

2019 Research Progress Report

Potato Breeding and Selection

Submitted by

David G. Holm, Caroline Gray and Katie Gaudreau

San Luis Valley Research Center

to the

Colorado Potato Administrative Committee (Area II)
Research Committee

and the

Colorado Potato Administrative Committee (Area III)

Mission Statement

“The mission of the Colorado Potato Breeding and Selection Program is to develop cultivars that will help assure that the Colorado potato industry remains productive, competitive, and sustainable and that provide the consumer with improved nutrition and quality.”

Table 1. Generalized potato breeding and selection scheme used at the SLV Research Center.

Year	Comments
1	Select parents for crossing and true seed production in the greenhouse.
2	Produce seedling tubers from true seed in the greenhouse.
3	80,000-90,000 seedling tubers planted in the field as single hills. Several thousand tubers are obtained from other breeding programs. Initial selection of this material takes place at harvest. First year of field selection.
4	Twelve-hills of each single-hill selection are planted. Second of field selection.
5	Preliminary Selections Tier 1 (PT1). Third year of field selection (48 plant tuber-unit seed increase). Initial evaluations for chipping qualities (chip color after various storage regimes and specific gravity) are conducted this year and subsequently.
6	Preliminary Selections Tier 2 (PT2). Fourth year of field selection (96 plant tuber-unit seed increase). Initial evaluations to characterize selections for blackspot bruise potential, storage weight loss, dormancy, and enzymatic browning. Initial evaluations for french fry potential (french fry color and specific gravity) are conducted this year and subsequently. Evaluations for chipping qualities are continued.
7	Intermediate Selections. Fifth year of field selection. Initial data collected on yield, grade, and growth characteristics. Plant a 144 plant tuber-unit seed increase and a 2 rep x 25 plants intermediate yield trial (IYT).
8-14+	<p>Advanced Selections: Includes selections that have advanced from the IYT. Additional selections are included that have graduated from the Southwest Regional and Western Regional Trials. The advanced yield trials for reds, specialty types, and chippers are planted with entries in the Western Regional Red, Specialty and Chip Trials. Selections are in the 6th-12th+ cycles of field selection. All advanced yield trials (AYT) have 4 reps x 25 plants. Sixth and seventh year of field selections respectively have a 400/1,200 plant tuber-unit seed increase. All 8th year selections have up to a 1/3 acre tuber-unit seed increase planted. All 9th year and older selections generally have up to a ½ acre or more of seed increase depending on grower demand.</p> <p>Selections in the sixth year of selection are indexed for viruses and cleanup/micropropagation is initiated. Testing for ring rot and PLRV reaction is also initiated at this stage and continues as needed. Selections in the 7th year of field selection are entered into cultural management trials and postharvest disease reaction (dry rot and soft rot) evaluations.</p>
10	All 8 th year selections are entered in the Southwest Regional Trials (4 locations - CO, TX, two in CA). Cultural management trials and postharvest disease reaction evaluations continue as needed.
11-13	All 9 th -11 th year selections are entered in the Western Regional Trials (4 trials): main (russets and long whites), reds, specialties, and chippers. The Western Coordinating Committee (WERA027) directs these trials at 10+ locations in the Western United States each year. Cultural management trials and postharvest disease reaction evaluations continue as needed.
11+	Grower/industry evaluations. The Colorado Potato Breeding and Selection Project relies on the cooperation of several growers, shippers, and processors to evaluate advanced selections for adaptability and marketability.
14+	Release as a named cultivar.

Table 2A. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Preliminary Trial entries - 2019.

Clone	Blackspot Index ¹			% Weight ² Loss	Dormancy ³ (Days)	Enzymatic Browning ⁴
	Bud End	Stem End	Average			
AC13260-1RU	4.2	4.5	4.4	3.4	84	4.4
CO14032-6R	4.8	4.9	4.9	4.3	84	3.0
CO14035-4R	4.7	4.6	4.7	5.3	84	4.2
CO14040-3R	4.2	4.5	4.4	6.0	84	2.2
CO14062-2RU	5.0	4.8	4.9	3.3	105	5.0
CO14074-1R	4.7	4.6	4.7	4.4	77	3.8
CO14076-1R	5.0	4.4	4.7	4.5	77	3.8
CO14105-1R	5.0	5.0	5.0	5.0	77	4.6
CO14137-2RU	5.0	4.6	4.8	3.1	74	4.2
CO14206-1W/Y	4.3	4.1	4.2	1.6	84	3.2
CO14206-1W/Y	3.6	3.1	3.4	3.3	70	4.8
CO14226-2W/Y	4.1	2.7	3.4	2.7	84	3.0
CO14226-3W/Y	4.8	4.2	4.5	6.5	49	3.8
CO14479-4W/Y	4.6	4.1	4.4	2.9	63	4.8
Canela Russet	5.0	5.0	5.0	3.0	127	4.4
Centennial Russet	5.0	4.9	5.0	4.5	82	5.0
Russet Burbank	5.0	5.0	5.0	2.3	153	4.6
Russet Norkotah	5.0	5.0	5.0	2.8	110	4.2
Sangre-S10	4.3	5.0	4.7	2.5	103	3.8
Shepody	5.0	5.0	5.0	1.4	75	4.8
Yukon Gold	5.0	5.0	5.0	1.6	47	5.0

¹ Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

² Tubers were stored at 45F for 92 days.

³ Days from harvest to first visible growth. Tubers were stored at 45F.

⁴ Degree of darkening rated at 60 minutes after slicing tubers lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 2B. Specific gravity, french fry color, and texture for Preliminary Trial clones - 2019.

Clone	Specific Gravity	Fry Color ¹		Fry Texture ²	
		At Harvest	3 wks 55F+ 8 wks 45F	At Harvest	3 wks 55F+ 8 wks 45F
AC13260-1RU	1.083	2	3	3	3
CO14032-6R	1.082	2	2	3	3
CO14035-4R	1.077	3	3	2	2
CO14040-3R	1.085	1	1	2	2
CO14062-2RU	1.071	1	1	2	3
CO14074-1R	1.085	1	2	2	2
CO14076-1R	1.084	3	2	2	3
CO14105-1R	1.069	2	3	3	2
CO14137-2RU	1.081	1	1	3	3
CO14206-1W/Y	1.089	3	2	1	2
CO14206-1W/Y	1.090	1	0	4	4
CO14226-2W/Y	1.097	1	1	3	3
CO14226-3W/Y	1.092	0	0	4	4
CO14479-4W/Y	1.083	0	1	3	3
Canela Russet	1.076	3	2	3	3
Centennial Russet	1.072	3	3	3	3
Russet Burbank	1.071	3	2	3	3
Russet Norkotah-S3	1.070	4	3	2	2
Sangre-S10	1.077	3	3	2	2
Shepody	1.083	2	2	3	3
Yukon Gold	1.072	3	2	2	3

¹Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings of ≤ 2 are acceptable.

²Fry texture was rated on a 1 to 5 scale, with 5 indicating the cooked flesh was dry and mealy and 1 representing a soggy, wet texture.

Table 3A. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for San Luis Valley Chipping study entries - 2019.

Clone	Blackspot Index ¹			% Weight ² Loss ²	Dormancy ³ (Days)	Enzymatic Browning ⁴
	Bud End	Stem End	Average			
AC00206-2W	5.0	4.9	5.0	2.8	104	4.8
AC01144-1W	5.0	4.5	4.8	2.0	110	3.8
AC01151-5W	5.0	5.0	5.0	3.0	124	1.8
AC03433-1W	5.0	4.7	4.9	2.2	102	4.4
AC05153-1W	4.7	4.7	4.7	4.4	110	1.6
AC11453-7W	4.7	4.4	4.6	2.9	47	4.2
AC11467-4W	5.0	4.3	4.7	3.1	82	4.0
AC11494-6W	2.9	3.7	3.3	2.6	75	4.4
AC12178-2W	4.4	3.8	4.1	2.2	89	4.2
AC12184-1W	4.7	4.2	4.5	2.8	84	4.8
AC13126-1W	4.1	4.1	4.1	3.2	98	4.6
CO02033-1W	4.0	3.9	4.0	2.9	118	4.4
CO02321-4W	5.0	4.6	4.8	2.3	95	4.8

Table 3A continued on next page

¹ Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

² Tubers were stored at 45F for 91 days.

³ Days from harvest to first visible growth. Tubers were stored at 45F.

⁴ Degree of darkening rated at 60 minutes after slicing tubers lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 3A (cont'd). Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for San Luis Valley Chipping study entries - 2019.

Clone	Blackspot Index ¹			% Weight ² Loss ²	Dormancy ³ (Days) ³	Enzymatic Browning ⁴
	Bud End	Stem End	Average			
CO03243-3W	5.0	4.0	4.5	2.6	84	3.2
CO10073-7W	5.0	4.7	4.9	4.2	91	4.6
CO10076-4W	4.8	3.4	4.1	3.1	98	4.2
CO11023-2W	5.0	4.8	4.9	2.7	87	4.0
CO11023-9W	5.0	5.0	5.0	4.0	94	4.8
CO11037-5W	5.0	5.0	5.0	1.8	94	3.2
CO12235-3W	4.8	4.5	4.7	3.4	94	3.4
CO12293-1W	5.0	4.8	4.9	3.1	96	4.4
CO12428-2W	5.0	4.7	4.9	4.9	61	4.6
CO13232-5W	4.5	3.9	4.2	2.4	101	4.2
CO13232-11W	4.9	5.0	5.0	2.4	111	4.6
CO13232-25W	5.0	4.7	4.9	3.0	97	4.8
Atlantic	3.4	3.7	3.6	3.6	91	4.4
Chipeta	5.0	5.0	5.0	2.2	89	4.8
Snowden	4.8	4.4	4.6	2.5	108	4.4

¹ Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

² Tubers were stored at 45F for 91 days.

³ Days from harvest to first visible growth. Tubers were stored at 45F.

⁴ Degree of darkening rated at 60 minutes after slicing tubers lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 3B. Chip color¹ after various storage regimes, and specific gravity of San Luis Valley Chipping study entries - 2019.

Clone	Specific Gravity	7 wks 40F	7 wks/40F +3 wks/60F	7 wks 50F	7 wks/50F +3 wks/60F
AC00206-2W	1.077	3.5	2.0	2.5	2.0
AC01144-1W	1.068	3.5	4.0	3.0	3.5
AC01151-5W	1.081	4.5	4.0	3.0	3.5
AC03433-1W	1.080	3.5	2.5	2.0	3.5
AC05153-1W	1.079	5.0	4.5	4.0	4.0
AC11453-7W	1.095	4.0	3.0	2.0	2.0
AC11467-4W	1.083	3.0	3.0	2.5	2.5
AC11494-6W	1.088	3.5	4.0	2.5	3.0
AC12178-2W	1.085	2.5	2.5	2.5	2.0
AC12184-1W	1.087	4.0	3.0	3.0	2.5
AC13124-1W	1.077	4.5	4.5	3.5	4.0
AC13125-1W	1.078	5.0	4.5	3.5	4.0
AC13125-4W	1.075	4.0	4.0	3.0	3.5
AC13125-5W	1.075	4.0	3.5	3.0	3.0
AC13126-1W	1.093	3.5	4.0	2.0	2.0
AC13133-2W	1.088	4.5	4.5	3.5	4.0
AFC6532-2W	1.090	4.0	4.0	3.0	2.0
CO02033-1W	1.086	3.5	4.0	3.0	2.5
CO02321-4W	1.079	3.0	3.0	3.0	2.0

Table 3B continued on the next page

¹ Chip color was rated using the Snack Food Association 1-5 scale. Ratings of ≤ 2.0 are acceptable.

Table 3B (cont'd). Chip color¹ after various storage regimes, and specific gravity of San Luis Valley Chipping study entries - 2019.

Clone	Specific Gravity	7 wks 40F	7 wks/40F +3 wks/60F	7 wks 50F	7 wks/50F +3 wks/60F
CO03243-3W	1.083	3.5	3.5	2.5	3.0
CO10073-7W	1.081	4.0	3.5	3.0	2.5
CO10076-4W	1.079	4.5	2.0	2.5	2.5
CO11023-2W	1.083	3.0	2.5	2.5	2.5
CO11023-9W	1.077	3.0	3.0	1.5	2.0
CO11037-5W	1.083	4.5	1.2	1.5	2.5
CO12235-3W	1.080	3.5	3.0	2.0	2.5
CO12293-1W	1.081	3.5	3.5	2.5	2.0
CO12428-2W	1.089	3.0	3.0	2.5	3.0
CO13231-3W	1.075	3.5	2.5	2.5	2.5
CO13232-5W	1.073	3.0	2.5	2.5	1.5
CO13232-11W	1.076	4.0	4.0	1.0	1.5
CO13232-25W	1.078	2.0	2.0	1.5	1.5
CO13244-3W	1.078	3.5	3.5	2.0	2.5
CO13427-6W	1.083	4.0	3.5	2.5	2.5
NDC1484Y-1W	1.083	4.5	4.0	3.5	3.5
Atlantic	1.091	4.5	4.0	2.5	2.5
Chipeta	1.077	4.5	4.0	3.0	2.5
Snowden	1.082	4.5	3.5	2.5	2.0

¹ Chip color was rated using the Snack Food Association 1-5 scale. Ratings of ≤ 2.0 are acceptable.

Table 4A. Yield, grade, and tuber shape for Intermediate Yield Trial entries - 2019.

Clone	Yield (Cwt/A)						Tuber Shape ¹ L:W/W:T
	Total	US #1					
		Total	%	4-10 oz	>10 oz	<4 oz	
AC10454-1RU	288	232	81	207	25	50	1.58/1.20
AC10500-1RU	378	261	69	247	14	107	1.88/1.24
AC12080-4RU	295	233	79	209	24	58	1.89/1.14
AC12090-3RU	343	294	86	232	62	45	1.80/1.13
CO13003-1RU	314	228	73	213	15	78	1.68/1.22
CO13007-2RU	326	284	87	244	41	37	1.69/1.33
CO13007-8RU	353	257	73	222	36	79	1.76/1.19
CO13008-6RU	431	364	84	248	116	62	1.73/1.19
CO13055-4RU	306	212	69	212	0	91	1.71/1.19
CO13413-2RU	388	307	79	295	12	79	1.71/1.30
Canela Russet	410	362	88	279	84	45	1.79/1.28
Russet Norkotah-S3	340	298	87	161	136	33	2.14/1.18
Mean	348	278	80	231	47	64	1.78/1.21
LSD ³ (0.05)	53	73	11	70	40	31	0.20/0.12

¹ L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

² Russet Norkotah yield data not included in mean or LSD calculations.

³ LSD=least significant difference.

Table 4B. Grade defects for Intermediate Yield Trial entries - 2019.

Clone	% External Defects ¹	External Defects Observed ²	% Hollow Heart ³
AC10454-1RU	1.8		1.0
AC10500-1RU	2.5		0.0
AC12080-4RU	1.3		0.0
AC12090-3RU	0.4		0.0
CO13003-1RU	2.4		0.0
CO13007-2RU	0.9		0.0
CO13007-8RU	4.8		0.0
CO13008-6RU	1.3		0.0
CO13055-4RU	1.3		0.0
CO13413-2RU	0.5		0.0
Canela Russet	0.5		0.0
Russet Norkotah-S3	2.8		0.0

¹ Percent external defects based on the proportion of the total sample weight with significant defects.

² MS=misshapen; SG=second growth; GC=growth crack; GR=green. Most prevalent defects for each clone are asterisked.

³ Percent hollow heart calculated as follows: (Weight of tubers >10 ounces with defects/total sample weight) x 100.

