2018 Potato Cultivar Yield and Postharvest Quality Evaluations

WSU Potato Research Group

Washington State University

World Class. Face to Face.

2018 Potato Cultivar Yield and Postharvest Quality Evaluations

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Potato Research Group

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On the cover: Alex Cruz directs the crew while planting a phosphorus trial that included 4 rates by 6 varieties.

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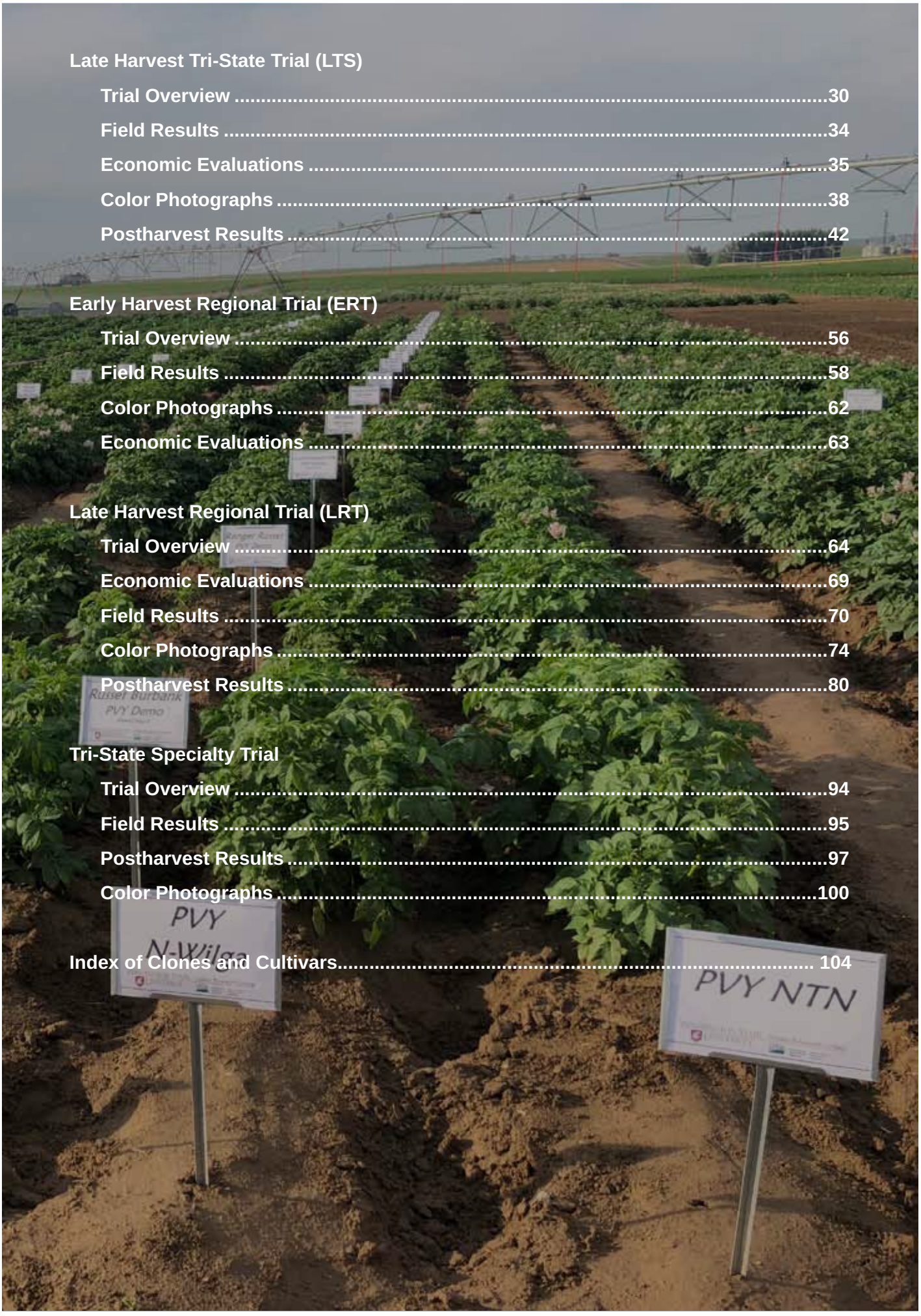
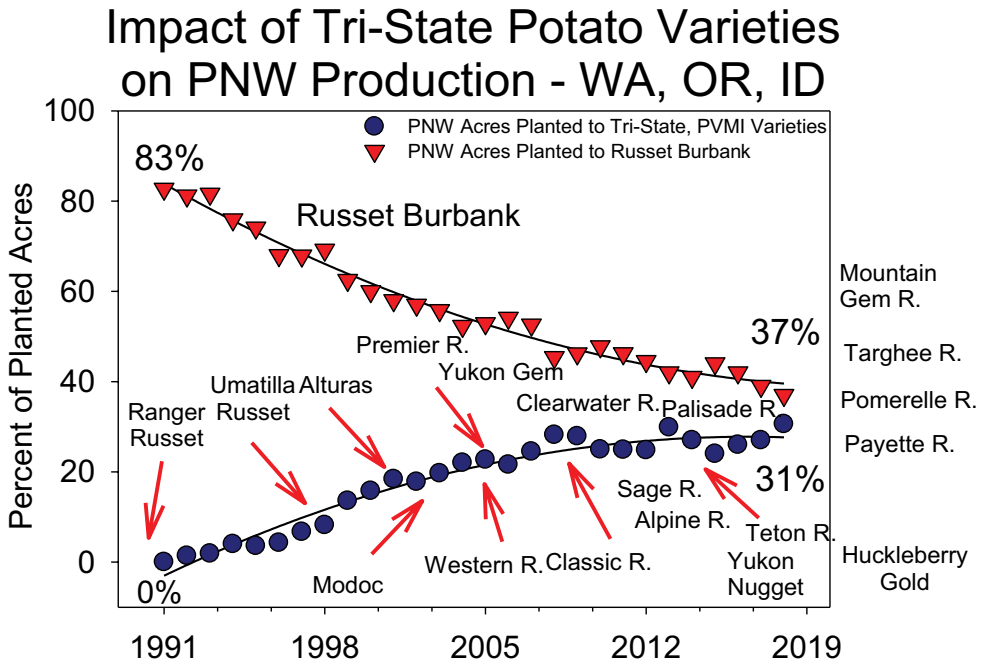


