuylkill County	Dakota Trailblazer	12	268	221	82	62	14	33	35	0	15	1.105	1	0
	Cal White	12	372	323	87	90	31	36	20	0	9	1.085	0	0
	Norwis	12	380	358	94	100	22	45	23	4	2	1.074	1	0
	Bintje[yf]	12	362	245	68	69	49	18	1	0	17	1.074	0	0
	Lady Amarilla[yf]	12	301	244	81	68	34	40	7	0	10	1.073	0	0
	Performer[yf]	12	427	362	85	101	28	43	13	0	8	1.077	0	0
	Ambassador[yf]	12	452	374	83	105	41	32	9	0	0	1.089	0	0

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

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

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

[4]Percentage of total that are pickouts.

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

Yellow flesh varieties are indicated with [yf].

Non-replicated trial.

Table 16: Notes on fresh colors of potato varieties/lines, 2015

Yellow Flesh Notes

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:	YF1	YF2	YF3
	B2152-17 (Red skin)	Yukon Gold	Julinka
	B3156-2	Heraclea	Fontane
	B3156-15	Taurus	Lady Amarilla
	B3161-10	Performer	Francisca
	B3172-3	Ambassador	Goldeye
	BNC483-2 (Red skin)	Novella	Erika
	Dione	Musica	COAF10102-1
	AF5403-3	Viviana	
		Svenja	
		BNC201-1 (Red skin)	
		Peter Wilcox	
		B3103-4	
		B3148-12	
		B3148-21	
		B3155-3	
		B3172-9	
		B3148-14	
		BNC484-3 (Red skin)	
		NY149	
		L30-5	
		AF5215-2	
		AF5505-3	
		A00286-3Y (Red splash on skin)	
		A05182-7Y	
		A02267-1Y	
Red Flesh Varieties		A05180-3PY (Purple skin)	
MSR226-ARR (Red skin)		CO04099-3W/Y	
		CO04067-8RY (Red skin)	

Purple Flesh Varieties
CO04056-3P/PW (Purple skin)

Purple Magic has a white edge around a purple and white speckled flesh

Table 17: Management of evaluation trials, 2015

Rock Springs

Trial	Germplasm
Planting Date:	20 May
Harvest Date:	15, 16, 19& 20 October
Previous Crop:	Wheat
Fertilizer Rate/A:	20 April: 122 lbs/A 0-0-62 (N-P-K). At planting: 1037 lb/A 10-10-10 (N-P-K) 3 July: 49.5 lb/A liquid N
Herbicide:	Eptam 7E, Medal EC, Sencor 75DF, Matrix
Fungicide:	Gavel 75DF, Manzate ProStik, Tanos, Bravo WS, Endura
Insecticide:	Mocap, Admire Pro, Avaunt, Baythroid XL, Coragen, Movento, FulFill
Vine Kill:	8 and 14 Sep
Rainfall (inches):	June (8.42), July (7.19), August (2.43), September (2.99)
Irrigation (inches):	None

Trial	Par fry commercial
Planting Date:	29 May
Harvest Date:	12 October
Previous Crop:	Wheat
Fertilizer Rate/A:	21 April: 150 lbs/A 0-0-62 (N-P-K). At planting: 1037 lb/A 10-10-10 (N-P-K) 2-7 July: 66 lb/A liquid N
Herbicide:	Eptam 7E, Medal EC, Sencor 75DF
Fungicide:	Gavel 75DF, Manzate ProStik, Tanos, Bravo WS, Endura
Insecticide:	Admire Pro, Avaunt, Baythroid XL, Coragen, Movento, FulFill, Agr Mec
Vine Kill:	14 and 22 Sep
Rainfall (inches):	June (8.42), July (7.19), August (2.43), September (2.99)
Irrigation (inches):	None

Trial	Early variety
Planting Date:	20 May
Harvest Date:	25 August
Previous Crop:	Wheat
Fertilizer Rate/A:	20 April: 122 lbs/A 0-0-62 (N-P-K). At planting: 1037 lb/A 10-10-10 (N-P-K) 3 July: 49.5 lb/A liquid N
Herbicide:	Eptam 7E, Medal EC, Sencor 75DF, Matrix
Fungicide:	Gavel 75DF, Manzate ProStik, Tanos, Bravo WS, Endura
Insecticide:	Mocap, Admire Pro, Avaunt, Baythroid XL, Coragen, Movento, FulFill
Vine Kill:	17 Aug
Rainfall (inches):	June (8.42), July (7.19), August (2.43), September (2.99)
Irrigation (inches):	None

Trial	Creamer variety
Planting Date:	12 June
Harvest Date:	27 August
Previous Crop:	Wheat
Fertilizer Rate/A:	20 April: 122 lbs/A 0-0-62 (N-P-K). At planting: 1037 lb/A 10-10-10 (N-P-K)
Herbicide:	Eptam 7E, Medal EC, Sencor 75DF, Matrix
Fungicide:	Gavel 75DF, Manzate ProStik, Tanos, Bravo WS, Endura
Insecticide:	Mocap, Admire Pro, Avaunt, Baythroid XL, Coragen, Movento, FulFill
Vine Kill:	4, 7, 14 Aug
Rainfall (inches):	June (8.42), July (7.19), August (2.43), September (2.99)
Irrigation (inches):	None

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

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Field evaluation of potato cultivars and breeding lines for resistance to late blight in Pennsylvania, 2015.

Thirty-two potato cultivars and advanced breeding lines were evaluated at the Pennsylvania State University Russell E. Larson Agricultural Research Center in Pennsylvania Furnace, PA. 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. Each treatment row had an adjacent row of the susceptible cv. Atlantic as a spreader row. Precipitation was 8.42, 7.19, 2.43, and 2.99 in. for Jun, Jul, Aug, and Sep, respectively. On 17 Aug, spreader rows were spray-inoculated with a mixture of four isolates of *Phytophthora infestans* clonal lineage US-23, at a concentration of 9.5×10^4 sporangia/ml, to promote a uniform spread of the pathogen to all treatment plots. Overhead sprinklers were used for approximately one hour daily when the weather was dry and hot to increase humidity in the plant canopy after infection. Disease ratings were determined by visually assessing each 4-ft plot and estimating the percentage of late blight diseased foliage. Assessments were made on 27 Aug and 1, 5, 9 Sep.

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; Palisade Russet, AF4648-2, CO00291-5R, NY154 (NYH15-17), AF4953-6, and Katahdin were resistant to moderately resistant.