Table 4C. Growth characteristics of Intermediate Yield Trial entries - 2019.

Clone	% Stand	Emergence Uniformity ¹	Vine Vigor ²	Stems/ Plant	Vine Size ³	Vine Type ⁴	Vine Maturity ⁵
AC10454-1RU	100	3.0	3.5	3.1	4.0	2.0	3.0
AC10500-1RU	98	3.5	3.0	5.5	4.0	4.0	4.0
AC12080-4RU	100	4.0	3.5	2.6	3.0	3.0	3.0
AC12090-3RU	98	3.0	3.0	3.8	3.5	3.0	3.0
CO13003-1RU	100	3.0	3.0	3.3	3.0	3.0	3.0
CO13007-2RU	98	3.0	3.0	2.1	3.5	3.0	3.0
CO13007-8RU	98	3.0	3.5	3.1	3.5	3.5	3.5
CO13008-6RU	100	3.5	3.5	4.0	4.0	4.0	4.0
CO13055-4RU	100	3.5	3.5	4.2	3.0	3.0	3.0
CO13413-2RU	100	3.5	3.5	3.9	3.5	3.0	3.0
Canela Russet	100	3.5	3.5	2.8	3.5	4.0	4.0
Russet Norkotah-S3	100	3.0	3.0	2.8	3.0	3.0	3.0
Mean	99	3.4	3.3	3.4	3.5	3.1	3.3
LSD ⁷ (0.05)	NS	1.0	NS	0.9	1.0	NS	0.4

¹Emergence uniformity is rated on a 1 to 5 scale, with 5 indicating very uniform emergence.

²Vine vigor is rated on a 1 to 5 scale, with 5 indicating very vigorous vines.

³Vine size is rated on a 1 to 5 scale, with 5 indicating very large vines.

⁴Vine type is rated on a 1 to 5 scale, with 5 indicating very upright vines.

⁵Vine maturity is rated on the following basis: 1=very early; 2=early; 3=medium; 4=late; and 5=very late.

⁶Russet Norkotah % stand data not included in mean or LSD calculation.

⁷LSD=least significant difference; NS=not significant.

Table 4D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Intermediate Yield Trial entries - 2019.

Clone	Blackspot Index ¹			% Weight ² Loss	Dormancy ³ (Days)	Enzymatic Browning ⁴
	Bud End	Stem End	Average			
AC10454-1RU	5.0	4.7	4.9	4.1	67	3.4
AC10500-1RU	5.0	4.7	4.9	3.8	60	4.2
AC12080-4RU	4.6	4.1	4.4	2.8	88	3.4
AC12090-3RU	5.0	4.6	4.8	2.2	116	3.2
CO13003-1RU	4.5	3.7	4.1	2.9	88	4.4
CO13007-2RU	4.6	4.6	4.6	2.6	95	4.0
CO13007-8RU	5.0	5.0	5.0	2.8	60	3.2
CO13008-6RU	5.0	4.7	4.9	3.7	67	2.6
CO13055-4RU	4.6	4.1	4.4	3.9	67	3.0
CO13413-2RU	5.0	5.0	5.0	4.1	67	4.2
Canela Russet	5.0	5.0	5.0	4.1	130	4.4
Russet Norkotah-S3	4.8	4.9	4.9	3.3	109	3.0

¹Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

²Tubers were stored at 45F for 91 days.

³Days from harvest to first visible growth. Tubers were stored at 45F.

⁴Degree of darkening rated at 60 minutes after slicing tubers lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 4E. Specific gravity, french fry color, and texture for Intermediate Yield Trial entries - 2019.

Clone	Specific Gravity	Fry Color ¹		Fry Texture ²	
		At Harvest	3 wks 55F+ 8 wks 45F	At Harvest	3 wks 55F+ 8 wks 45F
AC10454-1RU	1.086	1	1	4	4
AC10500-1RU	1.095	1	1	2	2
AC12080-4RU	1.084	0	1	3	3
AC12090-3RU	1.081	3	2	3	3
CO13003-1RU	1.085	1	1	4	4
CO13007-2RU	1.084	0	0	2	2
CO13007-8RU	1.076	1	2	3	3
CO13008-6RU	1.101	0	0	5	5
CO13055-4RU	1.095	0	0	5	5
CO13413-2RU	1.089	1	0	3	3
Canela Russet	1.097	1	1	4	4
Russet Norkotah-S3	1.078	2	2	2	2

¹Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings of ≤ 2 are acceptable.

²Fry texture was rated on a 1 to 5 scale, with 5 indicating the cooked flesh was dry and mealy and 1 representing a soggy, wet texture.

Table 5A. Yield, grade, and tuber shape for Intermediate Specialty Yield Trial entries - 2019.

Clone	Yield (Cwt/A)						Tuber Shape ¹ L:W/W:T
	Total	US #1					
		Total	%	4-10 oz	>10 oz	<4 oz	
AC10376-1-2012W/Y	347	222	64	202	20	123	1.10/1.23
AC10376-1-2015W/Y	481	390	81	305	85	74	1.03/1.27
AFC6041-1R	376	256	68	250	6	119	1.08/1.24
CO13033-4W/Y	386	160	41	160	0	217	1.02/1.21
CO13127-2RW/Y	277	14	5	14	0	263	1.28/1.08
Sangre-S10	335	248	74	192	55	49	1.19/1.27
Yukon Gold	250	161	64	129	32	52	1.21/1.24
Mean	351	205	55	175	30	129	1.13/1.22
LSD ² (0.05)	130	118	12	83	58	46	0.12/0.08

¹L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

²LSD=least significant difference.

Table 5B. Grade defects for Intermediate Specialty Yield Trial entries - 2019.

Clone	% External Defects ¹	External Defects Observed ²	% Hollow Heart ³
AC10376-1-2012W/Y	0.6		0.0
AC10376-1-2015W/Y	3.3		0.0
AFC6041-1R	0.3		0.0
CO13033-4W/Y	2.4		0.0
CO13127-2RW/Y	0.0		0.0
Sangre-S10	11.6		0.0
Yukon Gold	15.4		0.0

¹ Percent external defects based on the proportion of the total sample weight with significant defects.

² MS=misshapen; SG=second growth; GC=growth crack; GR=green. Most prevalent defects for each clone are asterisked.

³ Percent hollow heart calculated as follows: (Weight of tubers >10 ounces with defects/total sample weight) x 100.

Table 5C. Growth characteristics of Intermediate Specialty Yield Trial entries - 2019.

Clone	% Stand	Emergence Uniformity ¹	Vine Vigor ²	Stems/ Plant	Vine Size ³	Vine Type ⁴	Vine Maturity ⁵
AC10376-1-2012W/Y	100	3.3	3.5	3.0	3.0	3.3	3.0
AC10376-1-2015W/Y	100	3.5	3.5	2.3	4.0	4.0	4.0
AFC6041-1R	100	3.0	3.0	4.7	4.0	3.0	4.0
CO13033-4W/Y	98	4.0	5.0	3.8	4.0	3.0	4.0
CO13127-2RW/Y	100	4.0	4.0	4.9	3.5	3.0	3.5
Sangre-S10	98	3.0	3.5	3.0	3.0	3.0	3.0
Yukon Gold	98	3.5	3.5	2.5	2.5	2.5	2.5
Mean	99	3.5	3.8	3.5	3.9	3.1	3.5
LSD ⁶ (0.05)	NS	NS	1.4	1.3	0.7	0.7	0.9

¹Emergence uniformity is rated on a 1 to 5 scale, with 5 indicating very uniform emergence.

²Vine vigor is rated on a 1 to 5 scale, with 5 indicating very vigorous vines.

³Vine size is rated on a 1 to 5 scale, with 5 indicating very large vines.

⁴Vine type is rated on a 1 to 5 scale, with 5 indicating very upright vines.

⁵Vine maturity is rated on the following basis: 1=very early; 2=early; 3=medium; 4=late; and 5=very late.

⁶LSD=least significant difference; NS=not significant.

Table 5D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Intermediate Specialty Yield Trial entries - 2019.

Clone	Blackspot Index ¹			% Weight ² Loss ²	Dormancy ³ (Days) ³	Enzymatic ⁴ Browning ⁴
	Bud End	Stem End	Average			
AC10376-1-2012W/Y	5.0	4.7	4.9	3.3	109	3.4
AC10376-1-2015W/Y	5.0	5.0	5.0	2.5	81	4.2
AFC6041-1R	4.9	4.6	4.8	6.2	74	3.6
CO13033-4W/Y	5.0	4.3	4.7	5.6	18	2.6
CO13127-2RW/Y	4.8	5.0	4.9	5.5	25	2.6
Sangre-S10	4.1	4.3	4.2	3.1	81	3.2
Yukon Gold	5.0	5.0	5.0	1.9	81	4.4

¹Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

²Tubers were stored at 45F for 91 days.

³Days from harvest to first visible growth. Tubers were stored at 45F.

⁴Degree of darkening rated at 60 minutes after slicing tubers lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 5E. Specific gravity, french fry color, and texture for Intermediate Specialty Yield Trial entries - 2019.

Clone	Specific Gravity	Fry Color ¹		Fry Texture ²	
		At Harvest	3 wks 55F+ 8 wks 45F	At Harvest	3 wks 55F+ 8 wks 45F
AC10376-1-2012W/Y	1.080	3	3	3	3
AC10376-1-2015W/Y	1.064	3	5	2	2
AFC6041-1R	1.071	3	5	2	2
CO13033-4W/Y	1.087	1	2	4	4
CO13127-2RW/Y	1.088	2	3	1	1
Sangre-S10	1.076	2	3	2	2
Yukon Gold	1.088	1	2	3	3

¹Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings of ≤ 2 are acceptable.

²Fry texture was rated on a 1 to 5 scale, with 5 indicating the cooked flesh was dry and mealy and 1 representing a soggy, wet texture.

Table 6A. Yield, grade, and tuber shape for Intermediate Chipping Yield Trial entries - 2019.

Clone	Yield (Cwt/A)						Tuber Shape ¹ L:W/W:T
	Total	US #1				<4 oz	
		Total	%	4-10 oz	>10 oz		
CO13196-6W	317	159	50	155	4	158	0.85/1.32
CO13232-5W	398	327	82	316	10	66	1.10/1.16
CO13232-11W	299	242	80	233	9	57	0.94/1.25
CO13232-25W	378	332	87	306	27	42	0.95/1.17
CO13233-1W	339	269	79	236	33	66	1.04/1.23
CO13428-9W	445	355	80	315	40	77	0.90/1.16
FC16796-3W	434	224	51	221	2	196	0.91/1.17
Atlantic	297	263	88	183	80	32	1.05/1.25
Chipeta	361	330	91	170	160	21	1.12/1.22
Snowden	302	253	84	229	24	46	0.93/1.28
Mean	357	275	77	236	39	76	0.98/1.23
LSD ² (0.05)	116	126	12	102	36	31	0.10/0.08

¹L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

²LSD=least significant difference.

Table 6B. Grade defects for Intermediate Chipping Yield Trial entries - 2019.

Clone	% External Defects ¹	External Defects Observed ²	% Hollow Heart ³
CO13196-6W	0.0		0.0
CO13232-5W	1.2		0.0
CO13232-11W	0.3		0.0
CO13232-25W	1.0		0.0
CO13233-1W	1.0		0.6
CO13428-9W	2.9		0.0
FC16796-3W	1.9		0.0
Atlantic	0.7		1.7
Chipeta	2.9		0.0
Snowden	0.9		0.0

¹Percent external defects based on the proportion of the total sample weight with significant defects.

²MS=misshapen; SG=second growth; GC=growth crack; GR=green. Most prevalent defects for each clone are asterisked.

³Percent hollow heart calculated as follows: (Weight of tubers >10 ounces with defects/total sample weight) x 100.

Table 6C. Growth characteristics of Intermediate Chipping Yield Trial entries - 2019.

Clone	% Stand	Emergence Uniformity ¹	Vine Vigor ²	Stems/ Plant	Vine Size ³	Vine Type ⁴	Vine Maturity ⁵
CO13196-6W	88	3.0	3.5	4.0	3.5	2.5	3.0
CO13232-5W	98	3.5	3.5	4.3	3.0	3.0	4.0
CO13232-11W	98	3.0	3.0	2.8	2.5	3.0	3.0
CO13232-25W	100	3.5	4.0	4.2	3.5	2.5	4.0
CO13233-1W	100	3.5	3.0	2.9	2.5	3.0	3.0
CO13428-9W	96	4.0	4.5	3.9	4.0	3.0	4.0
FC16796-3W	100	4.0	4.0	3.5	4.0	2.5	3.0
Atlantic	94	4.0	3.5	2.7	3.0	3.0	3.0
Chipeta	100	4.0	4.5	2.8	4.5	3.5	3.5
Snowden	98	3.0	2.5	2.2	3.5	3.5	3.5
Mean	99	3.5	3.6	3.3	3.4	3.0	3.6
LSD ⁶ (0.05)	NS	0.9	1.3	1.0	1.3	NS	0.5

¹Emergence uniformity is rated on a 1 to 5 scale, with 5 indicating very uniform emergence.

²Vine vigor is rated on a 1 to 5 scale, with 5 indicating very vigorous vines.

³Vine size is rated on a 1 to 5 scale, with 5 indicating very large vines.

⁴Vine type is rated on a 1 to 5 scale, with 5 indicating very upright vines.

⁵Vine maturity is rated on the following basis: 1=very early; 2=early; 3=medium; 4=late; and 5=very late.

⁶LSD=least significant difference; NS=not significant.

Table 6D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Intermediate Chipping Yield Trial entries - 2019.

Clone	Blackspot Index ¹			% Weight ² Loss ²	Dormancy ³ (Days) ³	Enzymatic ⁴ Browning ⁴
	Bud End	Stem End	Average			
CO13196-6W	4.8	4.5	4.7	5.2	81	4.6
CO13232-5W	3.6	3.4	3.5	3.7	102	4.4
CO13232-11W	4.8	4.4	4.6	3.8	102	4.8
CO13232-25W	4.3	2.9	3.6	3.8	88	4.4
CO13233-1W	3.9	3.7	3.8	3.3	81	4.2
CO13428-9W	4.0	2.6	3.3	5.0	67	3.4
FC16796-3W	4.7	4.3	4.5	4.1	74	3.2
Atlantic	4.0	3.8	3.9	4.4	74	4.2
Chipeta	4.3	3.1	3.7	2.2	81	4.6
Snowden	3.0	1.6	2.3	3.3	81	2.8

¹ Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

² Tubers were stored at 45F for 91 days.

³ Days from harvest to first visible growth. Tubers were stored at 45F.

⁴ Degree of darkening rated at 60 minutes after slicing tubers lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 6E. Specific gravity, french fry color, and texture for Intermediate Chipping Yield Trial entries - 2019.

Clone	Specific Gravity	7 wks 40F	7 wks/40F +3 wks/60F	7 wks 50F	7 wks/50F +3 wks/60F
CO13196-6W	1.095	4.0	4.0	2.5	3.5
CO13232-5W	1.084	4.0	3.5	2.0	2.0
CO13232-11W	1.084	3.5	4.0	2.0	3.0
CO13232-25W	1.087	3.0	3.5	1.5	3.5
CO13233-1W	1.096	3.0	3.0	2.0	3.0
CO13428-9W	1.100	3.5	3.0	2.0	3.0
FC16796-3W	1.089	5.0	4.5	3.0	3.0
Atlantic	1.100	4.5	4.5	3.5	3.0
Chipeta	1.097	4.0	3.0	2.0	2.0
Snowden	1.093	4.0	3.0	2.0	3.0

¹ Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings of ≤ 2 are acceptable.