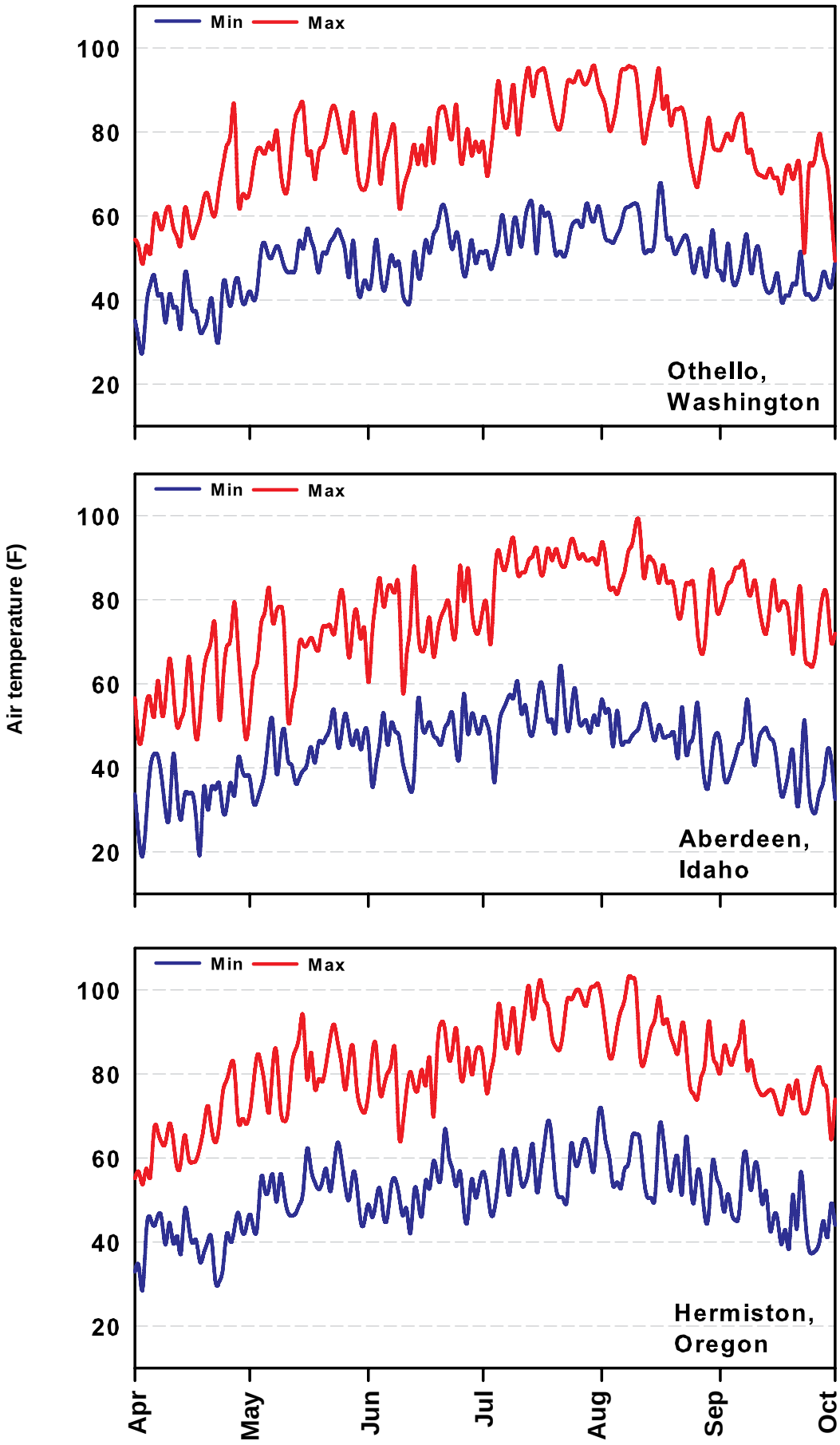
INTRODUCTION

The 2018 Washington "Potato Cultivar Yield and Postharvest Quality Evaluations" is an annual report providing detailed information about promising new potato clones and cultivars grown in Washington conducted by the **Washington State University (WSU) Potato Research Group**. **Our mission:** to identify and release new potato varieties that will provide profitable, sustainable production for the grower, improved competitiveness for the Washington and NW US potato industry, a healthy, inexpensive food supply for American consumers, and contributions towards a healthy environment. **Tri-State trials** include the newest clones which are created and evaluated in ID, OR, and WA by the USDA/ARS of Aberdeen, ID & Prosser, WA, Univ. of ID, OR State U., and WA State U. **Regional trials** include advanced clones from, and evaluated by, ID, OR, WA, CO, TX, and CA. Potato Commissions from the Tri-State area support and fund much of the variety development efforts. **Potato Variety Management Institute (PVMI)** is a nonprofit organization that licenses and promotes Tri-State varieties. PVMI collects royalties from the varieties which are then distributed among the Tri-State research programs to support the ongoing development efforts. Learn more at www.pvmi.org.

Recent Accomplishments: The effect of the Tri-State Potato Variety Development Program on the Northwest potato industry has been substantial. **Ranger Russet, Umatilla Russet, Clearwater Russet, Alturas, and Bannock Russet** are examples of russet cultivars released from the Tri-State program that have greatly benefited the United States and Northwest potato industry, being the 3rd, 4th, 6th, 7th, and 12th most widely grown cultivars in the United States in 2018, respectively, with Tri-State varieties representing 31%, or 266,400 acres, of the fall crop nationally. (NASS, Crop Production, November 2018). **Ranger Russet, Umatilla Russet, and Clearwater Russet** were the 3rd, 4th, and 5th most widely grown cultivars in the PNW (ID, OR, WA) in 2018, respectively, and accounted for 25% of the PNW planted acreage. Varieties recently released by the Tri-State program are now produced on more than 160,900 acres in the Pacific Northwest with value to growers estimated at approximately $810 million. In the past 16 years, the US farm-gate value of Tri-State varieties has increased by approximately $240 million.



2018 Growing Season Temperatures



Guide to Clone Designations

Example: ATX91137-1Ru		
	ATX91137-1Ru	Breeding Program (**A**berdeen, ID)
	A**TX**91137-1Ru	Selection Site (**T**e**x**as)
	ATX**91**137-1Ru	Year of Cross (19**91**)
	ATX91**137**-1Ru	Cross Number (**137**)
	ATX91137-**1**Ru	Tuber Selection (**1**)
	ATX91137-1**Ru**	Russet (**Ru**)

Location Codes

Designation		**Breeding Program**	**Selection Program**	**Other**
A	=	**A**berdeen, Idaho	**A**berdeen, Idaho	
AO	=	**A**berdeen, Idaho	**O**regon	
AOA	=	**A**berdeen, Idaho	**O**regon	**A**berdeen,Idaho
ATX	=	**A**berdeen, Idaho	**Tex**as	
BTX	=	**B**eltsville, Maryland	**Tex**as	
CO	=	**Co**lorado		
MWTX	=	**M**adison **W**isconsin	**Tex**as	
NDA	=	**N**orth **D**akota	**A**berdeen, Idaho	
NY	=	**N**ew **Y**ork		
PA	=	**P**rosser, WA	**A**berdeen, Idaho	
POR	=	**P**rosser, WA	**O**regon	
TC	=	**T**exas	**Co**lorado	
TXA	=	**Tex**as	**A**berdeen, Idaho	
TXNS	=	**Tex**as		**N**orkotah **S**train