Cultivar/Line	AUDPC[z]		Cultivar/Line	AUDPC	
Palisade Russet	40	q[y]	Snowden	438	h-k
AF4648-2	78	q	CO098012-5R	467	g-j
CO00291-5R	116	q	Yukon Gold	492	f-j
NY154 (NYH15-17)	123	pq	AF0338-17 (Sebec)	497	f-i
Kennebec	207	op	AF4975-3	506	fgh
AF4953-6	208	op	Teton Russet	538	efg
Katahdin	282	no	AF4138-8	549	d-g
BNC244-10	295	mn	Russet Norkotah	555	def
Russet Burbank	327	lmn	B2833-16	559	c-f
AF4124-7	371	klm	AF4985-1	577	c-f
AF4113-2	410	jkl	Atlantic	596	cde
AF3362-1	413	ijk	Superior	599	cde
AF4296-3	413	ijk	AF4172-2	634	bcd
Chieftain	426	h-k	B3005-7	643	abc
AF3001-6 (Easton)	430	h-k	AF4157-6	688	ab
AF4442-4	433	h-k	Dark Red Norland	725	a

[z] AUDPC = Area under the disease progress curve was calculated from 27 Aug to 9 Sep according to the formula: $\sum^{n}_{i=1}[(R_{i+1} + R_i)/2]\,[t_{i+1} - t_i]$, where R = disease severity rating (% of leaf surface affected) at the ith observation, t_i = time (days) since the previous rating at the ith observation, and n = total number of observations.

[y] Means followed by the same letter are not significantly different at $P = 0.05$ as determined by Fisher's protected least significant difference test (LSD = 85) (SAS v. 9.4, SAS Institute, Cary, NC).

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

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Field evaluation of potato cultivars and breeding lines for resistance to early blight in Pennsylvania, 2015.

Thirty-two potato cultivars and advanced breeding lines were evaluated at the Pennsylvania State University Russell E. Larson Agricultural Research Center in Pennsylvania Furnace, PA. Entries were planted on 14 May in a randomized complete block design with three replicates. Plots consisted of a single row 4-ft long with five seed pieces planted in each plot with a 4-ft break between plots. Each entry had an adjacent row of the susceptible cv. Dark Red Norland as a spreader row. Precipitation was 8.42, 7.19, 2.43, and 2.99 in. for Jun, Jul, Aug, and Sep, respectively. On 14 Jul, spreader rows were spray-inoculated with a conidial mixture of two isolates of *Alternaria solani*, at a concentration of 8.7×10^4 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 27 Jul, and 3, 9, 15 Aug.

Early blight disease pressure was high and the most susceptible plots reached 100% disease severity by the end of the season. Dark Red Norland was included as susceptible check cultivar. Palisade Russet was identified as moderately resistant to early blight in our previous trials. Ten cultivars/lines were characterized as moderately resistant: CO00291-5R, Palisade Russet, Kennebec, AF4953-6, Russet Burbank, AF4648-2, NY154 (NYH15-17), Snowden, AF4296-3, and AF4975-3.

Cultivar/Line	AUDPC[z]		Cultivar/Line	AUDPC	
CO00291-5R	69	m[y]	AF4113-2	241	f-j
Palisade Russet	76	m	Superior	257	f-i
Kennebec	84	m	BNC244-10	261	f-i
AF4953-6	102	lm	B3005-7	271	e-i
Russet Burbank	103	lm	Yukon Gold	278	e-h
AF4648-2	106	lm	AF4124-7	279	e-h
NY154 (NYH15-17)	142	klm	AF4985-1	287	d-h
Snowden	146	klm	AF4138-8	307	d-g
AF4296-3	162	j-m	AF0338-17 (Sebec)	311	d-g
AF4975-3	162	j-m	Teton Russet	321	d-g
AF3362-1	179	i-l	AF4442-4	332	c-f
AF3001-6 (Easton)	180	i-l	B2833-16	357	cde
Atlantic	206	h-k	AF4157-6	376	cd
Katahdin	206	h-k	Russet Norkotah	423	bc
AF4172-2	206	h-k	CO098012-5R	479	b
Chieftain	233	g-k	Dark Red Norland	689	a

[z] AUDPC = area under the disease progress curve was calculated from 27 Jul to 15 Aug according to the formula: $\sum^{n}_{i=1}[(R_{i+1} + R_i)/2]\,[t_{i+1} - t_i]$, where R = disease severity rating (% of leaf surface affected) at the ith observation, t_i = time (days) since the previous rating at the ith observation, and n = total number of observations.

[y] Means followed by the same letter are not significantly different at $P = 0.05$ as determined by Fisher's protected least significant difference test (LSD = 95) (SAS v. 9.4, SAS Institute, Cary, NC).

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

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Field evaluation of potato cultivars and breeding lines for resistance to powdery scab in Pennsylvania, 2015.

Thirty-three potato cultivars and advanced breeding lines were planted in a naturally infested field in Potter Co., PA on 17 Jun. The experimental design was a randomized complete block design with three replications. The plots were 6-ft long with 8 seed pieces planted in each plot and 5-ft breaks between plots within a row. Precipitation was 7.47, 2.35, 1.25, and 3.44 in. for Jun, Jul, Aug, and Sep, respectively. 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 15 Sep. Tubers were harvested on 8 Oct and were visually assessed on 22 Oct. 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.

Kennebec and Shepody were included as susceptible check cultivars. None of the cultivars/lines could be classified as resistant; however, Russet Burbank is typically considered moderately resistant to powdery scab, therefore the cultivars/lines with less disease incidence than Russet Burbank were considered moderately resistant. These cultivars/lines included: Teton Russet, Dark Red Norland, NY154 (NYH15-17), BNC244-10, AF4953-6, Russet Norkotah, and AF3362-1.

Cultivar/Line	Powdery Scab Incidence (%)	Cultivar/Line	Powdery Scab Incidence (%)
Teton Russet	2.3 g[z]	Snowden	44.7 a-f
Dark Red Norland	10.9 fg	Palisade Russet	46.7 a-f
NY154 (NYH15-17)	13.2 e-g	Chieftain	47.7 a-f
BNC244-10	15.0 e-g	AF3001-6 (Easton)	48.9 a-e
AF4953-6	21.2 d-g	AF4442-4	52.7 a-d
Russet Norkotah	22.9 d-g	Superior	54.1 a-d
AF3362-1	24.2 c-g	AF4172-2	56.2 a-d
Russet Burbank	25.7 c-g	Katahdin	56.3 a-d
AF4648-2	26.0 c-g	AF4985-1	58.2 a-d
AF4296-3	29.4 b-g	B3005-7	60.5 abc
CO098012-5R	31.0 b-g	B2833-16	61.3 abc
AF4975-3	35.3 a-g	AF4157-6	61.4 abc
AF4138-8	40.4 a-f	AF0338-17 (Sebec)	66.7 ab
CO00291-5R	41.6 a-f	Yukon Gold	70.2 a
AF4124-7	43.6 a-f	Kennebec	71.6 a
Atlantic	43.8 a-f	Shepody	72.6 a
AF4113-2	44.5 a-f		

[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 = 37.4) (SAS v. 9.4, SAS Institute, Cary, NC).