² Fry texture was rated on a 1 to 5 scale, with 5 indicating the cooked flesh was dry and mealy and 1 representing a soggy, wet texture.

Table 7A. Yield, grade, and tuber shape for Advanced Yield Trial entries - 2019.

Clone	Yield (Cwt/A)						Tuber Shape ¹ L:W/W:T
	Total	US #1					
		Total	%	4-10 oz	>10 oz	<4 oz	
AFC5726-1RU	199	165	83	128	37	29	1.56/1.21
CO09036-2RU	308	208	67	199	8	90	2.05/1.15
CO09076-3RU	238	162	68	141	21	67	2.14/1.13
CO09205-2RU	253	172	68	165	8	77	1.89/1.13
CO12152-1RU	294	186	63	186	0	95	1.79/1.21
CO12246-1RU	280	222	79	212	10	57	1.59/1.20
CO12305-2RU	206	122	59	121	1	84	1.85/1.16
CO12378-1RU	285	107	37	106	1	172	1.59/1.21
Canela Russet	294	248	84	223	25	43	1.74/1.23
Russet Norkotah-S3	229	229	82	169	59	38	2.02/1.20
Mean	264	182	69	165	17	75	1.83/1.19
LSD ³ (0.05)	48	45	8	NS	18	19	0.15/0.09

¹ L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

² Russet Norkotah yield data not included in mean or LSD calculations.

³ LSD=least significant difference.; NS=not significant.

Table 7B. Grade defects for Advanced Yield Trial entries - 2019.

Clone	% External Defects ¹	External Defects Observed ²	% Hollow Heart ³
AFC5726-1RU	2.3		4.3
CO09036-2RU	3.1		0.0
CO09076-3RU	3.0		0.0
CO09205-2RU	0.8		0.5
CO12152-1RU	4.5		0.0
CO12246-1RU	0.4		0.0
CO12305-2RU	0.2		0.0
CO12378-1RU	1.8		0.0
Canela Russet	0.9		0.0
Russet Norkotah-S3	4.5		0.3

¹ Percent external defects based on the proportion of the total sample weight with significant defects.

² MS=misshapen; SG=second growth; GC=growth crack; GR=green. Most prevalent defects for each clone are asterisked.

³ Percent hollow heart calculated as follows: (Weight of tubers >10 ounces with defects/total sample weight) x 100.

Table 7C. Growth characteristics of Advanced Yield Trial entries - 2019.

Clone	% Stand	Emergence Uniformity ¹	Vine Vigor ²	Stems/ Plant	Vine Size ³	Vine Type ⁴	Vine Maturity ⁵
AFC5726-1RU	66	2.3	2.8	2.6	3.3	3.8	3.8
CO09036-2RU	99	3.0	3.3	3.3	4.0	3.3	3.5
CO09076-3RU	98	3.0	3.0	4.0	2.8	2.8	2.5
CO09205-2RU	99	2.8	2.3	3.4	2.8	4.0	3.0
CO12152-1RU	97	3.3	3.3	3.2	3.0	3.3	3.0
CO12246-1RU	99	3.8	3.5	2.7	3.0	3.0	3.0
CO12305-2RU	98	3.5	3.3	3.4	2.8	2.3	2.0
CO12378-1RU	100	2.8	3.0	3.5	3.3	3.5	3.0
Canela Russet	98	3.0	3.3	2.8	3.5	3.5	3.0
Russet Norkotah-S3	98	3.3	3.0	3.3	3.5	3.0	2.5
Mean	95	3.1	3.1	3.2	3.2	3.2	2.9
LSD ⁷ (0.05)	12	0.6	0.6	0.7	0.6	0.5	0.5

¹Emergence uniformity is rated on a 1 to 5 scale, with 5 indicating very uniform emergence.

²Vine vigor is rated on a 1 to 5 scale, with 5 indicating very vigorous vines.

³Vine size is rated on a 1 to 5 scale, with 5 indicating very large vines.

⁴Vine type is rated on a 1 to 5 scale, with 5 indicating very upright vines.

⁵Vine maturity is rated on the following basis: 1=very early; 2=early; 3=medium; 4=late; and 5=very late.

⁶Russet Norkotah % stand data not included in mean or LSD calculations.

⁷LSD=least significant difference.

Table 7D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Advanced Yield Trial entries - 2019.

Clone	Blackspot Index ¹			% Weight Loss ²	Dormancy ³ (Days)	Enzymatic Browning ⁴
	Bud End	Stem End	Average			
AFC5726-1RU	5.0	4.6	4.8	3.1	67	4.4
CO09036-2RU	4.9	4.9	4.9	2.7	88	4.8
CO09076-3RU	4.8	5.0	4.9	3.9	74	4.2
CO09205-2RU	5.0	4.6	4.8	2.1	67	4.6
CO12152-1RU	3.8	2.7	3.3	2.9	81	2.8
CO12246-1RU	5.0	4.9	5.0	3.1	74	3.8
CO12305-2RU	5.0	4.7	4.9	2.4	81	3.8
CO12378-1RU	5.0	4.4	4.7	4.3	88	3.6
Canela Russet	5.0	4.5	4.8	3.6	137	4.2
Russet Norkotah-S3	5.0	4.3	4.7	3.0	116	3.0

¹ Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

² Tubers were stored at 45F for 91 days.

³ Days from harvest to first visible growth. Tubers were stored at 45F.

⁴ Degree of darkening rated at 60 minutes after slicing tubers lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 7E. Specific gravity, french fry color, and texture for Advanced Yield Trial entries - 2019.

Clone	Specific Gravity	Fry Color ¹		Fry Texture ²	
		At Harvest	3 wks 55F+ 8 wks 45F	At Harvest	3 wks 55F+ 8 wks 45F
AFC5726-1RU	1.090	0	2	5	5
CO09036-2RU	1.089	0	1	4	4
CO09076-3RU	1.079	1	2	3	4
CO09205-2RU	1.080	0	0	5	4
CO12152-1RU	1.102	0	0	4	4
CO12246-1RU	1.087	2	0	4	3
CO12305-2RU	1.077	1	0	3	3
CO12378-1RU	1.092	1	1	5	5
Canela Russet	1.096	0	1	4	4
Russet Norkotah-S3	1.081	2	3	3	3

¹Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings of ≤ 2 are acceptable.

²Fry texture was rated on a 1 to 5 scale, with 5 indicating the cooked flesh was dry and mealy and 1 representing a soggy, wet texture.

Table 8A. Yield, grade, and tuber shape for Advanced Fingerling Yield Trial entries - 2019.

Clone	Total (Cwt/A)	Tuber Length				Tuber Shape ¹ L:W/W:T
		<2"	2-4"	4-6"	>6"	
CO12117-4RF/R	215	31	153	18	0	2.88/1.06
CO12125-3PF/P	356	33	256	56	4	2.40/1.14
Banana	250	29	152	26	4	3.31/1.11
LaRatte	245	25	157	28	2	3.09/1.10
Mean	266	30	179	32	3	2.93/1.11
LSD ² (0.05)	63	9	46	26	NS	0.36/0.07

¹L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

²LSD=least significant difference; NS=not significant.

Table 8B. Grade defects for Advanced Fingerling Yield Trial entries - 2019.

Clone	% External Defects ¹	External Defects Observed ²	% Hollow Heart ³
CO12117-4RF/R	5.8		0.0
CO12125-3PF/P	1.9		0.0
Banana	14.7		0.0
LaRatte	13.1		0.0

¹ Percent external defects based on the proportion of the total sample weight with significant defects.

² MS=misshapen; SG=second growth; GC=growth crack; GR=green. Most prevalent defects for each clone are asterisked.

³ Percent hollow heart calculated as follows: (Weight of tubers >10 ounces with defects/total sample weight) x 100.

Table 8C. Growth characteristics of Advanced Fingerling Yield Trial entries - 2019.

Clone	% Stand	Emergence Uniformity ¹	Vine Vigor ²	Stems/ Plant	Vine Size ³	Vine Type ⁴	Vine Maturity ⁵
CO12117-4RF/R	100	3.0	3.0	7.4	4.3	3.3	4.8
CO12125-3PF/P	100	3.5	4.0	3.0	4.5	3.3	3.5
Banana	100	4.0	4.3	5.0	4.5	3.3	3.0
LaRatte	100	4.0	3.8	5.3	4.3	3.0	3.0
Mean	100	3.6	3.8	5.1	4.3	3.2	3.6
LSD6 (0.05)	NS	0.5	0.5	1.4	NS	NS	0.5

¹Emergence uniformity is rated on a 1 to 5 scale, with 5 indicating very uniform emergence.

²Vine vigor is rated on a 1 to 5 scale, with 5 indicating very vigorous vines.

³Vine size is rated on a 1 to 5 scale, with 5 indicating very large vines.

⁴Vine type is rated on a 1 to 5 scale, with 5 indicating very upright vines.

⁵Vine maturity is rated on the following basis: 1=very early; 2=early; 3=medium; 4=late; and 5=very late.

⁶LSD=least significant difference; NS=not significant.

Table 8D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Advanced Fingerling Yield Trial entries - 2019.

Clone	Blackspot Index ¹			%		
	Bud End	Stem End	Average	Weight Loss ²	Dormancy (Days) ³	Enzymatic Browning ⁴
CO12117-4RF/R	---	---	---	3.2	81	---
CO12125-3PF/P	---	---	---	4.1	74	---
Banana	4.7	4.2	4.5	3.3	74	4.0
LaRatte	4.7	4.6	4.7	2.7	74	4.6

¹ Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

² Tubers were stored at 45F for 91 days.

³ Days from harvest to first visible growth. Tubers were stored at 45F.

⁴ Degree of darkening rated at 60 minutes after slicing tubers lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 8E. Specific gravity, french fry color, and texture for Advanced Fingerling Yield Trial entries - 2019.

Clone	Specific Gravity	Fry Color ¹		Fry Texture ²	
		At Harvest	3 wks 55F+ 8 wks 45F	At Harvest	3 wks 55F+ 8 wks 45F
CO12117-4RF/R	1.085	-	-	2	2
CO12125-3PF/P	1.072	-	-	2	1
Banana	1.083	1	3	4	5
LaRatte	1.080	1	3	4	5

¹Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings of ≤ 2 are acceptable.

²Fry texture was rated on a 1 to 5 scale, with 5 indicating the cooked flesh was dry and mealy and 1 representing a soggy, wet texture.

Table 9A . Yield, grade, and tuber shape for Southwest Regional Russet Trial entries - 2019.

Clone	Yield (Cwt/A)						Tuber Shape ¹ L:W/W:T
	Total	US #1					
		Total	%	4-10 oz	>10 oz	<4 oz	
CO10085-1RU	308	239	78	213	26	64	1.98/1.21
CO11009-3RU	298	236	79	161	75	43	1.82/1.16
COTX08322-10RU	301	243	81	214	29	55	1.65/1.29
Canela Russet	348	302	87	259	43	42	1.77/1.22
Russet Norkotah ^{-S3}	372	318	85	163	155	36	2.09/1.24
Mean	325	268	82	202	66	48	1.87/1.23
LSD ³ (0.05)	41	42	5	28	34	15	0.18/0.08

¹L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

²Russet Norkotah yield data not included in mean or LSD calculations.

³LSD=least significant difference.

Table 9B. Grade defects for Southwest Regional Russet Trial entries - 2019.

Clone	% External Defects ¹	External Defects Observed ²	% Hollow Heart ³
CO10085-1RU	1.4		0.0
CO11009-3RU	5.6		0.8
COTX08322-10RU	1.0		0.0
Canela Russet	0.7		0.0
Russet Norkotah-S3	4.8		0.0

¹ Percent external defects based on the proportion of the total sample weight with significant defects.

² MS=misshapen; SG=second growth; GC=growth crack; GR=green. Most prevalent defects for each clone are asterisked.

³ Percent hollow heart calculated as follows: (Weight of tubers >10 ounces with defects/total sample weight) x 100.

Table 9C. Growth characteristics of Southwest Regional Russet Trial entries - 2019.

Clone	% Stand	Emergence Uniformity ¹	Vine Vigor ²	Stems/ Plant	Vine Size ³	Vine Type ⁴	Vine Maturity ⁵
CO10085-1RU	100	2.8	2.5	3.1	3.3	3.3	3.3
CO11009-3RU	89	2.8	2.5	2.7	4.0	3.0	4.3
COTX08322-10RU	100	3.8	3.3	2.8	3.3	3.0	2.8
Canela Russet	99	3.0	3.8	3.2	4.0	3.3	3.8
Russet Norkotah ^{-S3}	100	3.0	3.3	3.5	3.5	3.0	3.0
Mean	98	3.1	3.1	3.0	3.6	3.1	3.4
LSD ⁷ (0.05)	5	0.6	0.7	0.7	0.6	0.5	0.5

¹Emergence uniformity is rated on a 1 to 5 scale, with 5 indicating very uniform emergence.

²Vine vigor is rated on a 1 to 5 scale, with 5 indicating very vigorous vines.

³Vine size is rated on a 1 to 5 scale, with 5 indicating very large vines.

⁴Vine type is rated on a 1 to 5 scale, with 5 indicating very upright vines.

⁵Vine maturity is rated on the following basis: 1=very early; 2=early; 3=medium; 4=late; and 5=very late.

⁶Russet Norkotah % stand data not included in mean or LSD calculations.

⁷LSD=least significant difference.

Table 9D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Southwest Regional Russet Trial entries - 2019.

Clone	Blackspot Index ¹			% Weight Loss ²	Dormancy ³ (Days)	Enzymatic Browning ⁴
	Bud End	Stem End	Average			
CO10085-1RU	4.8	4.0	4.4	3.6	60	3.8
CO11009-3RU	4.6	4.4	4.5	3.2	95	3.0
COTX08322-10RU	4.7	3.6	4.2	3.0	67	1.4
Canela Russet	4.8	4.4	4.6	4.3	137	4.4
Russet Norkotah-S3	4.7	3.7	4.2	3.8	109	4.5

¹ Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

² Tubers were stored at 45F for 91 days.

³ Days from harvest to first visible growth. Tubers were stored at 45F.

⁴ Degree of darkening rated at 60 minutes after slicing tubers lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 9E. Specific gravity, french fry color, and texture for Southwest Regional Russet Trial entries - 2019.

Clone	Specific Gravity	Fry Color ¹		Fry Texture ²	
		At Harvest	3 wks 55F+ 8 wks 45F	At Harvest	3 wks 55F+ 8 wks 45F
CO10085-1RU	1.089	1	3	4	3
CO11009-3RU	1.093	0	1	4	3
COTX08322-10RU	1.082	0	1	3	2
Canela Russet	1.092	1	2	4	3
Russet Norkotah-S3	1.081	3	3	2	2

¹Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings of ≤ 2 are acceptable.

²Fry texture was rated on a 1 to 5 scale, with 5 indicating the cooked flesh was dry and mealy and 1 representing a soggy, wet texture.

Table 10A1. Yield, grade, and tuber shape for Southwest Regional Specialty Trial entries - 2018.

Clone	Yield (Cwt/A)						Tuber Shape ¹ L:W/W:T
	Total	US #1				<4 oz	
		Total	%	4-10 oz	>10 oz		
CO11250-1W/Y	315	205	65	200	6	107	1.17/1.27
CO11266-1W/Y	265	156	58	154	2	108	1.28/1.18
Yukon Gold	235	190	81	156	34	42	1.04/1.25
Mean	272	184	68	170	14	86	1.20/1.24
LSD ² (0.05)	57	52	9	52	11	23	0.12/0.10

¹L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

²LSD=least significant difference.

Table 10A2. Yield, grade, and tuber shape for Southwest Regional Specialty Trial Fingerling entries - 2018.