Miscellaneous Designations

PA97**B**3-2	**B**	=	Chuck **B**rown's cross
A93157-6**LS**	**LS**	=	**L**ow **S**ugar
CO94165-3**P/P**	**P/P**	=	**P**urple skin & **P**urple flesh
A96741-2**R**	**R**	=	**R**ed skin
CO94183-1**R/R**	**R/R**	=	**R**ed skin / **R**ed flesh
VC0967-2**R/Y**	**R/Y**	=	**R**ed skin / **Y**ellow flesh
ATX92230-1**Ru**	**Ru**	=	**Ru**sset skin
VC1009-1**W/Y**	**W/Y**	=	**W**hite skin & **Y**ellow flesh
A97066-42**LB**	**LB**	=	**L**ate **B**light resistance
AC9923**PW/Y**	**PW/Y**	=	**P**urple skin with **W**hite eyes/ **Y**ellow flesh
AC9653**P/Y**	**P/Y**	=	**P**urple skin/**Y**ellow flesh
CO977-2**P/PW**	**P/PW**	=	**P**urple skin/**P**urple & **W**hite flesh
A99029-3**E**	**E**	=	**E**arly maturing
A0008-1**TE**	**TE**	=	**TE**tonia, ID Selection, Early maturing
A07008-4**T**	**T**	=	**T**etonia, ID Selection, Late maturing
A06914-3**CR**	**CR**	=	**C**orky **R**ingspot resistance
A06862-18**VR**	**VR**	=	**V**irus **R**esistance

OVERALL CULTIVAR & CLONE PERFORMANCE

Merit Score Methods

Overview: Overall performance for each entry was rated on a scale of 1 to 5; 5 indicating the best performance possible. The methods are explained below. Economic analysis methods are explained on pages 16 (Fresh) and 17 (Process).

FRESH MARKET MERIT SCORE METHODS:

75% Fresh market economic value

25% Internal quality – blackspot bruise, shatter bruise, hollow heart, internal brown spot, and brown center. An average merit value is taken. Of the five internal categories listed above, the worst internal defect or bruise rating for each cultivar is weighted 50% so serious bruise or defect problems are reflected in the final merit score.

Researcher's Discretion: The overall merit score may be reduced by up to 50% for any unacceptable trait not quantified in the data (e.g. poor appearance or poor flavor).

EARLY PROCESS MARKET MERIT SCORE METHODS:

75% Early harvest process market economic value

25% Internal quality – blackspot bruise, shatter bruise, hollow heart, internal brown spot, and brown center. An average merit value is taken. Of the five internal categories listed above, the worst internal defect or bruise rating for each cultivar is weighted 50% so serious bruise or defect problems are reflected in the final merit score.

Researcher's Discretion: The overall merit score may be reduced by up to 50% for any unacceptable trait not quantified in the data.

LATE PROCESS MARKET MERIT SCORE METHODS:

For the late process market, a merit score is listed for both field and post-harvest performance.

Field/Economic Performance – methods are the same as "Early Process Market Merit Score Methods" shown above, with the exception that a late harvest economic analysis is conducted.

Post-Harvest Performance – see "Postharvest Procedures" section near front of book.

Researcher's Discretion:
The overall merit score may be reduced by up to 50% for any unacceptable trait not quantified in the data.

WA Multi-Year Summaries of Graduating Russet Entries and Reference Varieties

Entry	Year	Early/Late* Harvest Total Yield	US # 1 & 2 Yield > 6 oz	Specific Gravity	Average Tuber Weight/ Number per Plant	Bruise Blackspot/ Shatter	Internal** Issues	Merit Scores (5 = Best) Field Performance Early/Late Fresh	Field Performance Early/Late Process	Postharvest Processing Performance
		CWT/A	% of Total		oz/number	%				
AO06191-1	2018	494/725	88	1.088	11.8/5.9	13/63	none	4.9/1.6	3.6/3.0	3.5
	2017	439/695	89	1.092	11.7/5.1	13/80	none	4.6/1.6	3.6/2.8	3.0
	2016	576/711	91	1.092	12.3/4.8	29/82	none	3.4/4.4	3.2/4.0	3.0
	2015	394/620	90	1.093	12.2/4.4	22/97	none	3.4/1.8	3.9/2.4	4.7
	2014	460/513	92	1.083	11.0/4.1	22/47	3% HH	4.0/1.5	3.6/3.1	3.9
	Large, uniform-shaped and sized tubers, dark russet skin. 4-6 tubers per plant typical, high percentage of US No. 1 tubers, tubers typically shorter than Ranger or Burbank, hollow heart and shatter bruising are concerns, excellent french fry processing, good storage dormancy, may resist dry rot, yields medium to low. Fresh pack potential if shatter bruise controlled.									
Ranger R.	2018	491/899	86	1.082	11.8/7.3	60/30	3% IBS	NA	3.7/3.6	4
	2017	453/754	81	1.104	8.3/7.9	33/48	none	NA	2.7/2.9	2.4
	2016	465/788	77	1.087	8.4/8.8	58/13	none	NA	2.6/4.6	3.2
	2015	479/851	77	1.086	7.1/8.8	17/23	none	NA	3.6/3.8	4.9
	2014	524/681	76	1.077	8.9/6.6	49/19	3% IBS	NA	4.3/2.5	2.8
	Long, shape variable at times, yet uniform other times. 7 to 9 tubers per plant typical.									
R. Burbank	2018	633/863	81	1.080	10.4/7.9	48/58	3% IBS	2.4/1.3	3.9/2.2	2.2
	2017	428/752	77	1.088	8.2/8.0	13/53	10% HH, 13% BC	1.0/0.9	1.6/3.2	2.3
	2016	526/734	63	1.085	6.8/9.0	57/57	14% BC, 4% IBS	0.9/1.3	2.0/3.2	2.2
	2015	460/677	70	1.072	7.7/8.0	41/59	3% BC	1.3/1.4	2.9/1.2	2.7
	2014	466/730	63	1.077	9.4/6.8	31/61	3% HH, 6% IBS	0.9/0.4	1.3/1.2	2.0
	Shape typically variable, often with many growth cracks and knobs. 7 to 9 tubers per plant typical.									
R. Norkotah (Fresh Market) only	2018	511/785	86	1.071	10.4/7.1	25/25	none	2.8/2.0	NA	NA
	2017	545/685	76	1.076	7.7/7.7	23/43	none	5.0/2.6	NA	NA
	2016	473/696	63	1.076	6.8/8.3	24/12	none	2.5/2.5	NA	NA
	2015	468/602	70	1.065	7.7/7.6	21/29	none	1.7/2.5	NA	NA
	2014	465/730	73	1.068	7.5/8.0	22/11	none	2.3/3.5	NA	NA
	Shape and skin typically very uniform, size profile typically on the small side. 7 to 8 tubers per plant typical.									
Shepody (Early Harvest) only	2018	621	87	1.072	12.6/5.1	3/0	none	NA	3.9/NA	-
	2017	415	80	1.077	8.3/6.0	7/0	none	NA	3.4/NA	-
	2016	502	82	1.092	11.1/4.9	29/24	none	NA	4.3/NA	-
	2015	487	72	1.076	7.6/6.7	7/7	none	NA	3.4/NA	-
	2014	553	84	1.073	9.9/5.8	13/0	none	NA	3.8/NA	-
	Early-harvest processing variety. Early-harvest post-harvest merit not evaluated as this and most varieties typically produce acceptable fries directly from the field. 5-6 tubers per plant typical.									