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

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Evaluation of foliar fungicides for control of potato late blight in Pennsylvania, 2015.

Fungicides were evaluated on potato cv. Atlantic at the Pennsylvania State University Russell E. Larson Agricultural Research Center in Pennsylvania Furnace, PA. Potatoes were planted on 11 Jun. The experimental design was a randomized complete block with four replicates. Plots were three-rows wide (36 in. spacing between rows) and 10-ft long with 8 in. seed piece spacing. Precipitation was 8.42, 7.19, 2.43, and 2.99 in. for Jun, Jul, Aug, and Sep, respectively. On 17 Aug, spreader rows were spray-inoculated with a mixture of four isolates of *Phytophthora infestans* clonal lineage US-23, at a concentration of 9.5×10^4 sporangia/ml, to promote a uniform spread of the pathogen to all treatment plots. Overhead sprinklers were used for approximately one hour daily when the weather was dry and hot to increase humidity in the plant canopy after infection. Fungicides were applied with a tractor-mounted, N_2-pressurized side boom sprayer at 30 psi and 44 gal/A. The spray boom was equipped with drop nozzles and boom nozzles so that both sides and the top of each plant were uniformly sprayed. Disease ratings were determined by visually assessing each plot for the percentage of late blight diseased foliage. The plots were rated on 27 Aug and 1, 5, 9, 13, 18 Sep and the assessments were used to calculate the area under the disease progress curve (AUDPC). Plants were vine killed on 22 and 25 Sep with Reglone (2.0 pt/A). The middle row of each plot was harvested on 7 Oct. The tubers were visually assessed for late blight symptom and yield data were collected for healthy tubers on 28 Oct. Tuber disease incidence was calculated as the percentage of tubers with late blight. Disease and yield data were subjected to analysis of variance and Fisher's protected least significant difference test (SAS v. 9.4, SAS Institute, Cary, NC).

All of the treatments significantly suppressed season-long foliar late blight compared to the untreated control. Treatments 1, 4 and 8 significantly reduced tuber late blight disease incidence compared to the untreated control. All of the treatments except treatments 10 and 11 had significantly higher total yields than the untreated control. All of the treatments except treatments 10 and 11 had significantly higher marketable yields than the untreated control.

Treatment and rate/A	Days after first application[z]	AUDPC[y]	Tuber disease incidence[x]	Yield (Cwt/A)[w]	
				Total	> 1.875 in.
1 Bravo Weather Stik 6 SC 1.5 pt	0, 13, 21				
A20942 2.14 pt	7, 28				
Revus TOP 4.17 SC 7 fl oz + Induce 0.125%	35	24 e[v]	0.3 c	616 a	609 a
2 Bravo Weather Stik 6 SC 1.5 pt	0, 13, 21				
A20942 1.71 pt	7, 28				
Revus TOP 4.17 SC fl oz + Induce 0.125%	35	25 e	2.6 abc	578 abc	573 ab
3 Bravo Weather Stik 6 SC 1.5 pt	0, 13, 21, 35				
A20942 2.14 pt	7, 28	29 de	3.9 abc	551 bcd	548 bc
4 Bravo Weather Stik 6 SC 1.5 pt	0, 13, 21, 35				
A20942 1.71 pt	7, 28	30 de	2.2 bc	579 ab	571 ab
5 Previcur Flex 6F 1.2 pt + Mancozeb 75 DF 2 lb	0				
Tanos 50 DF 8 oz + Bravo Weather Stik 6 SC 1.5 pt	7				
Zing! 4.95SC 32 oz + Induce 0.5%	13, 35				
Ranman 400SC 2.75 oz + Mancozeb 75 DF 2 lb	21				
Zampro 4.38SC 14 oz + Bravo Weather Stik 1.5 pt	28	61 de	3.3 abc	524 de	516 cd
6 Zing! 4.95SC 34 fl oz + Induce 0.5%	0, 7, 13, 21, 28, 35	63 de	3.0 abc	552 bcd	546 bc
7 Zing! 4.95SC 32 fl oz + Induce 0.5%	0, 7, 13, 21, 28, 35	74 de	2.8 abc	524 cde	513 cd
8 Bravo Weather Stik 6 SC 1.5 pt	0, 7, 13, 21, 28, 35	121 d	2.2 bc	586 ab	580 ab
9 Bravo Weather Stik 6 SC 1.5 pt	0, 13, 28	506 c	4.3 abc	516 de	511 cd
10 CX-10250 4.5 oz/100 gal	0, 13, 28				
Bravo Weather Stik 6 SC 1.5 pt	7, 21, 35	510 c	6.9 ab	488 ef	480 de
11 CX-10250 4.5 oz/100 gal	0, 7, 13, 21, 28, 35	1266 b	5.2 abc	430 g	422 f
12 Untreated Control	NA	1460 a	7.5 a	445 fg	435 ef
LSD (0.05)		95	4.9	55	54

[z] First fungicide application was 12 Aug.

[y] AUDPC = Area under disease progress curve was calculated from 27 Aug to 18 Sep according to the formula: $\sum^{n}_{i=1}[(R_{i+1} + R_i)/2]\,[t_{i+1} - t_i]$, where R = disease severity rating (% of leaf surface affected) at the ith observation, t_i = time (days) since the previous rating at the ith observation, and n = total number of observations.

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

[w] cwt/A = hundred weight per acre of healthy tubers. Yield: Total = all yield but not include rotted/diseased tubers. Yield > 1.875 in. = yield for US #1 healthy tubers.

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

Supplemental Progress Report, 2015----------April 11, 2016

Pennsylvania Regional Potato Germplasm Evaluation Program, 2015

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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: Lehigh, Erie and the Russell E. Larson Agricultural Research Center at Rock Springs, Centre Co. Please see the Progress Report from December 2015 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 cut into strips. Center slices (36 over the 4 tubers) were blanched in water for 3 minutes at 185°F then fried for 3 minutes at 365°F. The samples were rated using the USDA scale.