Clone	Yield (Cwt/A)					Tuber Shape ¹ L:W/W:T
	Total	Tuber Length				
		<2"	2-4"	4-6"	>6"	
CO08029-1RF/R	274	13	211	46	2	3.09/0.95
CO08062-3PF/P	304	16	219	57	4	2.92/1.10
Banana	298	14	182	57	7	3.39/1.10
LaRatte	309	20	202	50	1	3.34/1.17
Mean	296	16	203	53	3	3.21/1.10
LSD ² (0.05)	62	5	40	NS	5	0.32/0.06

¹L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

²LSD=least significant difference; NS=not significant.

Table 10B. Grade defects for Southwest Regional Specialty Trial entries - 2019.

Clone	% External Defects ¹	External Defects Observed ²	% Hollow Heart ³
CO08029-1RF/R	0.5		0.0
CO08062-3PF/P	2.7		0.0
CO11250-1W/Y	0.7		0.0
CO11266-1W/Y	0.5		0.0
Banana	12.2		0.0
LaRatte	11.8		0.0
Yukon Gold	0.9		0.0

¹ Percent external defects based on the proportion of the total sample weight with significant defects.

² MS=misshapen; SG=second growth; GC=growth crack; GR=green. Most prevalent defects for each clone are asterisked.

³ Percent hollow heart calculated as follows: (Weight of tubers >10 ounces with defects/total sample weight) x 100.

Table 10C. Growth characteristics of Southwest Regional Specialty Trial entries - 2019.

Clone	% Stand	Emergence Uniformity ¹	Vine Vigor ²	Stems/ Plant	Vine Size ³	Vine Type ⁴	Vine Maturity ⁵
CO08029-1RF/R	95	2.3	2.8	5.5	4.0	3.0	3.5
CO08062-3PF/P	98	2.5	2.8	2.8	4.0	3.0	3.8
CO11250-1W/Y	98	3.0	3.8	4.1	4.0	3.3	3.3
CO11266-1W/Y	92	2.3	2.3	2.7	3.3	4.0	4.0
Banana	100	3.5	4.0	4.9	4.3	3.3	3.0
LaRatte	99	3.5	4.0	5.7	4.5	3.3	3.0
Yukon Gold	89	3.0	3.3	2.2	2.8	3.0	2.8
Mean	96	2.9	3.3	4.0	3.8	3.3	3.3
LSD6 (0.05)	6	0.6	0.6	0.9	0.5	0.5	0.6

¹Emergence uniformity is rated on a 1 to 5 scale, with 5 indicating very uniform emergence.

²Vine vigor is rated on a 1 to 5 scale, with 5 indicating very vigorous vines.

³Vine size is rated on a 1 to 5 scale, with 5 indicating very large vines.

⁴Vine type is rated on a 1 to 5 scale, with 5 indicating very upright vines.

⁵Vine maturity is rated on the following basis: 1=very early; 2=early; 3=medium; 4=late; and 5=very late.

⁶LSD=least significant difference.

Table 10D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Southwest Regional Specialty Trial entries - 2019.

Clone	Blackspot Index ¹			% Weight Loss ²	Dormancy ³ (Days)	Enzymatic Browning ⁴
	Bud End	Stem End	Average			
CO08029-1RF/R	---	---	---	2.0	102	---
CO08062-3PF/P	---	---	---	3.5	60	---
CO11250-1W/Y	3.6	3.1	3.4	3.3	53	3.8
CO11266-1W/Y	4.8	4.8	4.8	3.7	74	4.4
Banana	5.0	4.5	4.5	3.4	74	4.6
LaRatte	5.0	4.5	4.8	2.9	81	4.6
Yukon Gold	5.0	4.4	4.5	2.0	81	4.6

¹ Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

² Tubers were stored at 45F for 91 days.

³ Days from harvest to first visible growth. Tubers were stored at 45F.

⁴ Degree of darkening rated at 60 minutes after slicing tubers lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 10E. Specific gravity, french fry color, and texture for Southwest Regional Specialty Trial entries - 2019.

Clone	Specific Gravity	Fry Color ¹		Fry Texture ²	
		At	3 wks 55F+	At	3 wks 55F+
		Harvest	8 wks 45F	Harvest	8 wks 45F
CO08029-1RF/R	1.085	-	-	2	1
CO08062-3PF/P	1.076	-	-	3	3
CO11250-1W/Y	1.098	1	1	4	4
CO11266-1W/Y	1.083	1	1	3	2
Banana	1.083	1	2	5	4
LaRatte	1.081	2	2	5	5
Yukon Gold	1.094	2	3	3	3

¹ Chip color was rated using the Snack Food Association 1-5 scale. Ratings of ≤ 2.0 are acceptable.

Table 11A. Yield, grade, and tuber shape for Southwest Regional Chipping Trial entries - 2019.

Clone	Yield (Cwt/A)						Tuber Shape ¹ L:W/W:T
	Total	US #1					
		Total	%	4-10 oz	>10 oz	<4 oz	
ATTX07042-3W	291	118	39	107	11	163	1.11/1.13
CO11023-2W	254	174	68	168	6	73	0.87/1.21
CO11023-9W	256	151	59	144	8	98	1.01/1.16
CO11037-5W	340	248	73	214	34	77	1.02/1.18
TX09403-15W	274	180	65	174	5	89	0.98/1.22
TX09403-21W	286	202	71	196	7	80	0.91/1.19
Atlantic	264	223	84	188	35	36	0.99/1.29
Chipeta	406	347	86	192	155	22	1.19/1.18
Snowden	282	225	79	211	14	55	0.90/1.33
Mean	303	223	73	196	27	74	1.00/1.18
LSD ² (0.05)	60	62	11	61	37	25	0.14/0.14

¹L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

²LSD=least significant difference.

Table 11B. Grade defects for Southwest Regional Chipping Trial entries - 2019.

Clone	% External Defects ¹	External Defects Observed ²	% Hollow Heart ³
ATTX07042-3W	3.4		0.0
CO11023-2W	2.9		0.0
CO11023-9W	2.4		0.0
CO11037-5W	4.1		0.5
TX09403-15W	2.3		0.0
TX09403-21W	1.3		0.0
Atlantic	1.8		0.0
Chipeta	8.9		0.9
Snowden	6.3		0.0

¹ Percent external defects based on the proportion of the total sample weight with significant defects.

² MS=misshapen; SG=second growth; GC=growth crack; GR=green. Most prevalent defects for each clone are asterisked.

³ Percent hollow heart calculated as follows: (Weight of tubers >10 ounces with defects/total sample weight) x 100.

Table 11C. Growth characteristics of Southwest Regional Chipping Trial entries - 2019.

Clone	% Stand	Emergence Uniformity ¹	Vine Vigor ²	Stems/ Plant	Vine Size ³	Vine Type ⁴	Vine Maturity ⁵
ATTX07042-3W	89	2.5	2.5	5.2	3.0	3.0	3.3
CO11023-2W	94	2.8	2.5	3.2	3.0	4.0	3.5
CO11023-9W	88	2.3	2.0	2.1	3.0	3.0	4.3
CO11037-5W	99	2.8	3.0	3.5	4.0	3.0	3.8
TX09403-15W	95	3.0	3.0	3.0	3.0	2.8	3.0
TX09403-21W	99	3.3	3.0	2.9	2.8	3.0	3.0
Atlantic	100	3.0	3.3	2.6	2.3	3.0	3.0
Chipeta	95	3.0	4.3	2.9	4.5	3.0	4.0
Snowden	99	3.3	3.5	2.9	3.5	3.0	2.8
Mean	96	3.2	3.6	3.0	3.5	3.4	3.3
LSD6 (0.05)	5	0.7	0.6	0.9	0.4	NS	0.4

¹Emergence uniformity is rated on a 1 to 5 scale, with 5 indicating very uniform emergence.

²Vine vigor is rated on a 1 to 5 scale, with 5 indicating very vigorous vines.

³Vine size is rated on a 1 to 5 scale, with 5 indicating very large vines.

⁴Vine type is rated on a 1 to 5 scale, with 5 indicating very upright vines.

⁵Vine maturity is rated on the following basis: 1=very early; 2=early; 3=medium; 4=late; and 5=very late.

⁶LSD=least significant difference; NS=not significant.

Table 11D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Southwest Regional Chipping Trial entries - 2019.

Clone	Blackspot Index ¹			% Weight ² Loss ²	Dormancy ³ (Days) ³	Enzymatic ⁴ Browning ⁴
	Bud End	Stem End	Average			
ATTX07042-3W	4.4	4.5	4.5	3.5	95	4.8
CO11023-2W	4.8	4.4	4.6	4.4	74	4.2
CO11023-9W	4.8	3.3	4.1	5.8	81	4.6
CO11037-5W	5.0	4.0	4.5	2.7	88	3.6
TX09403-15W	4.9	3.9	4.4	2.9	74	5.0
TX09403-21W	4.7	4.2	4.5	3.3	74	4.0
Atlantic	2.5	2.9	2.7	4.1	74	4.6
Chipeta	4.3	3.9	4.1	2.9	88	3.8
Snowden	3.6	1.6	2.6	3.9	81	3.4

¹ Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

² Tubers were stored at 45F for 91 days.

³ Days from harvest to first visible growth. Tubers were stored at 45F.

⁴ Degree of darkening rated at 60 minutes after slicing tubers lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 11E. Specific gravity, french fry color, and texture for Southwest Regional Chipping Trial entries - 2019.

Clone	Specific Gravity	7 wks 40F	7 wks/40F +3 wks/60F	7 wks 50F	7 wks/50F +3 wks/60F
ATTX07042-3W	1.086	5.0	4.5	3.5	2.5
CO11023-2W	1.084	3.5	3.5	2.0	2.5
CO11023-9W	1.084	3.5	3.5	2.0	3.5
CO11037-5W	1.089	4.5	3.0	2.0	2.5
TX09403-15W	1.083	3.5	4.0	2.0	3.0
TX09403-21W	1.078	4.0	4.5	1.5	3.0
Atlantic	1.094	4.5	4.0	3.0	3.5
Chipeta	1.093	4.5	3.5	2.5	3.0
Snowden	1.097	4.5	2.0	1.5	2.0

¹ Chip color was rated using the Snack Food Association 1-5 scale. Ratings of ≤ 2.0 are acceptable.

Table 12A. Yield, grade, and tuber shape for Western Regional Main Trial entries - 2019.

Clone	Yield (Cwt/A)						Tuber Shape ¹ L:W/W:T
	Total	US #1					
		Total	%	4-10 oz	>10 oz	<4 oz	
A07061-6	411	356	86	280	76	51	1.64/1.20
A071012-4BF	403	341	85	181	160	17	1.72/1.16
A07769-4	377	328	87	260	67	39	1.82/1.20
A08422-4VRsto	294	244	84	236	9	32	1.79/1.21
A08433-4VR	342	274	80	230	43	62	1.59/1.23
A10021-5TE	308	269	87	224	46	35	2.18/1.17
AO02183-2	381	305	80	264	42	67	2.00/1.08
AOR07781-5	353	302	86	214	88	42	1.88/1.23
CO10087-4RU	262	220	84	206	14	40	1.84/1.13
CO10091-1RU	281	196	69	186	10	81	1.71/1.23
COTX05095-2Ru/Y	327	228	69	226	2	96	1.47/1.14
POR12NCK50-1	373	319	85	266	54	48	2.00/1.27
Canela Russet	309	261	84	217	44	46	1.81/1.25
Ranger Russet	251	192	76	152	40	45	2.11/1.18
Russet Burbank	298	206	68	165	41	83	1.88/1.19
Russet Norkotah ^{-S3}	305	252	83	165	87	41	1.74/1.21
Shepody	212	150	71	80	70	51	1.87/1.18
Mean	323	261	80	209	53	51	1.81/1.18
LSD ³ (0.05)	46	48	7	44	36	14	0.25/0.14

¹L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

²Russet Norkotah yield data not included in mean or LSD calculations.

³LSD=least significant difference.

Table 12B. Grade defects for Western Regional Main Trial entries - 2019.

Clone	% External Defects ¹	External Defects Observed ²	% Hollow Heart ³
A07061-6	0.8		0.0
A071012-4BF	11.2		0.0
A07769-4	2.6		0.0
A08422-4VRsto	5.6		0.0
A08433-4VR	1.9		0.0
A10021-5TE	1.3		0.0
AO02183-2	1.7		0.0
AOR07781-5	1.8		0.0
CO10087-4RU	0.7		0.0
CO10091-1RU	1.3		0.0
COTX05095-2Ru/Y	0.8		0.0
POR12NCK50-1	1.6		0.0
Canela Russet	0.7		0.0
Ranger Russet	5.3		0.0
Russet Burbank	1.9		0.0
Russet Norkotah-S3	1.8		0.0
Shepody	5.5		0.0

¹Percent external defects based on the proportion of the total sample weight with significant defects.

²MS=misshapen; SG=second growth; GC=growth crack; GR=green. Most prevalent defects for each clone are asterisked.

³Percent hollow heart calculated as follows: (Weight of tubers >10 ounces with defects/total sample weight) x 100.

Table 12C. Growth characteristics of Western Regional Main Trial entries - 2019.

Clone	% Stand	Emergence Uniformity ¹	Vine Vigor ²	Stems/ Plant	Vine Size ³	Vine Type ⁴	Vine Maturity ⁵
A07061-6	100	3.8	4.0	2.8	4.0	2.0	3.8
A071012-4BF	100	3.3	4.0	2.8	4.3	3.0	4.0
A07769-4	99	3.0	3.5	3.5	3.8	3.0	4.0
A08422-4VRsto	100	3.3	2.8	1.6	3.0	3.3	3.0
A08433-4VR	100	2.8	3.0	1.5	4.5	4.0	4.5
A10021-5TE	100	3.0	2.5	2.6	3.3	3.8	4.0
AO02183-2	100	3.3	3.5	3.1	4.3	4.0	3.8
AOR07781-5	100	4.0	4.0	4.3	4.3	3.3	3.3
CO10087-4RU	97	3.3	3.3	3.3	3.3	3.0	3.0
CO10091-1RU	99	3.0	2.8	2.8	3.5	3.5	3.5
COTX05095-2Ru/Y	100	4.0	3.8	3.1	3.0	3.0	2.8
POR12NCK50-1	99	3.0	3.3	2.9	4.0	3.8	3.3
Canela Russet	99	3.0	3.0	2.6	4.0	3.0	3.0
Ranger Russet	99	3.3	3.3	3.0	3.8	3.0	3.0
Russet Burbank	100	3.3	4.0	3.2	4.0	2.5	3.0
Russet Norkotah ^{-S3}	99	3.3	3.0	2.9	4.0	3.0	3.0
Shepody	100	3.8	3.0	2.4	3.5	2.0	2.3
Mean	100	3.3	3.3	2.8	3.8	3.1	3.4
LSD ⁷ (0.05)	2	0.6	0.6	0.7	0.6	0.4	0.5

¹Emergence uniformity is rated on a 1 to 5 scale, with 5 indicating very uniform emergence.

²Vine vigor is rated on a 1 to 5 scale, with 5 indicating very vigorous vines.

³Vine size is rated on a 1 to 5 scale, with 5 indicating very large vines.

⁴Vine type is rated on a 1 to 5 scale, with 5 indicating very upright vines.

⁵Vine maturity is rated on the following basis: 1=very early; 2=early; 3=medium; 4=late; and 5=very late.

⁶Russet Norkotah % stand data not included in mean or LSD calculations.

⁷LSD=least significant difference.

Table 12D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Western Regional Main Trial entries - 2019.