*Early Harvest ~ 110 days after planting, Late Harvest ~ 150 DAP.
**HH = Hollow heart, BC = brown center, IBS = internal brown spot.

2018 Tri-State Specialty Potato Clones - Washington State University

2018 Tri-State Specialty Trial

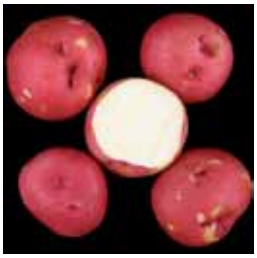
	US #1 Yield 2018				(See also Tri-State Specialty Section near end of book)
	US#1 Yield CWT/A	0-6 oz -----%	6-10oz -----	Fresh Market Appearance 5 = best	Comments
Red Skin/White Flesh*					
Chieftain	831	22	49	3.3	Skin not set, nice color, range of sizes.
A08112-7R	414	97	3	4.0	Smooth shape, small uniform size, good skin set, bright red.
Red-Purple/Yellow Flesh					
ATTX05175S-1R/Y	591	88	11	3.7	Bright maroon, deep eyes, powdery scab on some.
COTX04193S-2R/Y	608	41	40	2.7	Flat, lots of growth cracks (PVY?), with russeting.
Yellow Flesh					
Yukon Gold	549	16	24	3.3	Large, variety of sizes with smooth skin
POR14PG22-3	588	93	7	3.3	Lumpy, bumpy, and small.
Fingerling					
LaRatte	199	98	2	2.0	Skinny, white/yellow, crooked shapes.
POR11PG62-3	296	98	2	3.0	Bright red with yellow/white skin. Lenticils, oblong.

*Skin/Flesh Color: R = Red, W = White, Y = Yellow, P = Purple, Rus = Russet, Buff = off-white with or without light russeting.

Chieftain

LaRatte

ATTX05175S-1R/Y



Yukon Gold

A08112-7R

POR11PG62-3

COTX04193S-2R/Y

POR14PG22-3

At-Harvest Grading Comments & Fresh Market Appearance

Newest Lines - 2018 Tri-State Trials			
	Fresh Market Appearance 1-5 (5 = Best)		
Clone	2018	2017	Tuber Appearance Comments*
Early Harvest Tri-State			
Ranger Russet	2.7	2.3	Mostly typy, dark russet, spotty skin.
Russet Burbank	3.3	2.0	Large, somewhat typy, with some points
Russet Norkotah	3.0	4.0	Mostly typy, ok size, some spotty russteing.
Shepody	2.0	3.0	Large, rough, with light skin.
A07098-4	2.7	2.0	Light russet, plump, small, not an early variety.
A07547-4adg	2.7	-	Chipper? Round with light skin.
A07705-4	2.7	-	Light russeting, some pointy, ok length, a bit flat.
A08422-4VRsto	2.3	2.0	Light russet, exposed lenticils on most. A bit short.
A08510-1LB	3.0	2.7	Light russeting, smooth, small, some round.
A09022-4	2.7	-	Light russeting, short and small.
AOR08540-1	3.7	-	Smooth russet skin, good length and size.
AOR10204-3	3.0	-	Large and long, dark russet, pointy, skin set not so good.
OR12133-10	2.7	-	Light russet, spotty pre-scab. Good length, a bit flat.
POR12NCK50-1	3.7	4.0	Typy, dark skin, skin set not good.
Late Harvest Tri-State			
Ranger Russet	2.5	2.0	Large, shape nonuniform, some typy.
Russet Burbank	2.0	1.7	Good length, irregular shape.
Russet Norkotah	3.3	4.0	Mostly typy, some irregular shapes, good skin.
A07098-4	2.3	2.0	Smaller ones that are round, bad skin, some sprouting.
A07547-4adg	2.0	-	Flat round river rock, larger, a chipper?
A07705-4	2.0	2.0	Pears with bad skin, light russet with road mapping.
A08510-1LB	2.3	1.0	Somewhat typy, but short, light russeting.
A09022-4	2.0	-	Short/round with spotty skin
AOR08540-1	2.8	-	A lot of green, shorter tubers, irregular shapes.
AOR10204-3	2.8	-	Large and typy, some irregular shapes.
OR12133-10	2.5	-	Variable shapes with light skin.
POR12NCK50-1	3.0	3.0	Typy, ok length, nice skin.

*Typy - Visually appealing, uniform tuber shape.