Results

Yield results and listings of noteworthy varieties/lines were provided in the December 2015 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, AF4138-8, B2904-2, NY140, NY157 (J105-10), W5955-1, ACO3452-2W, ACO0206-2W, AF5568-6, BNC318-9 and BNC469-1 had the best color; Atlantic, Norwis, Sebec, AF4157-6, AF4648-2, AF4975-3, NY154 (H15-17), AF5033-13, AF5281-4, AF5320-1, BNC177-5, Reba, MSR061-1, MSQ086-3, MSS576-05SPL, Accumulator, Pinnacle, W6609-3, CO02024-9W, A00286-3Y, A00188-3C, A02267-1Y, Heraclea, AF5435-7, AF5558-13, AF5563-5, AF5563-12, BNC266-6, BNC364-1, BNC369-4, BNC468-1, BNC469-2, BNC469-9, BNC470-13, BNC470-16, BNC471-2, BNC478-2, B3148-15, B3150-7, B3155-3, B3159-7, B3172-9, MSL007-B, MSM246-B, CO04099-3W/Y, B3150-3 and Taurus had acceptable color. At Lehigh County, NY140 and W5955-1 had the best color; Atlantic, Snowden, Reba, A00286-3Y, NY141, BNC326-14, Elkton, Pinnacle and Accumulator had acceptable color. At Erie County, NY140 and W5955-

1had the best color; Atlantic, Snowden, A00286-3Y, NY141, BNC326-14, Heraclea, Pinnacle, Accumulator and MSQ086-3 had acceptable color.

From the results of the 3 week reconditioning the noteworthy lines are: At Rock Springs, AF4442-4, AF5320-1, NY140, NY157 (J105-10), W6609-3 and Heraclea had the best color; Atlantic, Norwis, Snowden, Sebec, AF4157-6, AF4648-2, B3005-7, NY154 (H15-17), AF5281-4, BNC177-5, B2834-8, B2904-2, Reba, MSR061-1, MSQ086-3, Accumulator, Pinnacle, W5955-1, ACO3452-2W, ACO0206-2W, CO02024-9W, A00286-3Y, A00188-3C, AF5435-7, AF5484-3, AF5558-13, AF5563-5, AF5563-12, AF5568-6, BNC266-6, BNC318-9, NC426-2, BNC468-1, BNC469-1, BNC469-5, BNC470-13, BNC470-16, BNC478-2, B3148-15, B3159-7, MSL007-B, MSM246-B, B3150-3 and Taurus had acceptable color. At Lehigh County, Snowden, Pinnacle and Accumulator had the best color; Reba, AF5215-2, A00286-3Y, NY140, BNC326-14, W5955-1 had acceptable color. At Erie, Pinnacle had the best color; Atlantic, Snowden, NY140, BNC326-14, Heraclea, W5955-1, Accumulator, MSQ086-3 and NY154 had acceptable color.

From the results of the 6 week reconditioning the noteworthy lines are: At Rock Springs, AF4648-2, AF5281-4, NY140, MSQ086-3, Pinnacle, W6609-3, ACO0206-2W and BNC266-6 had the best color; Atlantic, Norwis, Snowden, AF4157-6, AF4442-4, AF4975-3, B3005-7, NY154 (H15-17), AF5320-1, B2904-2, Reba, NY157 (J105-10), Accumulator, W5955-1, ACO3452-2W, CO02024-9W, A00286-3Y, A00188-3C, Heraclea, AF5435-7, AF5558-13, AF5563-12, AF5568-6, BNC318-9, BNC364-1, BNC468-1, BNC469-1, BNC470-13, BNC470-16, BNC471-2, BNC478-2, B3148-15, B3148-22, B3159-7, B3161-10, MSM246-B, B3150-3 and Taurus had acceptable color. At Lehigh County, NY140, Pinnacle and Accumulator had the best color; Atlantic, Snowden, Reba, A00286-3Y, BNC326-14 and W5955-1 had acceptable color. At Erie County, Snowden had the best color; BNC326-14, Heraclea, Pinnacle, W5955-1, Accumulator, MSQ086-3 and NY154 had acceptable color.

From the results of the chipping directly from 45°F the noteworthy lines are: At Rock Springs, B3005-7, NY140, MSR061-1, W5955-1, ACO3452-2W and CO02024-9W had the best color; Atlantic, Snowden, AF4157-6, AF4648-2, AF4975-3, NY154 (H15-17), AF4552-5, AF5280-5, AF5281-4, AF5320-1, BNC177-5, B2834-8, B2904-2, NY157 (J105-10), MSQ086-3, Accumulator, Pinnacle, W6609-3, ACO0206-2W, A00188-3C, Heraclea, AF5435-7, AF5563-12, AF5568-6, BNC266-6, BNC318-9, BNC364-1, NC426-2, BNC468-1, BNC469-1, BNC470-16, BNC478-2, B3148-15, B3159-7, MSL007-B, MSM246-B and Taurus had acceptable color. At Lehigh County, NY140 had the best color, Atlantic, Snowden, Reba, Pinnacle, W5955-1 and Accumulator had acceptable color. At Erie County, Snowden, NY140, BNC326-14, Heraclea, Pinnacle, W5955-1, Accumulator, MSQ086-3 and NY154 had acceptable color.

French fry Tests (Tables 4-8)
At Rock Springs, Easton, AF4113-2, AF4172-2, AF4296-3, AF4953-6, AF5057-13, AF5164-19, Dakota Trialblazer, Bintje, AF5071-2, W9133-1rus, W9433-1rus, A06084-1TE, Dione, AF4950-2, AF5487-8, AF5511-4, AF5518-1, AF5521-1, AF5521-6, AF5522-5, AF5550-11, A03873-3NV, A01025-4, A07103-1T and AF10237-4 had the best French fry color. At Lehigh County, Easton, Dakota Trailblazer and Bentje had the best color. At Erie County, Easton and Dakota Trailblazer had the best color.

Tablestock Tests (Table 9)
Of the 111 lines tested for culinary characteristics, only 22 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 Parkland Seed Potato, Sunrain, Solanum International, HZPC companies provided seed. Special thanks to Bob Leiby and Andy Muza who made sure this project was completed.

Table 1. Chip color results of potato evaluation at Rock Springs, Centre County, 2015 - 2016.