Clone	Blackspot Index ¹			% Weight Loss ²	Dormancy ³ (Days)	Enzymatic Browning ⁴
	Bud End	Stem End	Average			
A07061-6	4.9	4.7	4.8	2.9	53	4.0
A071012-4BF	4.8	4.0	4.4	2.8	74	3.0
A07769-4	5.0	5.0	5.0	3.2	88	4.4
A08422-4VRsto	4.7	4.3	4.5	2.9	81	4.4
A08433-4VR	5.0	4.7	4.9	2.4	88	4.4
A10021-5TE	4.8	4.5	4.7	3.2	81	4.4
AO02183-2	4.8	5.0	4.9	2.8	67	4.6
AOR07781-5	4.6	4.9	4.8	3.3	60	4.6
CO10087-4RU	4.8	4.9	4.9	3.6	81	4.2
CO10091-1RU	5.0	5.0	5.0	3.2	81	4.6
COTX05095-2Ru/Y	4.8	3.8	4.3	3.5	81	4.0
POR12NCK50-1	5.0	5.0	5.0	2.9	95	4.4
Canela Russet	5.0	4.8	4.9	3.9	137	4.6
Ranger Russet	4.1	2.2	3.2	2.8	74	3.2
Russet Burbank	3.2	2.9	3.1	2.0	109	3.4
Russet Norkotah-S3	5.0	4.7	4.9	3.0	109	4.2
Shepody	5.0	4.7	4.9	2.4	74	4.4

¹ Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

² Tubers were stored at 45F for 91 days.

³ Days from harvest to first visible growth. Tubers were stored at 45F.

⁴ Degree of darkening rated at 60 minutes after slicing tubers lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 12E. Specific gravity, french fry color, and texture for Western Regional Main Trial entries - 2019.

Clone	Specific Gravity	Fry Color ¹		Fry Texture ²	
		At Harvest	3 wks 55F+ 8 wks 45F	At Harvest	3 wks 55F+ 8 wks 45F
A07061-6	1.082	1	1	4	4
A071012-4BF	1.096	1	1	3	3
A07769-4	1.086	1	2	3	3
A08422-4VRsto	1.086	2	3	3	3
A08433-4VR	1.083	2	2	3	3
A10021-5TE	1.092	0	1	3	3
AO02183-2	1.092	0	0	4	4
AOR07781-5	1.093	0	0	5	5
CO10087-4RU	1.089	1	1	5	5
CO10091-1RU	1.085	1	1	5	5
COTX05095-2Ru/Y	1.083	2	2	3	3
POR12NCK50-1	1.092	0	0	5	4
Canela Russet	1.095	2	2	4	4
Ranger Russet	1.086	0	1	4	4
Russet Burbank	1.082	1	2	3	3
Russet Norkotah-S3	1.079	3	3	2	2
Shepody	1.083	2	2	3	4

¹Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings of ≤ 2 are acceptable.

²Fry texture was rated on a 1 to 5 scale, with 5 indicating the cooked flesh was dry and mealy and 1 representing a soggy, wet texture.

Table 13A. Yield, grade, and tuber shape for Western Regional Red Trial entries - 2019.

Clone	Yield (Cwt/A)						Tuber Shape ¹ L:W/W:T
	Total	US #1				<4 oz	
		Total	%	4-10 oz	>10 oz		
A08112-7R	364	114	31	114	0	250	1.21/1.13
Chieftain	385	321	83	270	51	61	1.10/1.29
Red LaSoda	297	243	82	196	46	52	1.07/1.25
Sangre-S10	287	225	78	170	55	58	1.17/1.26
Mean	333	226	68	188	38	105	1.10/1.21
LSD ² (0.05)	52	53	7	48	32	21	0.19/0.18

¹L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

²LSD=least significant difference.

Table 13B. Grade defects for Western Regional Red Trial entries - 2019.

Clone	% External Defects ¹	External Defects Observed ²	% Hollow Heart ³
A08112-7R	0.1		0.0
Chieftain	0.4		0.0
Red LaSoda	1.1		0.0
Sangre-S10	1.5		0.0

¹Percent external defects based on the proportion of the total sample weight with significant defects.

²MS=misshapen; SG=second growth; GC=growth crack; GR=green. Most prevalent defects for each clone are asterisked.

³Percent hollow heart calculated as follows: (Weight of tubers >10 ounces with defects/total sample weight) x 100.

Table 13C. Growth characteristics of Western Regional Red Trial entries - 2018.

Clone	% Stand	Emergence Uniformity ¹	Vine Vigor ²	Stems/ Plant	Vine Size ³	Vine Type ⁴	Vine Maturity ⁵
A08112-7R	100	3.5	3.8	4.4	4.0	3.5	3.0
Chieftain	100	3.8	4.0	2.8	3.5	3.0	3.0
Red LaSoda	100	3.3	3.5	2.9	3.0	2.0	3.0
Sangre-S10	100	3.0	3.3	3.2	4.0	3.0	3.0
Mean	100	3.4	3.6	3.3	3.6	2.9	3.0
LSD6 (0.05)	NS	0.8	NS	0.9	0.5	0.5	NS

¹Emergence uniformity is rated on a 1 to 5 scale, with 5 indicating very uniform emergence.

²Vine vigor is rated on a 1 to 5 scale, with 5 indicating very vigorous vines.

³Vine size is rated on a 1 to 5 scale, with 5 indicating very large vines.

⁴Vine type is rated on a 1 to 5 scale, with 5 indicating very upright vines.

⁵Vine maturity is rated on the following basis: 1=very early; 2=early; 3=medium; 4=late; and 5=very late.

⁶LSD=least significant difference; NS=not significant.

Table 13D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Western Regional Red Trial entries - 2019.

Clone	Blackspot Index ¹			% Weight Loss ²	Dormancy (Days) ³	Enzymatic Browning ⁴
	Bud End	Stem End	Average			
A08112-7R	4.8	4.5	4.7	4.0	81	4.4
Chieftain	4.8	4.6	4.7	3.6	102	3.8
Red LaSoda	5.0	4.9	5.0	3.2	81	3.0
Sangre-S10	3.3	4.8	4.1	1.9	81	3.0

¹ Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

² Tubers were stored at 45F for 91 days.

³ Days from harvest to first visible growth. Tubers were stored at 45F.

⁴ Degree of darkening rated at 60 minutes after slicing tubers lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 13E. Specific gravity, french fry color, and texture for Western Regional Red Trial entries - 2019.

Clone	Specific Gravity	Fry Color ¹		Fry Texture ²	
		At Harvest	3 wks 55F+ 8 wks 45F	At Harvest	3 wks 55F+ 8 wks 45F
A08112-7R	1.088	2	3	3	3
Chieftain	1.078	1	2	3	3
Red LaSoda	1.080	2	3	2	2
Sangre-S10	1.078	4	3	3	3

¹ Chip color was rated using the Snack Food Association 1-5 scale. Ratings of ≤ 2.0 are acceptable.

Table 14A. Yield, grade, and tuber shape for Advanced and Western Regional Specialty Specialty Trial entries - 2019.

Clone	Yield (Cwt/A)						Tuber Shape ¹ L:W/W:T
	Total	US #1					
		Total	%	4-10 oz	>10 oz	<4 oz	
ATTX05175S-1R/Y	340	62	18	62	0	278	0.89/1.24
ATX06264s-4R/Y	322	189	59	180	9	132	0.91/1.34
CO09079-5PW/Y	257	33	13	33	0	224	1.32/1.22
CO09128-3W/Y	194	2	1	2	0	192	0.97/1.19
CO09128-5W/Y	235	14	6	14	0	220	0.95/1.23
CO09218-4W/Y	214	89	40	76	13	123	1.16/1.32
CO10064-1W/Y	328	196	59	186	10	129	1.03/1.35
CO10097-2W/Y	278	157	55	151	5	122	1.10/1.15
CO10098-5W/Y	219	34	15	34	0	184	1.18/1.29
COTX04193S-2R/Y	256	147	55	146	1	109	0.94/1.25
Yukon Gold	226	168	74	141	28	48	1.10/1.21
Mean	268	109	38	102	7	157	1.05/1.26
LSD ² (0.05)	48	51	12	45	12	35	0.14/0.09

¹L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

²LSD=least significant difference.

Table 14B. Grade defects for Advanced and Western Regional Specialty Trial entries - 2019.

Clone	% External Defects ¹	External Defects Observed ²	% Hollow Heart ³
ATTX05175S-1R/Y	0.3		0.0
ATX06264s-4R/Y	0.4		0.0
CO09079-5PW/Y	0.0		0.0
CO09128-3W/Y	6.3		0.0
CO09128-5W/Y	0.0		0.0
CO09218-4W/Y	0.8		0.0
CO10064-1W/Y	0.8		0.0
CO10097-2W/Y	0.0		0.0
CO10098-5W/Y	0.4		0.0
COTX04193S-2R/Y	0.0		0.0
Yukon Gold	4.6		0.5

¹ Percent external defects based on the proportion of the total sample weight with significant defects.

² MS=misshapen; SG=second growth; GC=growth crack; GR=green. Most prevalent defects for each clone are asterisked.

³ Percent hollow heart calculated as follows: (Weight of tubers >10 ounces with defects/total sample weight) x 100.

Table 14C. Growth characteristics of Advanced and Western Regional Specialty Trial entries - 2019.

Clone	% Stand	Emergence Uniformity ¹	Vine Vigor ²	Stems/ Plant	Vine Size ³	Vine Type ⁴	Vine Maturity ⁵
ATTX05175S-1R/Y	98	3.5	3.5	4.9	3.8	3.0	3.3
ATX06264s-4R/Y	92	3.8	3.0	3.3	3.3	3.3	3.0
CO09079-5PW/Y	96	3.0	3.5	4.3	3.0	2.5	2.0
CO09128-3W/Y	97	3.0	3.0	5.7	2.0	2.0	2.3
CO09128-5W/Y	98	3.8	3.3	6.0	2.3	2.0	2.0
CO09218-4W/Y	81	2.5	2.0	3.5	3.0	3.8	4.5
CO10064-1W/Y	99	2.8	3.0	4.0	4.0	3.5	3.8
CO10097-2W/Y	98	3.0	2.8	4.9	3.3	3.8	3.0
CO10098-5W/Y	96	2.8	3.5	5.2	3.5	2.5	3.0
COTX04193S-2R/Y	95	3.5	3.3	3.5	2.5	2.5	1.5
Yukon Gold	96	3.3	3.5	2.1	2.8	3.0	2.5
Mean	96	3.2	3.1	4.2	3.1	2.9	2.8
LSD ⁶ (0.05)	7	0.8	0.6	0.9	0.6	0.7	0.5

¹Emergence uniformity is rated on a 1 to 5 scale, with 5 indicating very uniform emergence.

²Vine vigor is rated on a 1 to 5 scale, with 5 indicating very vigorous vines.

³Vine size is rated on a 1 to 5 scale, with 5 indicating very large vines.

⁴Vine type is rated on a 1 to 5 scale, with 5 indicating very upright vines.

⁵Vine maturity is rated on the following basis: 1=very early; 2=early; 3=medium; 4=late; and 5=very late.

⁶LSD=least significant difference.

Table 14D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Advanced and Western Regional Specialty Trial entries - 2019.

Clone	Blackspot Index ¹			% Weight Loss ²	Dormancy ³ (Days)	Enzymatic Browning ⁴
	Bud End	Stem End	Average			
ATTX05175S-1R/Y	4.5	3.6	4.1	5.1	81	2.4
ATX06264s-4R/Y	5.0	4.6	4.8	6.3	32	3.6
CO09079-5PW/Y	5.0	5.0	5.0	2.8	102	3.8
CO09128-3W/Y	3.5	4.5	4.0	2.2	95	4.0
CO09128-5W/Y	2.8	3.1	3.0	3.2	88	3.4
CO09218-4W/Y	4.5	3.4	4.0	3.1	32	3.6
CO10064-1W/Y	4.8	4.4	4.6	3.1	95	3.4
CO10097-2W/Y	4.8	4.5	4.7	2.9	88	4.0
CO10098-5W/Y	4.8	3.5	4.2	3.4	39	4.0
COTX04193S-2R/Y	4.7	4.2	4.5	3.5	67	3.4
Yukon Gold	4.8	4.2	4.5	1.7	88	4.6

¹ Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

² Tubers were stored at 45F for 91 days.

³ Days from harvest to first visible growth. Tubers were stored at 45F.

⁴ Degree of darkening rated at 60 minutes after slicing tubers lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 14E. Specific gravity, french fry color, and texture for Advanced and Western Regional Speciality Trial entries - 2019.

Clone	Specific Gravity	Fry Color ¹		Fry Texture ²	
		At Harvest	3 wks 55F+ 8 wks 45F	At Harvest	3 wks 55F+ 8 wks 45F
ATTX05175S-1R/Y	1.088	1	2	2	3
ATX06264s-4R/Y	1.080	3	3	3	2
CO09079-5PW/Y	1.070	3	4	3	2
CO09128-3W/Y	1.070	2	3	3	3
CO09128-5W/Y	1.070	2	3	2	2
CO09218-4W/Y	1.083	1	1	3	3
CO10064-1W/Y	1.095	0	1	3	3
CO10097-2W/Y	1.081	2	1	2	2
CO10098-5W/Y	1.105	0	1	4	4
COTX04193S-2R/Y	1.068	2	2	2	2
Yukon Gold	1.089	1	2	5	4

¹Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings of ≤ 2 are acceptable.

²Fry texture was rated on a 1 to 5 scale, with 5 indicating the cooked flesh was dry and mealy and 1 representing a soggy, wet texture.

Table 15A. Yield, grade, and tuber shape for Advanced and Western Regional Chipping Trial entries - 2019.

Clone	Yield (Cwt/A)						Tuber Shape ¹ L:W/W:T
	Total	US #1					
		Total	%	4-10 oz	>10 oz	<4 oz	
AC11453-7W	335	243	73	240	2	89	0.92/1.08
AC11467-4W	305	257	84	228	29	44	1.12/1.18
AC11494-6W	329	220	67	215	5	108	0.84/1.31
CO10073-7W	247	126	50	126	0	119	1.02/1.22
CO10076-4W	267	179	67	177	2	85	0.98/1.22
CO12235-3W	260	192	74	190	2	66	0.97/1.14
CO12293-1W	340	289	85	230	59	45	1.06/1.17
CO12428-2W	307	155	48	155	0	151	0.96/1.24
Atlantic	299	258	85	209	49	39	0.99/1.23
Chipeta	360	310	86	176	134	25	1.17/1.15
Snowden	282	225	79	211	14	55	0.90/1.33
Mean	303	223	73	196	27	75	0.99/1.20
LSD ³ (0.05)	60	62	10	61	37	25	0.13/0.14

¹ L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

² Atlantic yield data not included in mean or LSD calculations.

³ LSD=least significant difference.

Table 15B. Grade defects for Advanced and Western Regional Chipping Trial entries - 2019.

Clone	% External Defects ¹	External Defects Observed ²	% Hollow Heart ³
AC11453-7W	1.0		0.0
AC11467-4W	1.1		0.0
AC11494-6W	0.1		0.0
CO10073-7W	7.6		0.0
CO10076-4W	0.2		0.0
CO12235-3W	0.6		0.0
CO12293-1W	1.5		0.0
CO12428-2W	0.4		0.0
Atlantic	0.8		0.9
Chipeta	6.4		0.0
Snowden	6.3		0.0

¹ Percent external defects based on the proportion of the total sample weight with significant defects.

² MS=misshapen; SG=second growth; GC=growth crack; GR=green. Most prevalent defects for each clone are asterisked.