POR12NCK50-1

AOR08540-1

POR12NCK50-1

R. Norkotah

At-Harvest Grading Comments & Fresh Market Appearance

Advanced Lines - 2018 Regional Trials				
	Fresh Market Appearance 1-5 (5 = Best)			
Clone	2018	2017	2016	Tuber Appearance Comments*
Early Harvest Regional				
Ranger Russet	3.3	3.0	4.0	Irregular shapes. Medium russet.
Russet Burbank	2.0	2.7	2.3	Good length, irregular shapes.
Russet Norkotah	3.0	4.0	3.3	Mostly typy, spotty russeting, smaller.
Shepody	2.0	3.0	1.7	Large, pre-scab, spotty and ugly.
A06030-23	3.3	3.7	2.0	Plump, small, too short, typy.
A07061-6	1.0	2.0	2.0	Not early, round and short with ugly skin. Discard.
A071012-4BF	2.7	2.0	2.0	Short, long, irregular shapes, feathery russet. Discard.
A07769-4	2.3	3.0	-	Most are too short, light russet, bad skin, not dual purpose.
A08433-4VR	2.0	2.3	-	Flat, ugly skin, not dual. Irregular shapes and spotty.
A10021-5TE	2.3	2.3	-	Good length, uniform shape and size, bad skin though.
AO02183-2	3.3	-	-	Uniform shape and size, eyes are a bit deep, typy.
AO06191-1	4.0	4.0	4.0	Typy, dark russet, a bit flat.
AOR06576-1	2.0	2.3	3.3	Bad skin, spotty, ok length, shape a bit variable. Ugly.
AOR07781-5	2.7	2.7	3.3	Nice skin, mostly typy, a bit flat. Some irregular shapes.
AOR07821-1	2.7	3.3	2.3	Irregular shapes, ok length, flat.
AOTX05043-1Ru	3.3	-	-	Smooth russeting, mostly typy. Some irregular, some short.
CO08155-2RU/Y	4.0	2.7	-	Typy dark russet, good length, but small, not early.
CO08231-1RU	3.3	3.3	-	Light russet, many round/short. Small, not early.
CO09036-2RU	4.0	-	-	Small, typy, dark russet, not early
CO09076-3RU	2.5	-	-	Large, non uniform russeting.
CO09205-2RU	3.3	-	-	Small typy russet, not early though.
COTX05095-2Ru/Y	3.0	-	-	Short and small.
Late Harvest Regional				
Ranger Russet	2.5	2.3	3.3	Large, long with deeper eyes, skinny.
Russet Burbank	2.5	2.3	2.7	Shape a bit irregular, good length.
Russet Norkotah	3.3	4.0	3.0	Mostly typy, good skin, good length.
A07061-6	1.8	2.0	2.0	Bad skin, spotty russeting, round and short.
A071012-4BF	2.3	2.5	2.0	Variable shape, deep eyes, plump.
A07769-4	2.8	2.3	-	Plump, typy, good length.
A08433-4VR	2.0	1.3	-	Good length, but flat with bad skin.
A10021-5TE	2.0	1.8	-	Good length and shape, bad skin, a bit flat.
AO02183-2	2.8	-	-	Long, typy, large.
AO06191-1	4.0	3.3	4.0	Nice and typy, uniform size.
AOR06576-1	1.8	3.0	2.0	Bad skin, good length, non uniform shape.
AOR07781-5	3.0	2.5	3.8	Prominent eye brows with irregular shapes.
AOR07821-1	2.5	2.0	2.0	Short, nonuniform shape, somewhat typy.
AOTX05043-1Ru	2.5	-	-	Smaller, a bit short, shape irregular.
CO08155-2RU/Y	3.0	2.0	-	Too small, puffed wheat skin, typy.
CO08231-1RU	3.3	2.5	-	A chipper? Small and round.
CO09036-2RU	2.8	-	-	Short and small, ok appearance.
CO09076-3RU	2.3	-	-	Good length, some sprouting, nonuniform shape.
CO09205-2RU	4.0	-	-	Too small overall, otherwise typy
COTX05095-2Ru/Y	2.3	-	-	Short, small, and round.

*Typy - Visually appealing, uniform tuber shape

AO06191-1

AO02183-2

AO06191-1

AOR07781-5

FRESH MARKET MERIT - NEWEST LINES
2016-2018

(5 = best) - Entries ranked by means

EARLY HARVEST - Fresh Market Merit Scores

	Entry	Mean	2018	2017	2016
1	AOR10204-3	**3.8**	3.8	-	-
2	POR12NCK50-1	**3.1**	2.9	3.4	-
3	AOR08540-1	**3.0**	3.0	-	-
4	Russet Norkotah	**2.7**	2.3	4.3	1.6
5	OR12133-10	**2.1**	2.1	-	-
6	A08510-1LB	**1.8**	2.8	0.9	-
7	A07098-4	**1.8**	1.4	2.2	-
8	Ranger Russet	**1.6**	1.4	1.3	2.2
9	A08422-4VRsto	**1.6**	1.4	1.8	-
10	A07705-4	**1.4**	0.8	2.1	-
11	Russet Burbank	**1.3**	1.9	1.1	0.9
12	A07547-4adg	**1.2**	1.2	-	-
13	A09022-4	**0.4**	0.4	-	-

LATE HARVEST - Fresh Market Merit Scores

	Entry	Mean	2018	2017	2016
1	Russet Norkotah	**2.5**	2.1	2.5	2.9
2	A07705-4	**2.1**	2.0	2.1	-
3	POR12NCK50-1	**2.0**	2.2	1.9	-
4	OR12133-10	**2.0**	2.0	-	-
5	Ranger Russet	**1.5**	0.9	0.9	2.7
6	AOR10204-3	**1.5**	1.5	-	-
7	A07098-4	**1.4**	1.4	1.4	-
8	AOR08540-1	**1.3**	1.3	-	-
9	Russet Burbank	**0.9**	0.5	0.9	1.2
10	A08510-1LB	**0.8**	0.9	0.7	-
11	A09022-4	**0.8**	0.8	-	-
12	A07547-4adg	**0.2**	0.2	-	-

For more information on these cultivars, see the Early and Late Harvest Regional Trial Sections in this Book. The dash (“ - “) indicates the clone was not yet entered into the trial.

FRESH MARKET MERIT - ADVANCED LINES
2014-2018

(5 = best) - Entries ranked by means

EARLY HARVEST - Fresh Market Merit Scores

	Entry	Mean	2018	2017	2016	2015	2014
1	AO06191-1*	**4.1**	4.9	4.6	3.4	3.4	4
2	Russet Norkotah	**2.9**	2.8	5.0	2.5	1.7	2.3
3	Ranger Russet	**2.8**	2.6	3.1	2.8	2.7	2.6
4	AO02183-2	**2.5**	2.5	-	-		-
5	AOTX05043-1Ru	**2.5**	2.5	-	-	-	-
6	A10021-5TE	**2.4**	2.4	2.4	-	-	-
7	A08433-4VR	**2.2**	2.3	2.1	-	-	-
8	AOR07781-5	**2.2**	1.9	2.4	2.3	-	-
9	A07769-4	**2.2**	2.0	2.4	-	-	-
10	AOR06576-1	**2.1**	2.1	1.2	3.1	-	-
11	CO09076-3RU	**1.9**	1.9	-	-	-	-
12	AOR07821-1	**1.8**	1.5	2.3	1.7	-	-
13	A071012-4BF	**1.8**	2.0	1.9	1.5	-	-
14	COTX05095-2Ru/Y	**1.7**	1.7	-	-	-	-
15	CO08231-1RU	**1.6**	0.7	2.5	-	-	-
16	CO08155-2RU/Y	**1.6**	1.4	1.8	-	-	-
17	CO09036-2RU	**1.5**	1.5	-	-	-	-
18	CO09205-2RU	**1.5**	1.5	-	-	-	-
19	A06030-23	**1.5**	0.7	1.5	0.5	3.1	-
20	Russet Burbank	**1.3**	2.4	1.0	0.9	1.3	0.9
21	A07061-6	**1.3**	1.0	0.7	2.1	-	-