Variety/ Line	Specific Gravity	Chip Color Dec.[1]	Feb.[2]	Feb.[3]	Feb.[4]
Atlantic	1.099	4	4	4	5
Katahdin	1.079	-	7	7	8
Norwis	1.080	5	5	4	6
Snowden	1.095	3	4	5	4
Superior	1.082	6	7	7	7
Yukon Gold [YF]	1.094	7	8	8	8
AF0338-17 (Sebec)	1.094	5	5	7	6
AF4138-8	1.072	3	7	8	7
AF4157-6	1.094	4	4	5	4
AF4442-4	1.094	5	3	5	6
AF4648-2	1.094	5	4	3	4
AF4975-3	1.091	5	6	4	4
B2833-16	1.096	7	7	7	7
B3005-7	1.094	7	4	5	3
NY154 (H15-17)	1.098	4	4	4	5
AF4552-5	1.091	6	6	7	5
AF5033-13	1.093	5	6	7	6
AF5280-5	1.070	6	6	6	5
AF5281-4	1.095	4	4	3	4
AF5225-1	1.088	8	7	8	6
AF5320-1	1.094	4	3	4	5
BNC177-5	1.095	4	4	6	4
B2832-12	1.091	6	7	6	7
B2834-8	1.089	6	5	6	5
B2869-28	1.083	6	6	7	6
B2904-2	1.099	3	4	5	4
Reba	1.080	5	5	5	6
NY140	1.092	3	3	3	3
NY141	1.086	6	6	6	7
NY149 (F11-1)	1.084	8	6	7	9
NY151	1.075	7	8	6	8
NY157 (J105-10)	1.093	3	3	5	4
L30-5 [YF]	1.090	6	6	6	6
MSR061-1	1.089	4	4	6	3
MSQ086-3	1.084	4	4	3	4
MSS576-05SPL	1.084	5	6	8	6
MI Purple Sport I	1.081	7	8	8	7
Accumulator	1.096	4	5	5	4
Pinnacle	1.094	5	4	3	4
W5955-1	1.093	3	4	5	3
W6609-3	1.091	4	3	3	4
ACO3452-2W	1.076	3	4	5	3
ACO0206-2W	1.083	3	4	3	5
CO02024-9W	1.091	4	4	5	3
A00286-3Y [YF]	1.084	5	5	5	7
A05182-7Y [YF]	1.091	7	7	8	8
A00188-3C	1.090	4	4	5	5
A02267-1Y [YF]	1.075	5	6	7	7
Heraclea [YF]	1.095	4	3	4	5
Julinka [YF]	1.080	9	8	9	10

Table 1. Continued.

Variety/ Line	Specific Gravity	Chip Color			
		Dec.[1]	Feb.[2]	Feb.[3]	Feb.[4]
AF5403-3	1.100	6	6	6	7
AF5416-2	1.085	6	6	7	7
AF5428-7	1.084	6	6	7	7
AF5435-7	1.095	5	5	5	5
AF5467-13	1.088	6	7	7	7
NDAF092239CB-2	1.074	7	8	9	10
AF5484-3	1.108	6	5	6	6
AF5505-3 YF	1.079	6	7	7	7
AF5558-13	1.089	4	4	5	6
AF5561-2	1.081	7	6	6	7
AF5563-5	1.091	4	4	6	6
AF5563-12	1.093	5	5	4	4
AF5568-6	1.088	3	4	4	5
COAF10102-1 YF	1.100	6	7	7	7
AF5215-2 YF	1.084	6	6	6	6
BNC266-6	1.104	5	4	3	4
BNC318-9	1.088	3	4	4	5
BNC364-1	1.092	5	6	5	5
BNC369-4	1.090	5	7	6	7
B3103-4 YF	1.076	8	7	7	8
NC426-2	1.106	6	4	6	5
BNC468-1	1.096	5	5	5	5
BNC469-1	1.090	3	5	5	5
BNC469-2	1.093	5	6	6	6
BNC469-5	1.089	6	5	6	6
BNC469-9	1.100	5	6	6	6
BNC469-11	1.082	4	6	7	6
BNC469-12	1.102	6	7	6	7
BNC469-13	1.084	6	7	7	7
BNC470-13	1.093	5	5	5	6
BNC470-16	1.087	5	4	5	4
BNC471-2	1.087	5	6	5	6
BNC472-3	1.099	6	8	7	6
BNC476-1	1.094	6	6	6	7
BNC478-2	1.100	5	4	4	4
B3147-3	1.096	6	6	6	6
B3148-12 YF	1.084	7	7	7	7
B3148-14	1.091	6	6	6	7
B3148-15	1.096	4	5	4	5
B3148-21 YF	1.100	6	8	6	-
B3148-22	1.081	6	7	5	7
B3150-7	1.087	4	6	6	6
B3155-1	1.089	7	6	6	6
B3155-3 YF	1.096	5	6	6	6
B3156-2 YF	1.082	8	8	9	9
B3156-10	1.095	7	8	8	9
B3156-11	1.084	7	7	9	-
B3156-15 YF	1.072	6	6	7	8
B3159-7	1.100	5	4	4	4
B3161-5	1.108	6	6	6	6

Table 1. Continued.

Variety/ Line	Specific Gravity	Chip Color Dec.[1]	Feb.[2]	Feb.[3]	Feb.[4]
B3161-10 YF	1.097	6	6	5	7
B3168-3	1.089	6	6	6	6
B3172-3 YF	1.107	6	6	6	6
B3172-9 YF	1.088	5	6	6	7
MSL007-B	1.096	5	5	6	5
MSM246-B	1.099	4	4	5	5
MSQ131-A	1.081	6	6	8	7
CO04099-3W/Y YF	1.100	5	6	6	6
ACO01151-5W	1.100	6	6	6	6
B3150-3	1.096	4	4	5	6
Francisca YF	1.080	9	9	8	-
Taurus YF	1.095	5	5	4	5
Svenja YF	1.097	7	6	7	-

[1] Dec. = Stored at 55^{0}F from November 19, 2015 and chipped on December 15 - 17, 2015
[2] Feb. = Stored at 45^{0}F from November 29, 2015 than transferred to 55^{0}F three weeks prior to chipping on February 8 - 10, 2016.
[3] Feb. = Stored at 45^{0}F from November 29, 2015 than transferred to 55^{0}F six weeks prior to chipping on February 29 & March 1 & 2, 2016.
[4] Feb. = Stored at 45^{0}F from November 29, 2015 and chipped on February 23 – 25, 2016.

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 Lehigh County, Forrest Wessner Farm, 2015 - 2016.

Variety/ Line	Specific Gravity	Chip Color			
		Dec.[1]	Feb.[2]	Mar.[3]	Feb.[4]
Atlantic	1.087	4	6	5	5
Snowden	1.086	4	3	4	4
Reba	1.074	4	5	4	4
Superior	1.066	7	8	7	8
Yukon Gold YF	1.074	7	8	7	8
Lehigh YF	1.072	6	7	6	8
Francisca YF	1.063	9	10	10	10
AF5215-2	1.061	6	5	6	6
AF5225-1	1.074	6	7	6	7
A00286-3Y YF	1.074	5	5	5	6
NY140	1.075	3	4	3	3
NY141	1.060	4	7	8	9
NY149 YF	1.069	8	8	7	8
BNC326-14	1.073	5	4	5	6
B3032-6 YF	1.079	6	6	-	6
B3044-2	1.091	7	7	6	7
Elkton	1.080	5	7	7	7
Pinnacle	1.075	5	3	3	5
W5955-1	1.074	3	5	4	5
Accumulator	1.081	4	3	3	5

[1] Dec. = Stored at 55^0F from November 19, 2015 and chipped on December 12, 2015
[2] Feb. = Stored at 45^0F from November 29, 2015 than transferred to 55^0F three weeks prior to chipping on February 11, 2016.
[3] Mar. = Stored at 45^0F from November 29, 2015 than transferred to 55^0F six weeks prior to chipping on March 3, 2016.
[4] Feb. = Stored at 45^0F from November 29, 2015 and chipped on February 22, 2016.