³ Percent hollow heart calculated as follows: (Weight of tubers >10 ounces with defects/total sample weight) x 100.

Table 15C. Growth characteristics of Advanced and Western Regional Chipping Trial entries - 2019.

Clone	% Stand	Emergence Uniformity ¹	Vine Vigor ²	Stems/Plant	Vine Size ³	Vine Type ⁴	Vine Maturity ⁵
AC11453-7W	98	3.0	3.8	3.1	4.0	2.8	4.0
AC11467-4W	96	3.3	3.3	1.6	3.0	3.5	3.0
AC11494-6W	95	3.3	4.0	2.2	4.0	3.0	3.3
CO10073-7W	92	3.3	3.3	4.1	3.0	3.0	3.0
CO10076-4W	93	2.8	3.0	3.3	3.0	3.5	3.0
CO12235-3W	96	3.3	3.8	2.2	3.0	2.8	3.0
CO12293-1W	100	3.3	4.0	3.9	4.0	3.3	4.0
CO12428-2W	100	3.0	3.5	4.3	3.0	3.0	3.0
Atlantic	99	3.5	3.5	2.8	2.8	3.0	2.8
Chipeta	91	3.3	4.5	2.7	4.8	3.3	4.0
Snowden	99	3.3	3.5	2.9	3.5	3.0	2.8
Mean	96	3.2	3.6	3.0	3.5	3.1	3.3
LSD ⁷ (0.05)	5	0.7	0.6	0.9	0.4	NS	0.4

¹Emergence uniformity is rated on a 1 to 5 scale, with 5 indicating very uniform emergence.

²Vine vigor is rated on a 1 to 5 scale, with 5 indicating very vigorous vines.

³Vine size is rated on a 1 to 5 scale, with 5 indicating very large vines.

⁴Vine type is rated on a 1 to 5 scale, with 5 indicating very upright vines.

⁵Vine maturity is rated on the following basis: 1=very early; 2=early; 3=medium; 4=late; and 5=very late.

⁶Atlantic % stand data not included in mean or LSD calculations.

⁷LSD=least significant difference; NS=not significant.

Table 15D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Advanced and Western Regional Chipping Trial entries - 2019.

Clone	Blackspot Index ¹			% Weight ² Loss	Dormancy ³ (Days)	Enzymatic Browning ⁴
	Bud End	Stem End	Average			
AC11453-7W	4.1	3.4	3.8	4.2	74	3.2
AC11467-4W	4.1	2.8	3.5	4.5	60	3.0
AC11494-6W	2.3	2.6	2.5	3.9	67	3.8
CO10073-7W	5.0	4.8	4.9	4.7	81	4.0
CO10076-4W	3.3	2.2	2.8	4.8	88	3.2
CO12235-3W	4.4	4.0	4.2	4.9	81	3.8
CO12293-1W	5.0	4.8	4.9	5.0	81	4.4
CO12428-2W	4.8	4.3	4.6	5.8	60	4.6
Atlantic	3.9	3.9	3.9	4.4	81	4.6
Chipeta	4.8	4.6	4.7	3.4	81	4.6
Snowden	3.6	1.6	2.6	3.9	81	3.4

¹ Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

² Tubers were stored at 45F for 91 days.

³ Days from harvest to first visible growth. Tubers were stored at 45F.

⁴ Degree of darkening rated at 60 minutes after slicing tubers lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 15E. Chip color¹ after various storage regimes, and specific gravity of Advanced and Western Regional Chipping Trial entries - 2019.

Clone	Specific Gravity	7 wks 40F	7 wks/40F +3 wks/60F	7 wks 50F	7 wks/50F +3 wks/60F
AC11453-7W	1.098	3.5	2.5	2.0	2.5
AC11467-4W	1.088	3.0	3.0	2.5	2.5
AC11494-6W	1.099	3.0	4.0	2.5	3.5
CO10073-7W	1.086	3.5	3.5	2.0	2.5
CO10076-4W	1.084	3.5	3.5	2.0	1.0
CO12235-3W	1.092	4.0	4.0	2.5	2.5
CO12293-1W	1.088	3.5	3.5	2.0	2.0
CO12428-2W	1.097	2.5	2.5	2.0	3.0
Atlantic	1.095	4.0	4.0	1.5	3.5
Chipeta	1.091	4.0	4.5	2.0	3.5
Snowden	1.097	4.5	2.0	1.5	2.0

¹ Chip color was rated using the Snack Food Association 1-5 scale. Ratings of ≤ 2.0 are acceptable.

Table 16. Summary comparison of advanced selections and named cultivars for yield, grade, maturity, specific gravity, and grade defects.

Clone	Usage ¹	# Trials	Total Yield (Cwt/A)	% US #1	Vine Maturity ²	Specific Gravity	% External Defects ³	% Hollow Heart ⁴
<i>Russets</i>								
AC05039-2RU	Dual	6	312	89	2.1	1.087	1.7	0.1
CO08065-2RU	Dual	5	379	84	3.4	1.102	3.0	0.7
CO08231-1RU	FM	5	441	87	3.6	1.087	1.8	0.4
CO09036-2RU	Dual	5	399	74	3.4	1.091	1.7	1.2
CO09076-3RU	FM	5	395	80	2.7	1.082	4.7	0.1
CO09205-2RU	Dual	5	346	82	2.6	1.076	2.1	0.1
CO10087-4RU	Dual	4	307	91	2.4	1.091	1.0	1.0
CO10091-1RU	Dual	4	350	81	3.2	1.087	0.6	0.0
Canela Russet	FM	51	357	90	3.4	1.096	1.2	0.0
Russet Norkotah	FM	106	369	84	1.7	1.079	2.4	0.4
<i>Specialties</i>								
CO09128-3W/Y	FM	5	256	12	2.3	1.072	1.7	0.0
CO09128-5W/Y	FM	5	328	20	2.1	1.087	0.2	0.0
CO09218-4W/Y	FM	5	376	59	4.0	1.073	1.3	0.1
AC10376-1-2012W/Y	FM	4	435	72	3.5	1.081	1.7	0.1
CO10064-1W/Y	FM	4	406	66	3.2	1.095	1.3	0.0
CO10098-5W/Y	FM	4	296	33	2.9	1.104	0.7	0.0
Yukon Gold	FM	55	385	87	2.0	1.087	2.5	0.4

Table 16 continued on next page

Table 16 (cont'd). Summary comparison of advanced selections and named cultivars for yield, grade, maturity, specific gravity, and grade defects.

Clone	Usage ¹	# Trials	Total Yield (Cwt/A)	% US #1	Vine Maturity ²	Specific Gravity	% External Defects ³	% Hollow Heart ⁴
Chippers								
CO03243-3W	Chip	7	462	87	3.4	1.086	2.1	0.9
CO10073-7W	Chip	4	330	72	3.0	1.085	3.4	0.0
CO10076-4W	Chip	4	351	77	3.0	1.080	1.0	0.0
Atlantic	Chip	59	439	87	3.1	1.098	2.6	4.4
Chipeta	Chip	54	526	85	3.4	1.090	5.6	0.6

¹FM=fresh market; Dual= fresh market and processing potential; SPEC=specialty.

²Vine maturity: 1=very early; 2=early; 3=medium; 4=late; 5=very late.

³Includes defects such as second growth, growth crack, misshapen, and green.

⁴Based on tubers greater than 10 ounces.

Several selections that have been discontinued from grower evaluations are available for exclusive release. Data summaries for all clones are available at potatoes.colostate.edu/programs/potato-breeding/cultivars/. Please contact David Holm for further information. Included are **russets** - AC96052-1RU, AC00395-2RU, CO97087-2RU, CO98067-7RU, CO99053-4RU, CO03276-5RU, and CO05175-1RU; **reds** - CO98012-5R, CO99076-6R, CO99256-2R, CO00277-2R, and CO00291-5R; **chippers** CO02024-9W; and **specialties** (including yellows) - AC97521-1R/Y, ATC00293-1W/Y, CO97215-2P/P, CO97226-2R/R, CO97227-2P/PW, CO97232-1R/Y, CO97232-2R/Y, CO99045-1W/Y, CO00405-1RF, CO00412-5W/Y, CO00415-1RF, CO04056-3P/PW, CO04067-8R/Y, CO04099-3W/Y, CO05028-4P/PY, CO05028-11P/RWP, VC0967-2R/Y, VC1002-3W/Y, and VC1009-1W/Y.

Figure 1. Photographs of advanced selections.



Figure 1 (cont'd). Photographs of advanced selections.



Figure 1 (cont'd). Photographs of advanced selections.



Table 17A. Detailed data summary for AC05039-2RU.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		6	312	271-366
Yield US #1 (Cwt/A)		6	279	243-341
% US #1		6	89	85-93
Yield >10 oz (Cwt/A)		6	66	44-97
Yield <4 oz (Cwt/A)		6	28	19-44
% External Defects ¹		6	1.7	0.5-3.8
% Hollow Heart ²		6	0.1	0.0-0.6
% Stand		6	98	92-100
Emergence Uniformity		6	3.4	3.0-4.0
Vine Vigor ³		6	3.3	3.0-4.0
Stems/Plant		6	2.9	2.3-3.8
Vine Size ⁴		6	2.3	1.0-3.0
Vine Type ⁵		6	2.3	2.0-3.0
Vine Maturity ⁶		6	2.1	1.5-2.8
Blackspot ⁷	Bud End	7	5.0	4.8-5.0
	Stem End	7	4.8	4.3-5.0
	Average	7	4.9	
Weight Loss ⁸		7	2.3	1.8-3.0
Dormancy ⁹		7	83	55-101
Enzymatic Browning ¹⁰		7	4.5	4.2-5.0
Specific Gravity		7	1.087	1.084-1.089
Fry Color ¹¹	Harvest	7	1.0	0.0-2.0
	Storage	7	2.1	1.0-3.0
Fry Texture ¹²	Harvest	7	3.3	3.0-4.0
	Storage	7	3.1	3.0-4.0

Refer to footnotes on page 118

Table 17B. Detailed data summary for CO08065-2RU.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		5	379	331 - 433
Yield US #1 (Cwt/A)		5	317	271 - 364
% US #1		5	84	79 - 89
Yield >10 oz (Cwt/A)		5	79	35 - 118
Yield <4 oz (Cwt/A)		5	50	18 - 70
% External Defects ¹		5	3.0	0.3 - 5.7
% Hollow Heart ²		5	0.7	0.0 - 1.2
% Stand		5	99	98 - 100
Emergence Uniformity		5	3.6	3.0 - 4.3
Vine Vigor ³		5	3.6	3.0 - 4.0
Stems/Plant		5	2.9	2.4 - 3.4
Vine Size ⁴		5	3.6	2.8 - 4.0
Vine Type ⁵		5	3.0	3.0 - 3.0
Vine Maturity ⁶		5	3.4	3.0 - 4.0
Blackspot ⁷	Bud End	6	4.5	3.6 - 5.0
	Stem End	6	4.1	3.6 - 4.8
	Average	6	4.3	
Weight Loss ⁸		6	4.9	4.0 - 6.3
Dormancy ⁹		6	82	71 - 104
Enzymatic Browning ¹⁰		6	4.1	3.4 - 4.6
Specific Gravity		6	1.102	1.098 - 1.110
Fry Color ¹¹	Harvest	6	0.0	0.0 - 0.0
	Storage	6	0.2	0.0 - 1.0
Fry Texture ¹²	Harvest	6	4.0	3.0 - 5.0
	Storage	6	3.8	3.0 - 5.0

Refer to footnotes on page 118

Table 17C. Detailed data summary for CO08231-1RU.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		5	441	357 - 501
Yield US #1 (Cwt/A)		5	383	316 - 445
% US #1		5	87	77 - 92
Yield >10 oz (Cwt/A)		5	130	57 - 260
Yield <4 oz (Cwt/A)		5	49	24 - 89
% External Defects ¹		5	1.8	0.8 - 4.6
% Hollow Heart ²		5	0.4	0.0 - 0.9
% Stand		5	97	96 - 99
Emergence Uniformity		5	3.1	2.8 - 3.3
Vine Vigor ³		5	3.2	3.0 - 3.5
Stems/Plant		5	3.2	2.2 - 4.2
Vine Size ⁴		5	3.9	3.0 - 5.0
Vine Type ⁵		5	3.4	3.0 - 4.0
Vine Maturity ⁶		5	3.6	3.0 - 4.0
Blackspot ⁷	Bud End	6	4.9	4.7 - 5.0
	Stem End	6	4.5	3.9 - 5.0
	Average	6	4.7	
Weight Loss ⁸		6	3.6	2.5 - 4.4
Dormancy ⁹		6	66	56 - 83
Enzymatic Browning ¹⁰		6	4.1	2.2 - 4.6
Specific Gravity		6	1.087	1.081 - 1.097
Fry Color ¹¹	Harvest	6	1.7	0.0 - 3.0
	Storage	6	2.2	1.0 - 3.0
Fry Texture ¹²	Harvest	6	3.0	2.0 - 4.0
	Storage	6	3.3	3.0 - 4.0

Refer to footnotes on page 118

Table 17D. Detailed data summary for CO09036-2RU.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		5	399	308 - 505
Yield US #1 (Cwt/A)		5	299	208 - 424
% US #1		5	74	66 - 84
Yield >10 oz (Cwt/A)		5	56	8 - 139
Yield <4 oz (Cwt/A)		5	93	70 - 119
% External Defects ¹		5	1.7	0.4 - 3.1
% Hollow Heart ²		5	1.2	0.0 - 4.4
% Stand		5	98	96 - 100
Emergence Uniformity		5	3.0	2.3 - 4.0
Vine Vigor ³		5	3.3	2.8 - 3.8
Stems/Plant		5	3.2	2.6 - 4.0
Vine Size ⁴		5	4.2	3.5 - 5.0
Vine Type ⁵		5	3.0	2.8 - 3.3
Vine Maturity ⁶		5	3.4	3.0 - 3.8
Blackspot ⁷	Bud End	6	5.0	4.9 - 5.0
	Stem End	6	4.8	4.4 - 5.0
	Average	6	4.9	
Weight Loss ⁸		6	2.4	1.9 - 2.9
Dormancy ⁹		6	79	48 - 103
Enzymatic Browning ¹⁰		6	4.2	3.0 - 4.8
Specific Gravity		6	1.091	1.082 - 1.099
Fry Color ¹¹	Harvest	6	0.8	0.0 - 1.0
	Storage	6	0.8	0.0 - 2.0
Fry Texture ¹²	Harvest	6	4.5	4.0 - 5.0
	Storage	6	4.0	3.0 - 5.0

Refer to footnotes on page 118

Table 17E. Detailed data summary for CO09076-3RU.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		5	395	238 - 492
Yield US #1 (Cwt/A)		5	322	162 - 418
% US #1		5	80	68 - 85
Yield >10 oz (Cwt/A)		5	115	21 - 170
Yield <4 oz (Cwt/A)		5	53	40 - 67
% External Defects ¹		5	4.7	3.0 - 6.7
% Hollow Heart ²		5	0.1	0.0 - 0.3
% Stand		5	99	96 - 100
Emergence Uniformity		5	3.4	3.0 - 4.0
Vine Vigor ³		5	3.4	3.0 - 4.0
Stems/Plant		5	3.1	2.4 - 4.0
Vine Size ⁴		5	3.5	2.3 - 5.0
Vine Type ⁵		5	2.9	2.5 - 3.0
Vine Maturity ⁶		5	2.7	2.0 - 3.5
Blackspot ⁷	Bud End	6	5.0	4.8 - 5.0
	Stem End	6	4.9	4.6 - 5.0
	Average	6	4.9	
Weight Loss ⁸		6	3.6	2.8 - 4.8
Dormancy ⁹		6	67	41 - 77
Enzymatic Browning ¹⁰		6	4.2	3.4 - 5.0
Specific Gravity		6	1.082	1.075 - 1.087
Fry Color ¹¹	Harvest	6	1.7	1.0 - 3.0
	Storage	6	2.3	1.0 - 3.0
Fry Texture ¹²	Harvest	6	2.8	2.0 - 3.0
	Storage	6	3.0	2.0 - 4.0