*Shatter bruise on AO06191-1 may be a concern

LATE HARVEST - Fresh Market Merit Scores

	Entry	Mean	2018	2017	2016	2015	2014
1	Russet Norkotah	**2.6**	2.0	2.6	2.5	2.5	3.5
2	AO02183-2	**2.4**	2.4	-	-	-	-
3	AO06191-1	**2.2**	1.6	1.6	4.4	1.8	1.5
4	AOR07781-5	**2.0**	1.7	1.4	3.0	-	-
5	A07061-6	**2.0**	1.9	2.0	2.1	-	-
6	AOR06576-1	**2.0**	1.2	2.4	2.4	-	-
7	A08433-4VR	**1.8**	1.7	1.9	-	-	-
8	A07769-4	**1.7**	1.3	2.2	-	-	-
9	AOR07821-1	**1.7**	1.9	1.2	1.9	-	-
10	A071012-4BF	**1.6**	1.2	1.8	1.7	-	-
11	CO09036-2RU	**1.5**	1.5	-	-	-	-
12	CO08231-1RU	**1.5**	1.9	1.1	-	-	-
13	Ranger Russet	**1.4**	0.9	1.0	2.2	1.8	1.3
14	CO09076-3RU	**1.3**	1.3	-	-	-	-
15	CO09205-2RU	**1.2**	1.2	-	-	-	-
16	CO08155-2RU/Y	**1.2**	1.4	1.0	-	-	-
17	Russet Burbank	**1.1**	1.3	0.9	1.3	1.4	0.4
18	AOTX05043-1Ru	**0.9**	0.9	-	-	-	-
19	A10021-5TE	**0.8**	0.7	0.9	-	-	-
20	COTX05095-2Ru/Y	**0.5**	0.5	-	-	-	-

For more information on these cultivars, see the Early and Late Harvest Regional Trial Sections in this Book. The dash (" - ") indicates the clone was not yet entered into the trial.

PROCESS MARKET MERIT - NEWEST LINES
2016-2018

(5 = best) - Entries ranked by Field Performance means

EARLY HARVEST - Process Market Merit Scores

	Entry	Field Performance Mean	Field Performance Only* 2018	2017	2016
1	OR12133-10	**4.4**	4.4	-	-
2	Shepody	**4.2**	3.4	5.0	4.3
3	AOR08540-1	**3.9**	3.9	-	-
4	POR12NCK50-1	**3.9**	4.1	3.7	-
5	A08422-4VRsto	**3.5**	3.1	4.0	-
6	AOR10204-3	**3.4**	3.4	-	-
7	Russet Burbank	**3.3**	3.8	3.4	2.6
8	Ranger Russet	**3.3**	3.4	3.7	2.7
9	A07098-4	**3.2**	2.9	3.5	-
10	A07547-4adg	**2.7**	2.7	-	-
11	Russet Norkotah	**2.7**	2.6	3.4	2.0
12	A08510-1LB	**2.2**	2.1	2.3	-
13	A07705-4	**2.0**	1.2	2.7	-
14	A09022-4	**1.7**	1.7	-	-

*Postharvest values are not given for the Early Harvest Trial because all varieties typically fry well when delivered directly from the field and cold storage is not typical. The dash (" - ") indicates the clone was not yet entered into the trial.

LATE HARVEST - Process Market Merit Scores

		Field & Postharvest Processing Performance							
		All Years		2018		2017		2016	
	Entry	Field Mean	Post Harvest Mean	Field	Post Harv	Field	Post Harv	Field	Post Harv
1	OR12133-10	**3.9**	**2.6**	3.9	2.6	-	-	-	-
2	Ranger Russet	**3.1**	**3.3**	2.4	3.3	3.1	2.6	3.8	3.9
3	POR12NCK50-1	**2.9**	**3.3**	2.6	3.7	3.2	2.9	-	-
4	AOR08540-1	**2.5**	**2.6**	2.5	2.6	-	-	-	-
5	A07705-4	**2.5**	**1.8**	2.1	na	2.4	1.7	3.0	1.8
6	Russet Burbank	**2.4**	**2.3**	1.3	2.3	2.7	2.2	3.1	2.4
7	A07098-4	**2.3**	**2.4**	1.2	1.9	3.4	2.8	-	-
8	A08510-1LB	**2.1**	**2.7**	2.6	2.6	1.6	2.8	-	-
9	AOR10204-3	**1.9**	**1.8**	1.9	1.8	-	-	-	-
10	A09022-4	**1.9**	**3.7**	1.9	3.7	-	-	-	-
11	Russet Norkotah	**1.5**	**na**	1.6	na	1.5	na	-	-
12	A07547-4adg	**1.1**	**2.9**	1.1	2.9	-	-	-	-

For more information on these cultivars, see the Early and Late Harvest Tri-State Trial Sections in this Book. The dash (" - ") indicates the clone was not yet entered into the trial. Varieties with 'fresh' were designated for direct processing or fresh market only and are indicated with "na".

PROCESS MARKET MERIT - ADVANCED LINES
2014-2018

(5 = best) - Entries ranked by Field Performance means

EARLY HARVEST - Process Market Merit Scores

	Entry	Field Performance Mean	Field Performance Only* 2018	2017	2016	2015	2014
1	A07769-4	**4.0**	3.5	4.5	-	-	-
2	AOR07781-5	**3.9**	4.6	3.7	4.9	2.5	-
3	Shepody	**3.7**	3.9	3.5	3.4	4.3	3.4
4	AO06191-1	**3.6**	3.6	3.6	3.2	3.9	3.6
5	A10021-5TE	**3.3**	3.3	-	-	-	-
6	AOR07821-1	**3.3**	3.4	3.5	2.9	-	-
7	AOTX05043-1Ru	**3.2**	3.2	-	-	-	-
8	A071012-4BF	**3.2**	4.3	2.2	3.0	-	-
9	Russet Norkotah	**3.2**	2.5	3.0	4.0	3.1	3.3
10	CO09076-3RU	**3.2**	3.2	-	-	-	-
11	Ranger Russet	**3.2**	3.7	3.2	2.7	2.6	3.6
12	A08433-4VR	**3.1**	3.6	2.8	2.8	-	-
13	AO02183-2	**3.0**	3.0	-	-	-	-
14	AOR06576-1	**3.0**	3.3	2.2	3.3	-	-
15	COTX05095-2Ru/Y	**2.8**	2.8	-	-	-	-
16	CO08155-2RU/Y	**2.5**	3.0	2.2	2.2	-	-
17	Russet Burbank	**2.5**	3.9	1.8	1.6	2.0	2.9
18	A07061-6	**2.0**	1.6	2.1	1.1	3.2	-
19	CO08231-1RU	**1.7**	1.3	1.9	1.9	-	-
20	A06030-23	**1.7**	1.7	-	-	-	-
21	CO09036-2RU	**1.6**	1.6	-	-	-	-
22	CO09205-2RU	**1.6**	1.6	-	-	-	-

*Postharvest values are not given for the Early Harvest Trial because all varieties typically fry well when delivered directly from the field and cold storage is not typical. The dash (" - ") indicates the clone was not yet entered into the trial.