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, 2015 - 2016.

Variety/ Line	Specific Gravity	Chip Color			
		Dec.[1]	Feb.[2]	Mar.[3]	Feb.[4]
Atlantic	1.084	4	6	6	6
Snowden	1.070	4	4	3	5
Reba	1.065	6	7	7	6
Superior	1.065	7	7	7	8
Yukon Gold YF	1.066	7	8	9	8
Francisca YF	1.062	10	10	9	-
Julinka YF	1.067	10	10	10	10
A00286-3Y YF	1.070	5	6	7	7
NY140	1.070	3	4	6	4
NY141	1.063	5	7	6	8
NY149 YF	1.067	8	8	8	9
BNC326-14	1.067	5	4	4	5
Heraclea YF	1.077	4	4	5	5
Pinnacle	1.076	4	3	4	4
W5955-1	1.080	3	4	5	5
Accumulator	1.082	4	5	4	4
MSQ086-3	1.071	4	4	5	5
B3044-2	1.084	7	6	-	7
NY151	1.057	9	10	10	10
NY154	1.074	6	4	5	4

[1] Dec. = Stored at 55^{0}F from November 19, 2015 and chipped on December 18, 2015
[2] Feb. = Stored at 45^{0}F from November 29, 2015 than transferred to 55^{0}F three weeks prior to chipping on February 10, 2016.
[3] Mar. = Stored at 45^{0}F from November 29, 2015 than transferred to 55^{0}F six weeks prior to chipping on March 3, 2016.
[4] Feb. = Stored at 45^{0}F from November 19, 2015 and chipped on February 22, 2016.

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, 2015 - 2016.

Variety/ Line	Yield (cwt/A) [1] Total	>1 7/8"	% of Standard[2]	Percent[3] Pickouts	Specific Gravity	French Fry Color[4] Dec.[5]	Jan.[6]	Feb.[7]
Palisade Russet	353	220	77	30	1.104	1	0	0
Russet Burbank	403	252	88	31	1.086	1	1	1
Russet Norkotah	369	287	100	9	1.081	1	1	1
Teton Russet	442	316	110	21	1.081	1	1	1
Easton	414	358	124	5	1.096	00	00	00
Caribou Russet	324	227	79	24	1.090	0	0	1
AF4113-2	429	361	126	10	1.087	0	00	0
AF4124-7	359	242	84	18	1.090	0	1	1
AF4172-2	428	381	133	3	1.096	0	0	0
AF4296-3	389	257	89	20	1.101	0	0	00
AF4953-6	474	403	140	13	1.094	0	0	0
AF5057-13	515	392	136	16	1.106	0	00	00
AF5091-2	312	212	74	17	1.083	1	1	1
AF5164-19	477	384	134	13	1.088	00	0	0
Dakota Trialblazer	387	345	120	4	1.116	00	0	00
AF5203-7	456	315	110	17	1.091	1	1	1
A08422-2VR	474	412	143	10	1.087	1	1	1
A06021-1T	366	274	95	14	1.091	0	1	1
Fontane [YF]	387	309	108	4	1.099	1	1	0
Lady Amarilla [YF]	368	304	106	6	1.087	1	1	1
Bintje [YF]	395	242	84	28	1.086	0	0	0
Performer [YF]	382	332	116	9	1.085	1	1	1
Ambassador [YF]	452	317	110	15	1.092	1	1	1
Norwis	261	226	79	9	1.075	00	0	1
AF4283-1*	456	290	101	26	1.088	0	1	1
AF5060-27*	395	345	120	4	1.081	1	1	0
AF5071-2*	421	335	117	8	1.097	00	00	0
W9133-1rus*	365	326	113	10	1.078	0	0	0
W9433-1rus*	407	337	117	15	1.088	0	0	00
A06084-1TE*	295	187	65	12	1.085	00	00	00
Dione* [YF]	558	482	168	12	1.096	0	0	00
Cal White*	501	403	140	17	1.092	1	1	0
AF4950-2*	392	321	112	9	1.089	0	0	0
AF5312-1*	491	353	123	24	1.084	0	0	1
AF5487-8*	283	226	79	0	1.082	00	0	0
AF5488-10*	435	334	116	10	1.080	1	1	1
AF5494-2*	381	333	116	11	1.091	0	0	1
AF5511-4*	361	250	87	28	1.099	0	0	0
AF5518-1*	348	287	100	9	1.081	00	0	0
AF5521-1*	400	347	121	10	1.104	00	0	00
AF5521-6*	362	268	93	16	1.099	00	0	00
AF5522-5*	334	304	106	2	1.086	0	0	0
AF5550-11*	364	260	91	22	1.082	0	0	0
COAF10004-3*	437	247	86	32	1.091	0	1	1
A08014-9TE*	297	273	95	1	1.080	1	1	1
A03873-3NV*	362	254	88	11	1.080	00	00	0
A06914-3CR*	449	278	97	31	1.093	00	0	1
A01025-4*	279	240	84	5	1.097	00	00	0
A07103-1T*	285	248	86	0	1.100	00	0	00

Table 4. Continued.

Variety/ Line	Yield (cwt/A) [1] Total	>1 7/8"	% of Standard[2]	Percent[3] Pickouts	Specific Gravity	French Fry Color[4] Dec.[5]	Jan.[6]	Feb.[7]
Maris Piper*	469	382	133	9	1.094	0	0	1
AAF10237-4*	374	334	116	6	1.106	0	0	0

[1] Yield Total = all yield including pickouts. Yield >1 7/8" = categories 2, 3, 4 and 5 excluding pickouts.
[2] Percentage of the standard, Russet Norkotah for >1 7/8" yield.
[3] Percentage of total that are pickouts.
[4] French Fry Color: USDA Scale Color Standers for Frozen Fried Potatoes with 000 = lightest, 4 = darkest.
[5] Dec. = Stored at 55^0F from November 19, 2015 and fried on December 10 & 14, 2015.
[6] Jan. = Stored at 45^0F from November 29, 2015 than transferred to 55^0F three weeks prior to frying on January 26 & 27 , 2016.
[7] Feb. = Stored at 45^0F from November 29, 2015 than transferred to 55^0F six weeks prior to frying on February 16 & 17, 2016.

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 Lehigh County, Forrest Wessner Farm, 2015.