Refer to footnotes on page 118

Table 17F. Detailed data summary for CO09205-2RU.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		5	346	253 - 416
Yield US #1 (Cwt/A)		5	288	172 - 361
% US #1		5	82	68 - 89
Yield >10 oz (Cwt/A)		5	39	8 - 75
Yield <4 oz (Cwt/A)		5	50	33 - 77
% External Defects ¹		5	2.1	0.8 - 3.9
% Hollow Heart ²		5	0.1	0.0 - 0.5
% Stand		5	100	99 - 100
Emergence Uniformity		5	2.9	2.5 - 3.3
Vine Vigor ³		5	2.5	2.0 - 3.0
Stems/Plant		5	3.2	2.4 - 4.0
Vine Size ⁴		5	2.7	2.0 - 3.0
Vine Type ⁵		5	2.9	2.0 - 4.0
Vine Maturity ⁶		5	2.6	2.0 - 3.0
Blackspot ⁷	Bud End	6	4.9	4.6 - 5.0
	Stem End	6	4.5	4.2 - 4.8
	Average	6	4.7	
Weight Loss ⁸		6	2.2	1.7 - 3.1
Dormancy ⁹		6	50	35 - 67
Enzymatic Browning ¹⁰		6	4.2	2.8 - 5.0
Specific Gravity		6	1.076	1.074 - 1.080
Fry Color ¹¹	Harvest	6	0.5	0.0 - 1.0
	Storage	6	1.0	0.0 - 2.0
Fry Texture ¹²	Harvest	6	3.3	2.0 - 5.0
	Storage	6	3.5	3.0 - 4.0

Refer to footnotes on page 118

Table 17G. Detailed data summary for CO10087-4RU.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		4	307	262 - 330
Yield US #1 (Cwt/A)		4	279	220 - 311
% US #1		4	91	84 - 94
Yield >10 oz (Cwt/A)		4	68	14 - 108
Yield <4 oz (Cwt/A)		4	24	14 - 40
% External Defects ¹		4	1.0	0.4 - 1.4
% Hollow Heart ²		4	1.0	0.0 - 3.9
% Stand		4	95	90 - 99
Emergence Uniformity		4	3.6	3.3 - 4.0
Vine Vigor ³		4	3.5	2.5 - 4.3
Stems/Plant		4	2.7	2.1 - 3.3
Vine Size ⁴		4	2.8	2.0 - 3.5
Vine Type ⁵		4	2.5	2.0 - 3.0
Vine Maturity ⁶		4	2.4	2.0 - 3.0
Blackspot ⁷	Bud End	4	4.9	4.6 - 5.0
	Stem End	4	4.5	4.1 - 4.8
	Average	4	4.7	
Weight Loss ⁸		4	3.7	3.2 - 4.3
Dormancy ⁹		4	86	67 - 110
Enzymatic Browning ¹⁰		5	4.0	3.6 - 4.2
Specific Gravity		5	1.091	1.088 - 1.097
Fry Color ¹¹	Harvest	5	1.6	1.0 - 3.0
	Storage	5	1.2	1.0 - 2.0
Fry Texture ¹²	Harvest	5	4.2	3.0 - 5.0
	Storage	5	4.2	3.0 - 5.0

Refer to footnotes on page 31.

Table 17H. Detailed data summary for CO10091-1RU.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		4	350	281 - 409
Yield US #1 (Cwt/A)		4	290	196 - 372
% US #1		4	81	69 - 91
Yield >10 oz (Cwt/A)		4	50	10 - 124
Yield <4 oz (Cwt/A)		4	59	35 - 81
% External Defects ¹		4	0.6	0.0 - 1.3
% Hollow Heart ²		4	0.0	0.0 - 0.0
% Stand		4	99	97 - 100
Emergence Uniformity		4	3.3	3.0 - 3.5
Vine Vigor ³		4	2.8	2.5 - 3.0
Stems/Plant		4	2.5	1.8 - 2.8
Vine Size ⁴		4	3.3	2.8 - 3.5
Vine Type ⁵		4	3.1	3.0 - 3.5
Vine Maturity ⁶		4	3.2	3.0 - 3.5
Blackspot ⁷	Bud End	4	5.0	4.9 - 5.0
	Stem End	4	5.0	4.8 - 5.0
	Average	4	5.0	
Weight Loss ⁸		4	2.6	2.1 - 3.2
Dormancy ⁹		4	82	60 - 103
Enzymatic Browning ¹⁰		5	4.7	4.2 - 5.0
Specific Gravity		5	1.087	1.083 - 1.090
Fry Color ¹¹	Harvest	5	0.8	0.0 - 1.0
	Storage	5	1.0	0.0 - 2.0
Fry Texture ¹²	Harvest	5	3.8	2.0 - 5.0
	Storage	5	4.2	4.0 - 5.0

Refer to footnotes on page 31.

Table 17I. Detailed data summary for Canela Russet.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		51	357	214-472
Yield US #1 (Cwt/A)		51	322	182-441
% US #1		51	90	77-96
Yield >10 oz (Cwt/A)		51	103	25-236
Yield <4 oz (Cwt/A)		51	31	14-61
% External Defects ¹		51	1.2	0.0-6.9
% Hollow Heart ²		51	0.0	0.0-0.9
% Stand		50	96	82-100
Emergence Uniformity		50	3.0	1.0-4.0
Vine Vigor ³		50	2.4	1.0-3.8
Stems/Plant		50	2.1	1.1-4.2
Vine Size ⁴		50	3.8	3.0-5.0
Vine Type ⁵		50	3.5	3.0-4.3
Vine Maturity ⁶		50	3.4	2.8-4.0
Blackspot ⁷	Bud End	64	4.8	3.7-5.0
	Stem End	64	4.5	2.5-5.0
	Average	64	4.7	
Weight Loss ⁸		64	3.3	1.3-7.0
Dormancy ⁹		64	139	83-195
Enzymatic Browning ¹⁰		64	4.5	3.4-5.0
Specific Gravity		64	1.096	1.075-1.111
Fry Color ¹¹	Harvest	64	1.8	0.0-3.0
	Storage	64	2.2	0.0-4.0
Fry Texture ¹²	Harvest	64	3.9	2.0-5.0
	Storage	64	3.9	3.0-5.0

Refer to footnotes on page 118

Table 17J. Detailed data summary for Russet Norkotah.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		106	369	159-557
Yield US #1 (Cwt/A)		106	312	101-480
% US #1		106	84	59-94
Yield >10 oz (Cwt/A)		106	104	10-247
Yield <4 oz (Cwt/A)		106	49	13-131
% External Defects ¹		106	2.4	0.0-9.6
% Hollow Heart ²		106	0.4	0.0-2.8
% Stand		105	98	88-100
Emergence Uniformity		100	3.2	1.0-4.0
Vine Vigor ³		100	2.8	1.0-4.0
Stems/Plant		105	3.6	2.3-5.7
Vine Size ⁴		100	2.4	1.0-4.0
Vine Type ⁵		100	2.6	2.0-3.5
Vine Maturity ⁶		109	1.7	1.0-3.0
Blackspot ⁷	Bud End	113	4.7	2.9-5.0
	Stem End	113	4.4	2.6-5.0
	Average	114	4.6	
Weight Loss ⁸		114	3.4	1.0-7.1
Dormancy ⁹		113	97	70-140
Enzymatic Browning ¹⁰		113	3.4	2.2-4.8
Specific Gravity		117	1.079	1.066-1.091
Fry Color ¹¹	Harvest	114	2.1	1.0-4.0
	Storage	114	2.4	1.0-4.0
Fry Texture ¹²	Harvest	114	2.7	1.0-4.0
	Storage	114	2.7	1.0-5.0

Refer to footnotes on page 118

Table 17K. Detailed data summary for CO09128-3W/Y.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		5	256	194 - 323
Yield US #1 (Cwt/A)		5	32	2 - 60
% US #1		5	12	1 - 19
Yield >10 oz (Cwt/A)		5	0	0 - 0
Yield <4 oz (Cwt/A)		5	223	192 - 259
% External Defects ¹		5	1.7	0.2 - 6.3
% Hollow Heart ²		5	0.0	0.0 - 0.0
% Stand		5	93	82 - 100
Emergence Uniformity		5	2.7	2.3 - 3.0
Vine Vigor ³		5	2.7	2.3 - 3.3
Stems/Plant		5	5.0	4.2 - 5.7
Vine Size ⁴		5	2.3	2.0 - 3.0
Vine Type ⁵		5	2.1	2.0 - 2.5
Vine Maturity ⁶		5	2.3	1.5 - 3.0
Blackspot ⁷	Bud End	6	4.6	3.5 - 5.0
	Stem End	6	4.8	4.5 - 5.0
	Average	6	4.7	
Weight Loss ⁸		6	2.4	1.8 - 3.2
Dormancy ⁹		6	91	70 - 104
Enzymatic Browning ¹⁰		6	4.2	3.4 - 4.8
Specific Gravity		6	1.072	1.069 - 1.077
Fry Color ¹¹	Harvest	6	3.2	2.0 - 4.0
	Storage	6	2.7	1.0 - 3.0
Fry Texture ¹²	Harvest	6	2.0	1.0 - 3.0
	Storage	6	1.8	1.0 - 3.0

Refer to footnotes on page 118

Table 17L. Detailed data summary for CO09128-5W/Y.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		5	328	235 - 379
Yield US #1 (Cwt/A)		5	68	14 - 110
% US #1		5	20	6 - 36
Yield >10 oz (Cwt/A)		5	0.2	0 - 1.0
Yield <4 oz (Cwt/A)		5	259	187 - 300
% External Defects ¹		5	0.2	0.0 - 0.5
% Hollow Heart ²		5	0.0	0.0 - 0.0
% Stand		5	99	98 - 100
Emergence Uniformity		5	3.9	3.5 - 4.5
Vine Vigor ³		5	3.8	3.3 - 4.3
Stems/Plant		5	6.2	5.3 - 6.9
Vine Size ⁴		5	2.6	2.0 - 3.5
Vine Type ⁵		5	2.2	2.0 - 2.5
Vine Maturity ⁶		5	2.1	1.5 - 2.8
Blackspot ⁷	Bud End	6	4.2	3.3 - 4.8
	Stem End	6	3.7	3.1 - 4.7
	Average	6	3.9	
Weight Loss ⁸		6	3.2	2.1 - 4.3
Dormancy ⁹		6	39	32 - 54
Enzymatic Browning ¹⁰		6	4.0	3.2 - 5.0
Specific Gravity		6	1.087	1.083 - 1.091
Fry Color ¹¹	Harvest	6	0.7	0.0 - 1.0
	Storage	6	1.2	0.0 - 2.0
Fry Texture ¹²	Harvest	6	2.5	1.0 - 4.0
	Storage	6	2.5	2.0 - 3.0

Refer to footnotes on page 118

Table 17M. Detailed data summary for CO09218-4W/Y.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		5	376	214 - 496
Yield US #1 (Cwt/A)		5	233	89 - 375
% US #1		5	59	40 - 76
Yield >10 oz (Cwt/A)		5	18	5 - 48
Yield <4 oz (Cwt/A)		5	137	100 - 193
% External Defects ¹		5	1.3	0.6 - 2.5
% Hollow Heart ²		5	0.1	0.0 - 0.3
% Stand		5	93	81 - 100
Emergence Uniformity		5	2.4	1.5 - 3.0
Vine Vigor ³		5	2.1	1.8 - 2.5
Stems/Plant		5	4.0	3.5 - 4.9
Vine Size ⁴		5	3.8	3.0 - 4.3
Vine Type ⁵		5	3.1	2.5 - 3.8
Vine Maturity ⁶		5	4.0	3.5 - 4.5
Blackspot ⁷	Bud End	6	4.0	2.8 - 5.0
	Stem End	6	3.6	2.8 - 4.8
	Average	6	3.8	
Weight Loss ⁸		6	3.1	2.2 - 3.8
Dormancy ⁹		6	71	55 - 88
Enzymatic Browning ¹⁰		6	3.4	2.2 - 4.4
Specific Gravity		6	1.073	1.064 - 1.079
Fry Color ¹¹	Harvest	6	2.2	1.0 - 3.0
	Storage	6	2.3	2.0 - 3.0
Fry Texture ¹²	Harvest	6	2.2	2.0 - 3.0
	Storage	6	2.2	1.0 - 3.0

Refer to footnotes on page 118

Table 17N. Detailed data summary for AC10376-1-2012W/Y.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		4	435	347 - 533
Yield US #1 (Cwt/A)		4	317	222 - 417
% US #1		4	72	64 - 78
Yield >10 oz (Cwt/A)		4	50	20 - 90
Yield <4 oz (Cwt/A)		4	111	101 - 123
% External Defects ¹		4	1.7	0.6 - 3.0
% Hollow Heart ²		4	0.1	0.0 - 0.2
% Stand		4	99	96 - 100
Emergence Uniformity		4	3.1	2.8 - 3.5
Vine Vigor ³		4	3.2	2.0 - 4.0
Stems/Plant		4	2.7	2.6 - 3.0
Vine Size ⁴		4	3.6	3.0 - 4.0
Vine Type ⁵		4	3.2	3.0 - 3.3
Vine Maturity ⁶		4	3.5	3.0 - 4.0
Blackspot ⁷	Bud End	5	4.9	4.7 - 5.0
	Stem End	5	4.6	4.4 - 4.7
	Average	5	4.8	
Weight Loss ⁸		5	2.5	2.2 - 3.3
Dormancy ⁹		5	116	102 - 145
Enzymatic Browning ¹⁰		5	3.2	2.6 - 3.8
Specific Gravity		5	1.081	1.074 - 1.089
Fry Color ¹¹	Harvest	5	2.6	1.0 - 3.0
	Storage	5	3.4	3.0 - 4.0
Fry Texture ¹²	Harvest	5	2.6	2.0 - 3.0
	Storage	5	3.0	2.0 - 4.0

Refer to footnotes on page 31.

Table 17O. Detailed data summary for CO10064-1W/Y.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		4	406	328 - 473
Yield US #1 (Cwt/A)		4	269	196 - 328
% US #1		4	66	59 - 71
Yield >10 oz (Cwt/A)		4	31	10 - 48
Yield <4 oz (Cwt/A)		4	132	101 - 161
% External Defects ¹		4	1.3	0.3 - 2.0
% Hollow Heart ²		4	0.0	0.0 - 0.0
% Stand		4	100	99 - 100
Emergence Uniformity		4	3.3	2.8 - 3.5
Vine Vigor ³		4	3.3	2.8 - 4.0
Stems/Plant		4	4.1	3.9 - 4.6
Vine Size ⁴		4	4.0	4.0 - 4.0
Vine Type ⁵		4	3.1	3.0 - 3.5
Vine Maturity ⁶		4	3.2	3.0 - 3.8
Blackspot ⁷	Bud End	5	4.6	4.4 - 4.8
	Stem End	5	3.9	2.9 - 4.6
	Average	5	4.3	
Weight Loss ⁸		5	2.6	1.7 - 3.5
Dormancy ⁹		5	88	62 - 124
Enzymatic Browning ¹⁰		5	3.7	2.6 - 4.8
Specific Gravity		5	1.095	1.084 - 1.101
Fry Color ¹¹	Harvest	5	0.2	0.0 - 1.0
	Storage	5	0.8	0.0 - 1.0
Fry Texture ¹²	Harvest	5	3.4	3.0 - 4.0
	Storage	5	3.4	3.0 - 4.0

Refer to footnotes on page 31.