LATE HARVEST - Process Market Merit Scores

Field & Postharvest Processing Performance

		All Years		2018		2017		2016		2015		2014	
	Entry	Field Mean	Post Harvest Mean	Field	Post Harv	Field	Post Harv	Field	Post Harv	Field	Post Harv	Field	Post Harv
1	AO02183-2	**4.9**	**4.7**	4.9	4.7	-	-	-	-	-	-	-	-
2	A07769-4	**4.2**	**3.1**	3.8	3.6	4.6	2.6	-	-	-	-	-	-
3	A08433-4VR	**3.9**	**2.5**	4.1	2.9	3.7	2.0	-	-	-	-	-	-
4	AOR07821-1	**3.5**	**2.4**	4.7	2.3	4.1	1.7	1.8	3.3	-	-	-	-
5	Ranger Russet	**3.5**	**3.5**	3.6	4.0	2.9	2.4	4.6	3.2	3.8	4.9	2.5	2.8
6	CO09036-2RU	**3.5**	**3.5**	3.5	3.5	-	-	-	-	-	-	-	-
7	A071012-4BF	**3.3**	**1.9**	4.5	2.3	2.4	1.7	3.0	1.8	-	-	-	-
8	A10021-5TE	**3.2**	**4.2**	3.2	4.2	-	-	-	-	-	-	-	-
9	AOR07781-5	**3.1**	**3.6**	2.9	3.9	2.4	2.8	4.0	4.0	-	-	-	-
10	AO06191-1	**3.1**	**3.6**	3.0	3.5	2.8	3.0	4.0	3.0	2.4	4.7	3.1	3.9
11	AOR06576-1	**2.8**	**2.1**	2.0	na	3.2	na	3.3	2.1	-	-	-	-
12	A07061-6	**2.4**	**2.4**	2.8	2.1	3.3	2.4	1.3	2.8	-	-	-	-
13	AOTX05043-1Ru	**2.2**	**2.8**	2.2	2.8	-	-	-	-	-	-	-	-
14	Russet Burbank	**2.2**	**2.3**	2.2	2.2	3.2	2.3	3.2	2.2	1.2	2.7	1.2	2.0
15	CO08231-1RU	**2.0**	**na**	2.4	na	1.6	na	-	-	-	-	-	-
16	CO09076-3RU	**2.0**	**na**	2.0	na	-	-	-	-	-	-	-	-
17	CO08155-2RU/Y	**1.9**	**2.6**	2.3	2.7	1.6	2.4	-	-	-	-	-	-
18	Russet Norkotah	**1.4**	**na**	1.5	na	1.3	na	-	-	-	-	-	-
19	CO09205-2RU	**1.4**	**2.8**	1.4	2.8	-	-	-	-	-	-	-	-
20	COTX05095-2Ru/Y	**1.1**	**na**	1.1	na	-	-	-	-	-	-	-	-

For more information on these cultivars, see the Early and Late Harvest Regional Trial Sections in this Book. Varieties with 'fresh' were designated for direct processing or fresh market only and are indicated with "na".

Fresh Market Value - Methods

Economic Potential

The gross return in U.S. dollars per acre for each trial entry was calculated using WA (Columbia Basin) four-year average fresh potato prices. Production costs per acre were not applied. All assumptions are listed in the table below. Assessing the fresh value of a given lot of potatoes is difficult because the actual market allows fresh-pack sheds to utilize a mix of tuber sizes, packaging, and marketing opportunities to maximize income potential. Following discussions with actual pack-sheds and complying with USDA standards, the packaging and size ranges described below provide a good base for variety comparison. A packaging and handling fee (pack-shed operating fee) of $4.00 was assessed on each CWT of potatoes. This economic evaluation does not fully account for consumer preferences for each trial entry.

Fresh-pack market 4-year average shipping point prices per tuber size and grade with associated pack-fees.

	Range of Tuber Sizes for Each Package Type and USDA Grade		Four Year WA State Columbia Basin	Pack-Shed Fee: Packaging	
Markets/Packaging[a]	U.S. No. 1[b]	U.S. No. 2	Average Prices[c]	and Handling	Adjusted Value
50 lb cartons	oz	oz	$/CWT	$/CWT	$/CWT
100 Count	7 to 8.5		$13.54	$4.00	$9.54
90 Count	8.5 to 9.5		$14.71	$4.00	$10.71
80 Count	9.5 to 10.5		$17.02	$4.00	$13.02
70 Count	10.5 to 12.5		$17.62	$4.00	$13.62
60 Count	12.5 to 14		$17.61	$4.00	$13.61
50 Count	14 to 18		$17.06	$4.00	$13.06
10 lb Film Bags					
Non-size A	4 to 7		$9.15	$4.00	$5.15
100 lb Burlap Sacks					
10 oz Min. Size U.S. No. 2		10 to 20	$8.60	$4.00	$4.60
10 oz Min. Size U.S. No. 2	18 to 20		$8.60	$4.00	$4.60
Bulk					
Process-Culls	< 4	< 10	$4.00	$4.00	$0.00
Process-Culls	> 20	> 20	$4.00	$4.00	$0.00

[a]Count = tuber number per 50 lb carton.

[b]18 to 20 oz U.S. No. 1 tubers are typically of marginal value on the fresh market due to their large size. They were therefore priced as U.S. No. 2, 10 oz minimum size.

[c]Sales F.O.B. Shipping Point, market periods 2008-2011 (USDA Federal-State Market News Service 2008-2011). Process-culls priced at regional process-cull market value.

Process Value - Methods

Early Harvest

Economic Potential
The gross return in U.S. dollars per acre for each trial entry was calculated using an early harvest mock processing contract similar to those used by Washington State processors. All assumptions are listed below.

Contract Assumptions:

1. Base price of $160/ton.
   a. Base price is an average of early-harvest Ranger Russet contracts from Washington processors.
2. To compensate for yield loss due to early harvest, the base price was increased by $1.00/ton per day for each day potatoes were harvested earlier than Sept. 1.
3. Early harvest quality parameters were identical to those mentioned below in the Late Harvest Process Value – Methods.

Late Harvest

Economic Potential
The gross return in U.S. dollars per acre for each trial entry was calculated using a late-harvest mock processing contract. Process-market values are based on criteria (below) similar to that used by WA potato processors. Production costs per acre were not applied. Direct delivery contract assumptions are listed below.

Contract Assumptions:
1. Base price: $160/ton for market (U.S. #1 & 2) grade tubers.
2. **Six oz clause:** Premiums for market grade tubers 6 oz or greater of $0.80/ton for each percentage point >53% of the total tuber yield composite, with premium maximum not to exceed a total of $12.00/ton. Penalties were $1.00/ton for each percentage point below 53% > 6 oz tubers; below 40% > 6 oz, lots were penalized $20/ton.
3. **US #1 clause:** Premiums for US #1 grade tubers 6 oz or greater of $0.40/ton for each percentage point >60% of the total tuber yield composite, with premium maximum not to exceed a total of $10.00/ton. Penalties were $0.20/ton for each percentage point below 60% > 6 oz US #1 tubers, with the penalty maximum not to exceed a total of $4.20/ton.
4. **Undersized clause:** Market grade potatoes <4 oz (process culls) were valued at $60.00/ton.
5. **Specific Gravity clause:** Premiums per ton were $1.00 at 1.078, $3.00 at 1.079, $5.00 at 1.080, $7.00 at 1.081, $8.00 at 1.082, $9.00 at 1.083, with a maximum of $10.00 for 1.084 through 1.088. Above 1.088 premiums were as follows: $9.00 at 1.089, $8.00 at 1.090, $7.00 at 1.091, $6.00 at 1.092, $5.00 at 1.093, $4.00 at 1.094, $3.00 at 1.095, $2.00 at 1.096, $1.00 at 1.097. $0.00 at 1.098 and $0.00 at 1.099. Above 1.099, lots were penalized $1.00/ton with no ceiling. No premium or penalty for a value of 1.077. Penalties per ton were $5.00 at 1.076, $10.00 at 1.075, and $15.00 at 1.074. Below 1.074, lots were penalized $20.00/ton with no rejection minimum.
6. No premiums or penalties were applied for bruise, tuber fry color, sugar content, or internal defects.