Variety/ Line	Yield (cwt/A) [1] Total	>1 7/8"	% of Standard[2]	Percent[3] Pickouts	Specific Gravity	French Fry Color[4] Dec.[5]	Jan.[6]	Feb.[7]
Atlantic	358	302	100	13	1.087	-	-	-
Performer * YF	343	274	91	17	1.073	1	1	1
Ambassador * YF	407	232	77	25	1.084	1	1	1
Fontane * YF	397	297	98	7	1.082	1	1	1
Easton *	434	365	121	12	1.081	0	00	00
Russet Norkotah *	287	226	75	14	1.066	2	1	1
Dakota Trailblazer *	308	205	68	25	1.095	0	00	00
Norwis *	295	279	92	0	1.063	0	1	0
Cal White *	421	347	115	14	1.076	1	1	1
Bentje * YF	357	158	52	35	1.070	0	0	0
Lady Amarilla * YF	312	236	78	12	1.073	1	1	1

[1] Yield Total = all yield including pickouts. Yield >1 7/8" = categories 2, 3, 4 and 5 excluding pickouts.
[2] Percentage of the standard, Atlantic for >1 7/8" yield.
[3] Percentage of total that are pickouts.
[4] French Fry Color: USDA Scale Color Standers for Frozen Fried Potatoes with 000 = lightest, 4 = darkest.
[5] Dec. = Stored at 55^0F from November 19, 2015 and fried on December 9, 2015.
[6] Jan. = Stored at 45^0F from November 29, 2015 than transferred to 55^0F three weeks prior to frying on January 26, 2016.
[7] Feb. = Stored at 45^0F from November 29, 2015 than transferred to 55^0F six weeks prior to frying on February 16, 2016.

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. French fry color results of potato evaluation in Erie County, Mark Troyer Farm, 2015 - 2016.

Variety/ Line	Specific Gravity	French Fry Color[1] Dec.[2]	Jan.[3]	Feb.[4]
Dione [YF]	1.068	0	1	0
Performer [YF]	1.062	1	1	1
Ambassador [YF]	1.073	1	1	1
Fontane [YF]	1.074	1	1	1
Easton	1.072	0	00	00
Russet Norkotah	1.059	0	1	1
Dakota Trailblazer	1.081	0	0	0
Norwis	1.062	1	1	1
Cal White	1.066	2	1	1
Bentje [YF]	1.064	1	1	0
Lady Amarilla [YF]	1.071	1	1	1

[1] French Fry Color: USDA Scale Color Standers for Frozen Fried Potatoes with 000 = lightest, 4 = darkest.
[2] Dec. = Stored at 55^0F from November 19, 2015 and fried on December 9, 2015.
[3] Jan. = Stored at 45^0F from November 29, 2015 than transferred to 55^0F three weeks prior to frying on January 26, 2016.
[4] Feb. = Stored at 45^0F from November 29, 2015 than transferred to 55^0F six weeks prior to frying on February 16, 2016.

[YF] = Yellow flesh

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, 2015.

Variety/ Line	Yield (cwt/A) [1] Total	>1 7/8"	% of Standard[2]	Percent[3] Pickouts	Specific Gravity	French Fry Color[4] Dec.[5]	Jan.[6]	Feb.[7]
Atlantic	488	424	100	11	1.099	-	-	-
Palisade Russet	353	220	52	30	1.104	1	0	0
Russet Burbank	403	252	59	31	1.086	1	1	1
Russet Norkotah	369	287	68	9	1.081	1	1	1
Teton Russet	442	316	74	21	1.081	1	1	1
Easton	414	370	87	4	1.096	00	00	00
Caribou Russet	324	227	53	24	1.090	0	0	1
AF4113-2	429	361	85	10	1.087	0	00	0
AF4124-7	359	242	57	18	1.090	0	1	1
AF4172-2	428	381	90	3	1.096	0	0	0
AF4296-3	389	257	61	20	1.101	0	0	00
AF4953-6	474	403	95	13	1.094	0	0	0

[1] Yield Total = all yield including pickouts. Yield >1 7/8" = categories 2, 3, 4 and 5 excluding pickouts.
[2] Percentage of the standard, Russet Norkotah for >1 7/8" yield.
[3] Percentage of total that are pickouts.
[4] French Fry Color: USDA Scale Color Standers for Frozen Fried Potatoes with 000 = lightest, 4 = darkest.
[5] Dec. = Stored at 55^0F from November 19, 2015 and fried on December 10 & 14, 2015.
[6] Jan. = Stored at 45^0F from November 29, 2015 than transferred to 55^0F three weeks prior to frying on January 26 & 27 , 2016.
[7] Feb. = Stored at 45^0F from November 29, 2015 than transferred to 55^0F six weeks prior to frying on February 16 & 17, 2016.

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 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] Total	>1 7/8"	% of Standard[2]	Percent[3] Pickouts	Specific Gravity	French Fry Color[4] Dec.[5]	Jan.[6]	Feb.[7]
Kevin Troyer	Dakota Trailblazer	305	279	105	4	1.106	0	0	0
	Cal White	423	351	133	14	1.091	0	0	0
	Norwis	287	264	100	4	1.074	0	0	1
	Bintje YF	317	237	90	6	1.085	1	1	1
	Lady Amarilla YF	254	226	85	2	1.082	1	1	1
	Performer YF	273	257	97	0	1.074	1	1	1
	Ambassador YF	314	240	91	4	1.095	1	1	1
Nolan Masser	Dakota Trailblazer	268	221	62	15	1.105	0	0	0
	Cal White	372	323	90	9	1.085	0	0	0
	Norwis	380	358	100	2	1.074	0	0	0
	Bintje YF	362	245	69	17	1.074	1	1	1
	Lady Amarilla YF	301	244	68	10	1.073	1	1	1
	Performer YF	427	362	101	8	1.077	1	1	1
	Ambassador YF	452	374	105	0	1.089	1	1	1
Rock Springs	Dakota Trailblazer	374	347	76	5	1.104	00	0	0
	Easton	402	363	80	5	1.088	00	00	00
	Cal White	437	337	74	21	1.080	0	0	1
	Norwis	476	455	100	3	1.081	00	00	0
	Bintje YF	356	282	62	7	1.085	1	1	0
	Lady Amarilla YF	367	306	67	4	1.083	1	1	1
	Performer YF	362	322	71	8	1.080	1	1	1
	Ambassador YF	383	314	69	8	1.091	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, Norwis for >1 7/8" yield.
[3] Percentage of total that are pickouts.
[4] French Fry Color: USDA Scale Color Standers for Frozen Fried Potatoes with 000 = lightest, 4 = darkest.
[5] Dec. = Stored at 55^0F from November 19, 2015 and fried on December 8 & 9, 2016.
[6] Jan. = Stored at 45^0F from November 29, 2015 than transferred to 55^0F three weeks prior to frying on January 28, 2016.
[7] Feb. = Stored at 45^0F from November 29, 2015 than transferred to 55^0F six weeks prior to frying on February 18, 2016.