Table 17P. Detailed data summary for CO10098-5W/Y.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		4	296	219 - 352
Yield US #1 (Cwt/A)		4	104	34 - 153
% US #1		4	33	15 - 43
Yield >10 oz (Cwt/A)		4	5	0 - 17
Yield <4 oz (Cwt/A)		4	190	177 - 205
% External Defects ¹		4	0.7	0.0 - 1.9
% Hollow Heart ²		4	0.0	0.0 - 0.0
% Stand		4	95	92 - 96
Emergence Uniformity		4	3.1	2.8 - 3.5
Vine Vigor ³		4	3.6	3.3 - 4.0
Stems/Plant		4	4.9	4.4 - 5.2
Vine Size ⁴		4	2.9	2.3 - 3.5
Vine Type ⁵		4	2.4	2.0 - 2.5
Vine Maturity ⁶		4	2.9	2.5 - 3.0
Blackspot ⁷	Bud End	5	4.5	3.6 - 4.9
	Stem End	5	3.3	2.8 - 3.9
	Average	5	3.9	
Weight Loss ⁸		5	4.0	2.3 - 5.5
Dormancy ⁹		5	53	32 - 103
Enzymatic Browning ¹⁰		5	4.1	3.6 - 4.8
Specific Gravity		5	1.104	1.097 - 1.107
Fry Color ¹¹	Harvest	5	0.4	0.0 - 1.0
	Storage	5	0.8	0.0 - 1.0
Fry Texture ¹²	Harvest	5	2.8	1.0 - 4.0
	Storage	5	3.2	1.0 - 5.0

Refer to footnotes on page 31.

Table 17Q. Detailed data summary for Yukon Gold.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		55	385	226-513
Yield US #1 (Cwt/A)		55	338	161-444
% US #1		55	87	64-94
Yield >10 oz (Cwt/A)		55	139	28-248
Yield <4 oz (Cwt/A)		55	37	21-66
% External Defects ¹		55	2.5	0.0-15.4
% Hollow Heart ²		55	0.4	0.0-2.2
% Stand		55	96	87-100
Emergence Uniformity		55	3.3	2.5-4.8
Vine Vigor ³		55	3.7	3.0-5.0
Stems/Plant		55	2.4	1.6-3.8
Vine Size ⁴		55	3.1	2.5-4.5
Vine Type ⁵		55	2.7	2.0-3.5
Vine Maturity ⁶		55	2.0	1.0-3.0
Blackspot ⁷	Bud End	71	4.5	2.0-5.0
	Stem End	71	4.3	2.4-5.0
	Average	71	4.4	
Weight Loss ⁸		71	2.0	0.9-4.3
Dormancy ⁹		71	89	47-132
Enzymatic Browning ¹⁰		71	4.4	3.4-5.0
Specific Gravity		71	1.087	1.072-1.094
Fry Color ¹¹	Harvest	71	1.7	1.0-4.0
	Storage	71	2.7	1.0-4.0
Fry Texture ¹²	Harvest	71	3.2	1.0-5.0
	Storage	71	3.2	1.0-5.0

Refer to footnotes on page 31

Table 17R. Detailed data summary for CO03243-3W.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		7	462	439-501
Yield US #1 (Cwt/A)		7	403	357-438
% US #1		7	87	81-93
Yield >10 oz (Cwt/A)		7	111	76-220
Yield <4 oz (Cwt/A)		7	50	20-71
% External Defects ¹		7	2.1	0.6-3.1
% Hollow Heart ²		7	0.9	0.0-3.6
% Stand		7	96	92-99
Emergence Uniformity		7	3.3	2.5-5.0
Vine Vigor ³		7	3.6	3.3-4.3
Stems/Plant		7	2.9	2.1-3.5
Vine Size ⁴		7	3.9	3.0-4.3
Vine Type ⁵		7	3.0	3.0-3.0
Vine Maturity ⁶		7	3.4	3.0-4.0
Blackspot ⁷	Bud End	19	3.4	3.4-5.0
	Stem End	19	2.8	2.8-4.8
	Average	19	3.2	
Weight Loss ⁸		19	3.3	2.3-4.9
Dormancy ⁹		19	81	60-101
Enzymatic Browning ¹⁰		19	3.3	2.4-4.2
Specific Gravity		20	1.086	1.069-1.095
Chip Color ¹¹	40	20	3.8	2.5-5.0
	40R	20	2.8	1.0-4.0
	50	20	2.0	1.0-3.0
	50R	20	2.1	1.0-3.0

Refer to footnotes on page 103

Table 17S. Detailed data summary for CO10073-7W.

Variable	# Trials	Mean	Range	
Total Yield (Cwt/A)	4	330	247-395	
Yield US #1 (Cwt/A)	4	243	126-302	
% US #1	4	72	50-81	
Yield >10 oz (Cwt/A)	4	25.5	0-46	
Yield <4 oz (Cwt/A)	4	81	58-119	
% External Defects ¹	4	3.4	1.6-7.6	
% Hollow Heart ²	4	0.0	0.0-0.0	
% Stand	4	93	89-96	
Emergence Uniformity	4	3.1	2.8-3.3	
Vine Vigor ³	4	3.1	2.5-3.5	
Stems/Plant	4	3.8	3.5-4.1	
Vine Size ⁴	4	2.7	2.3-3.0	
Vine Type ⁵	4	2.7	2.3-3.0	
Vine Maturity ⁶	4	3.0	3.0-3.0	
Blackspot ⁷	Bud End	9	4.8	4.3-5.0
	Stem End	9	4.0	2.5-4.8
	Average	9	4.4	
Weight Loss ⁸	9	3.7	2.2-5.3	
Dormancy ⁹	9	81	67-91	
Enzymatic Browning ¹⁰	9	4.2	2.8-5.0	
Specific Gravity	10	1.085	1.081-1.090	
Chip Color ¹¹	40	10	3.6	3.0-4.5
	40R	10	2.9	1.0-3.5
	50	10	1.9	1.0-3.0
	50R	10	2.2	1.0-3.5

Refer to footnotes on page 103

Table 17T. Detailed data summary for CO10076-4W.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		4	351	267-413
Yield US #1 (Cwt/A)		4	276	179-361
% US #1		4	77	67-88
Yield >10 oz (Cwt/A)		4	26	0-54
Yield <4 oz (Cwt/A)		4	71	47-95
% External Defects ¹		4	1.0	0.2-1.3
% Hollow Heart ²		4	0.0	0.0-0.0
% Stand		4	96	93-98
Emergence Uniformity		4	3.4	2.8-3.8
Vine Vigor ³		4	2.9	2.5-3.3
Stems/Plant		4	3.1	2.7-3.5
Vine Size ⁴		4	2.8	2.3-3.5
Vine Type ⁵		4	3.1	3.0-3.5
Vine Maturity ⁶		4	3.0	3.0-3.0
Blackspot ⁷	Bud End	9	3.4	2.5-4.8
	Stem End	9	2.8	2.1-3.8
	Average	9	3.1	
Weight Loss ⁸		9	3.3	2.1-4.8
Dormancy ⁹		9	87	69-98
Enzymatic Browning ¹⁰		9	3.6	2.2-5.0
Specific Gravity		10	1.080	1.074-1.087
Chip Color ¹¹	40	10	4.0	3.0-4.5
	40R	10	2.1	1.0-3.5
	50	10	2.2	1.0-3.0
	50R	10	2.2	1.0-3.0

Refer to footnotes on page 103

Table 17U. Detailed data summary for Atlantic.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		59	439	172-597
Yield US #1 (Cwt/A)		59	380	149-512
% US #1		59	87	76-93
Yield >10 oz (Cwt/A)		59	138	35-290
Yield <4 oz (Cwt/A)		59	47	19-109
% External Defects ¹		59	2.6	0.1-9.1
% Hollow Heart ²		59	4.4	0.0-16.4
% Stand		59	96	63-100
Emergence Uniformity		53	3.6	2.0-4.8
Vine Vigor ³		53	3.6	2.8-4.3
Stems/Plant		59	3.0	1.8-4.9
Vine Size ⁴		53	3.1	2.2-4.0
Vine Type ⁵		53	3.0	2.8-3.8
Vine Maturity ⁶		59	3.1	2.8-4.0
Blackspot ⁷	Bud End	85	3.3	1.8-5.0
	Stem End	85	2.9	1.4-4.3
	Average	86	3.1	
Weight Loss ⁸		86	4.2	1.1-7.9
Dormancy ⁹		83	83	56-119
Enzymatic Browning ¹⁰		84	4.5	3.8-5.0
Specific Gravity		87	1.098	1.083-1.120
Chip Color ¹¹	40	87	4.2	2.0-5.0
	40R	87	3.6	1.5-5.0
	50	87	2.8	1.0-4.5
	50R	87	2.7	1.0-5.0

Refer to footnotes on page 103

Table 17V. Detailed data summary for Chipeta.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		54	526	355-757
Yield US #1 (Cwt/A)		54	446	249-606
% US #1		54	85	70-92
Yield >10 oz (Cwt/A)		54	176	52-388
Yield <4 oz (Cwt/A)		54	50	21-119
% External Defects ¹		54	5.6	1.1-13.0
% Hollow Heart ²		54	0.6	0.0-4.0
% Stand		54	98	91-100
Emergence Uniformity		47	3.6	3.0-5.0
Vine Vigor ³		47	4.2	3.2-5.0
Stems/Plant		53	3.3	2.0-4.9
Vine Size ⁴		47	4.5	4.0-5.0
Vine Type ⁵		47	3.1	2.5-4.0
Vine Maturity ⁶		54	3.4	3.0-4.5
Blackspot ⁷	Bud End	79	4.1	2.2-5.0
	Stem End	79	3.8	1.4-5.0
	Average	81	4.0	
Weight Loss ⁸		81	2.9	1.0-8.0
Dormancy ⁹		77	100	70-153
Enzymatic Browning ¹⁰		78	4.0	2.4-5.0
Specific Gravity		81	1.090	1.070-1.108
Chip Color ¹¹	40	81	4.5	3.0-5.0
	40R	81	3.8	1.5-5.0
	50	81	2.7	1.0-5.0
	50R	81	2.4	1.0-4.5

Refer to footnotes on page 103

Footnotes for Tables 17A-17V:

- ¹Percent external defects based on the proportion of the total sample weight with significant defects.
- ²Percent hollow heart calculated as follows: (Weight of tubers >10 ounces with defects/total sample weight) x 100.
- ³Vine vigor is rated on a 1 to 5 scale, with 5 indicating very vigorous vines.
- ⁴Vine size is rated on a 1 to 5 scale, with 5 indicating very large vines.
- ⁵Vine type is rated on a 1 to 5 scale, with 5 indicating very upright vines.
- ⁶Vine maturity is rated on the following basis: 1=very early; 2=early; 3=medium; 4=late; and 5=very late.
- ⁷Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.
- ⁸Tubers were stored at 45F for approximately 3 months.
- ⁹Days from harvest to first visible growth. Tubers were stored at 45F.
- ¹⁰Degree of darkening rated at 60 minutes after slicing tubers lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.
- ¹¹Chip color was rated using the Snack Food Association 1-5 scale. Ratings of ≤ 2.0 are acceptable. Reconditioned samples were stored at 60F for three weeks. Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings of ≤ 2.0 are acceptable.
- ¹²Fry texture was rated on a 1 to 5 scale, with 5 indicating the cooked flesh was dry and mealy and 1 representing a soggy, wet texture.

APPENDIX 1. Cultural management information for the Potato Breeding and Selection Program's trials at the San Luis Valley Research Center - 2019.

LOCATION: San Luis Valley Research Center

SOIL TYPE: Sandy Loam (Dunul cobbly sandy loam)

DATE:

Planted - 5/15/19

Hilled - 5/30/18

Vines Killed - 9/3/19 (Reglone 0.25 gal/A) 114 days after planting

Harvested - 9/26/19

PLOT INFORMATION:

Size of Plots - 1 row x 25'

Spacing Between Hills - 12"

Spacing Between Rows - 34"

Hills Per Plot - 25

Number of Reps - 4 except 2 for Intermediate Yield Trials

METHOD OF HARVEST:

Machine (Grimme 1-row)

FERTILIZER:

5/15/19 - 50 lbs N + 35 lbs P₂O₅ + 20 lbs K₂O + 10 lbs S + 1 lb Zn/A (dual band in-row liquid application)

7/13/19 - 18 lb N (fertigated)

7/16/19 - 16 lbs N (fertigated)

7/28/19 - 23 lbs N (fertigated)

7/31/19 - 17 lbs N (fertigated)

Total fertilizer applied: 124 lbs N + 62 lbs P₂O₅ + 120 lbs K₂O + 85 lbs S + 1 lb Zn/A

IRRIGATION:

Center Pivot -14.4" gross application (application frequency and amount based on ET)

Rainfall - " (5/10/18 - 9/27/18)

INSECTICIDES APPLIED:

Weekly - mineral oil (1 gal/A)

7/7/19 - Movento HL (2.5 oz a.i./A)

7/14/19 - Movento HL (2.5 oz a.i./A)

FUNGICIDES APPLIED:

7/13/19 - Champ Ion++

7/7/19 - Quadris Opti (8 oz a.i./A)

7/26/19 - Luna Tranquility (11oz/A)

8/20/19 - Agri Tin (2.75 oz/A)

HERBICIDES APPLIED:

6/3/19 - Tuscany (1.6 oz a.i./A)

6/3/19 - Prowl H20 (1.5 pt/A)

6/3/19 - Dual Magnum (1.6 pt/A S-metolachlor)

APPENDIX 2. General procedures used for postharvest evaluations.

Blackspot. Ten randomly selected tubers for each clone tested are bruised on the stem and bud ends with a 150 g weight dropped from a height of 60 cm. Tubers are stored at 40F prior to bruising and warmed up for 24 hours prior to bruising. After bruising, tubers are stored at room temperature for two days prior to evaluation. Blackspot susceptibility is evaluated by cutting the tubers in half longitudinally and rating the extent of damage. Blackspot is rated on a 1 to 5 scale, with 5 indicating no discoloration.

Storage Weight Loss and Dormancy. Ten randomly selected tubers are weighed and stored at 45F for approximately a three month period under low relative humidity conditions to evaluate storage weight loss potential. These tubers are also observed weekly for sprout growth. Dormancy is reported as days after harvest to first visible sprout growth.

Enzymatic Browning. Five tubers of each clone are cut in half lengthwise and rated for degree of darkening 60 minutes later. Degree of darkening is rated on a 1 to 5 scale, with 5 indicating no discoloration.

Specific Gravity. Specific gravity is determined using the air/water method.

Fry Color and Texture. Fry color and texture is determined at or shortly after harvest and after a minimum of eight weeks of storage at 45F. Fries are cooked for 3 ½ minutes at 375F. Fry color is rated on a 0-4 scale using the USDA color standards. Color ratings ≤ 2 are acceptable. Fry texture is rated on a 1 to 5 scale, with 5 indicating that the cooked flesh was dry and mealy, with 1 representing a soggy, wet texture.

Chip Color. Chip color is determined after an interval of storage at 40 and 50F and after reconditioning for two weeks at 60F. Chips are cooked at 365F until bubbling slows. Chip color is rated using the Snack Food Association 1-5 scale. Ratings ≤ 2.0 are acceptable.

Notes