YF = Yellow flesh

Planting spacing for trial

Kevin Troyer
- Dakota Trailblazer - 12 inches
- Cal White - 12 inches
- Norwis- 12 inches
- Bintje YF - 12 inches
- Lady Amarilla YF – 12 inches
- Performer YF – 12 inches
- Ambassador YF – 12 inches

Nolan Masser
- Dakota Trailblazer - 12 inches
- Cal White - 12 inches
- Norwis- 12 inches

	Bintje [YF] - 12 inches
	Lady Amarilla [YF] – 12 inches
	Performer [YF] – 12 inches
	Ambassador [YF] – 12 inches
Rock Springs	Dakota Trailblazer - 12 inches
	Easton – 12 inches
	Cal White - 12 inches
	Norwis- 10 inches
	Bintje [YF] - 10 inches
	Lady Amarilla [YF] – 10 inches
	Performer [YF] – 10 inches
	Ambassador [YF] – 10 inches

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

Variety/	Boil[1]			Bake[2]		Microwave[3]	
Line	Color[4]	Texture[5]	Sloughing[6]	Color	Texture	Color	Texture
Atlantic	1	2		1	2	1	2
Katahdin	1	3		1	3	1	3
Norwis	2	3		2	2	2	2
Snowden	1	2		1	2	1	2
Superior	1	3		1	2	1	2
Yukon Gold [YF]	3	3	1	3	2	3	3
AF0338-17 (Sebec)	1	3		1	2	1	1
AF4138-8	1	3		1	2	1	3
AF4157-6	1	2	1	1	2	1	1
AF4442-4	1	3		1	1	1	1
AF4648-2	1	3		1	2	1	3
AF4975-3	1	2		1	3	1	3
B2833-16	1	2		1	3	1	2
B3005-7	1	2		1	2	1	1
NY154 (H15-17)	2	2	1	2	1	2	2
AF4552-5	1	3		1	2	1	2
AF5033-13	1	2		1	2	1	2
AF5280-5	1	3		1	3	1	3
AF5281-4	1	2		1	1	1	2
AF5225-1	2	3		1	3	1	2
AF5320-1	1	2	1	1	3	1	3
BNC177-5	2	2	1	1	2	1	3
B2832-12	1	2		1	3	1	2
B2834-8	1	2		1	2	1	2
B2869-28	1	3		1	3	1	3
B2904-2	1	3		1	2	1	2
Reba	1	3		1	3	1	3
NY140	1	2		1	2	1	2
NY141	1	3		1	3	1	3
NY149 (F11-1) [YF]	3	2	1	3	1	3	1
NY150	1	2		1	2	1	2
NY151	1	2		1	3	1	3
NY157 (J105-10)	1	2		1	2	1	2
L30-5 [YF]	3	2		3	2	3	2
MSR061-1	1	2		1	2	1	2
MSQ086-3	1	3		1	2	1	2
MSS576-05SPL	1	3		1	3	1	2
MI Purple Sport I	1	3		1	1	1	3
Accumulator	1	2		1	2	1	3
Pinnacle	1	2	1	1	1	1	2
W5955-1	1	2	1	1	2	1	1
W6609-3	1	2		1	2	1	1
ACO3452-2W	1	3		1	3	1	2
ACO0206-2W	1	2		1	1	1	2
CO02024-9W	1	3		1	2	1	2
A00286-3Y [YF]	3	2	1	3	1	3	1
A05182-7Y [YF]	3	2	1	3	2	3	2
A00188-3C	1	2		1	2	1	2
A02267-1Y [YF]	3	3		3	3	3	2
Goldeye [YF]	3	3		3	2	3	3

Table 9. Continued.

Variety/ Line	Boil[1] Color[4]	Texture[5]	Sloughing[6]	Bake[2] Color	Texture	Microwave[3] Color	Texture
Erika [YF]	3	3		3	2	3	2
Novella [YF]	3	2		3	2	3	2
Musica [YF]	3	3		3	2	3	2
Heraclea	2	1		2	3	2	1
Viviana [YF]	3	3		3	3	3	2
Julinka [YF]	3	3		3	2	3	2
Reds							
Chieftain	1	3		1	3	1	2
Dark Red Norland	1	3		1	3	1	3
AF4985-1	1	2		1	3	1	2
BNC244-10	*	2		*	1	*	2
CO00291-5R	1	2		1	2	1	3
CO98012-5R	1	3		1	2	1	3
AF4831-2	1	2	1	1	3	1	2
B1816-5 [YF]	3	3		3	3	3	3
B2152-17 [YF]	3	2		2	3	3	2
BNC201-1 [YF]	3	3		3	2	3	3
K100-3	1	3		1	3	1	2
K45-2	1	3		1	3	1	3
L27-2	1	3		1	3	1	2
Red Endeavor	1	3		1	2	1	2
CO04056-3P/PW	P	2		P	3	P	2
A05180-3PY [YF]	3	3		3	3	3	3
Fenway Red	1	2		1	3	1	2
Carolina	1	3		1	3	1	2
Elmo	1	3		1	3	1	3
Purple Magic	*	2	1	*	2	*	2
Russets							
Palisade Russet	1	1	1	1	2	1	2
Russet Burbank	1	2	1	1	2	1	2
Russet Norkotah	1	2	1	1	2	1	3
Teton Russet	1	2	1	1	3	1	2
Easton	1	2		1	1	1	3
Caribou Russet	1	3		1	1	1	2
AF4113-2	1	2		1	3	1	2
AF4124-7	1	3		1	2	1	2
AF4172-2	1	2		1	2	1	2
AF4296-3	1	2		1	2	1	2
AF4953-6	1	2	1	1	2	1	2
AF4283-1	1	3		1	2	1	3
AF5057-13	1	2		1	3	1	2
AF5060-27	1	3		1	3	1	2
AF5071-2	1	2	1	1	1	1	3
AF5091-2	1	3		1	3	1	2
AF5164-19	1	3		1	1	1	1
Dakota Trialblazer	1	3		1	1	1	2
AF5203-7	1	3		1	1	1	3
W9133-1rus	1	3		1	1	1	2
W9433-1rus	1	2		2	2	1	1
A08422-2VR	1	3		1	3	1	3
A06021-1T	1	3		1	2	1	1

Table 9. Continued.

Variety/ Line	Boil[1] Color[4]	Texture[5]	Sloughing[6]	Bake[2] Color	Texture	Microwave[3] Color	Texture
A06084-1TE	1	1	1	1	3	1	1
Fontane YF	3	2	1	3	2	3	2
Lady Amarilla YF	3	2		3	2	3	2
Francisca YF	3	3		3	3	3	3
Taurus	2	2		2	2	2	2
Dione	2	2	1	2	1	2	2
Cal White	1	2		1	2	1	2
Bintje YF	3	2		2	2	3	2
Performer YF	3	3		3	2	3	2
Ambassador YF	3	1	1	3	2	3	2
Svenja YF	3	2		3	1	3	2
Maris Piper	1	2		1	2	1	1

Tested: January 18 - 21, 2016
[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