2018 Postharvest Procedures

Early Harvest

Culinary and quality characteristics of clones from the Red/Specialty Trial were evaluated after oven-baking, microwaving and boiling. Four- to six-ounce tubers were selected for the cooking protocols described below. After cooking, each tuber was halved from stem to bud end. One half was immediately tasted and evaluated on a scale from 1 to 5 (5 is best) for texture, flavor, tuber center, and skin characteristics. The remaining half was incubated for 30 minutes at room temperature and after-cooking-darkening was then graded on a 1 to 5 scale based on a color chart for white- and yellow-fleshed clones (1 = excessive graying, 5 = no discoloration).

Oven Baking - Tubers were pierced twice with a fork on each side and baked at 400°F for 1 hour.

Boiling - Tubers were cooked in a sieved double-boiler for 1 hour after coming to a boil.

Microwaving - Tubers were pierced twice with a fork on each side and cooked for 10 minutes at the outer edge of a microwave oven (high setting). The tubers were then turned over and moved to the center of the microwave where they were cooked an additional 10 minutes. Four-tuber samples from each of two clones (eight tubers total) were cooked simultaneously.

Cooking Time – was determined on 0.5-inch x 0.5-inch cores of tuber tissue cut from the stem (2 cores) and bud (2 cores) ends of 4 tubers of each clone. To prepare the cores, a 0.5-inch-thick longitudinal section was removed from the center of each tuber. Two cores were then cut from each end, one from the cortical area just beneath the periderm and one from the center region. The cores were placed in boiling water and timed until a weighted (90-g) pin penetrated the tissue.

Chipping - Tubers were cut longitudinally from stem to bud end. One half was sliced into 0.05-inch thick chips. The first slice was discarded to ensure uniform thickness of the second slice, which was processed as a chip. The chip samples (12 tubers/clone; 1 chip per tuber) were rinsed with water and fried in 375°F vegetable oil for 2 minutes. The chips were drained on paper towels and chip color was graded using the potato chip Snack Food Association (SFA) color chart (1 = light, 5 = dark).

Late Harvest

Testing of clones in the late harvest trials involved the following postharvest quality evaluations. As soon as possible after harvest, tuber specific gravity and fry color (Photovolt readings) were measured on 12 tubers from each clone. Clones designated as fresh processing were French fried and Photovolt readings compared at harvest only. Additional tubers of each clone were placed in storage at 40, 44 and 48°F. Tubers stored at 48°F were evaluated for bruise potential, soft rot susceptibility, consumer acceptance of French fries, and cooking time in October and November. Reducing sugar content and French fry color were assessed in early December. The extent of sprouting was recorded in late December. Tubers stored at 44°F were also evaluated for sugar accumulation in December. Storage of tubers at 40°F until mid December was done to determine the “cold-frying” potential of clones. Fry color was assessed as described below.

Statistical Analysis

Least significant difference (LSD) values are included in the tables to facilitate evaluation of differences in fry color (Photovolt readings), specific gravity, taste panel ratings, bruise, soft rot, and sprouting. Any two means whose difference is greater than or equal to the LSD value are significantly different.

Evaluation of Rated Characteristics

Specific gravity - was measured on a 12-tuber sample from each clone prior to storage by the weight-in-air/weight-in-water method and values were transformed into a 5-point scale as shown below. These same tubers were then used for French fry quality evaluation.

5 = 1.083–1.088

4 = 1.081–1.082 and 1.089–1.091

3 = 1.080 and 1.092–1.093

2 = 1.078–1.079 and 1.094–1.095

1 = 1.076–1.077 and 1.096 or higher

0 = 1.075 or lower

Tuber shape - The lengths and widths of up to twenty five 8- to 10-ounce tubers from each clone were measured and length:width (L/W) ratios reported. This was done to reveal the effects (if any) of growing location on tuber shape and to estimate the yield (% by number) of ≥3-inch long fries for each clone. Fry yields were calculated based on algorithms relating tuber shape (L/W) to the number and weight of fries. The following table reflects these relationships.

Visual Shape	Tuber L/W ratio	Percentage of French Fries (≥3 in.) (by weight)	(by number)
Round	1.00	53.9	35.2
Blocky	1.25	70.3	51.6
	1.50	82.6	64.1
	1.75	90.8	72.8
	2.00	95.0	77.6
Elongated	2.25	95.1	78.5

A L/W ratio close to one indicates a round tuber which is not ideally suited for French fry production. A ratio in the 1.5-1.8 range represents an oblong, blocky tuber, which is more desirable for processing. A typical L/W ratio for Russet Burbank is about 1.80. A schematic illustrating the relative sizes of potatoes having various ratios is included in the postharvest sections for the Tri-State and Regional Trials. Blocky and elongated tubers result in high French fry yield with less waste. Length to width ratios were transformed into a 5-point rating scale as shown below:

5 = 1.8 L/W and above
4 = 1.65-1.79 L/W
3 = 1.5-1.64 L/W
2 = 1.35-1.49 L/W
1 = 1.2-1.34 L/W
0 = Less than 1.2 L/W

French fries - were processed by frying tuber slices (3/8" x 1 1/8" x length of tuber) in 375°F oil for 3.5 minutes. Fry color was measured with a Photovolt meter within 3 minutes of frying. A Photovolt reading of 19 or less was considered unacceptably dark. The stem and bud end Photovolt readings were reported along with the USDA color class (see below). A difference of 9 Photovolt units or more between bud and stem end constitutes non-uniform fry color. A point was either added or subtracted from the total score, based on the uniformity of fry color. A (+) or (-) symbol is included with the Photovolt ratings to indicate that a point has been added or subtracted during tabulation of the total score. The USDA color classes assigned to French fries were based upon Photovolt readings of the darkest ends (usually the stem end) and are for information only; they were not used in determining the final rating.

Photovolt	USDA color
>31	0
25-30	1
20-24	2
15-19	3
<14	4

Rating	Photovolt reading
5 =	41 or higher
4 =	36 thru 40
3 =	31 thru 35
2 =	25 thru 30
1 =	20 thru 24
0 =	19 or less

Taste panels - were used to determine the consumer acceptance of French fries prepared from tubers of each clone. All of the clones evaluated by the taste panels were produced through classical breeding techniques. Slices (3/8" x 3/8" x length of tuber) from tubers stored at 48°F were fried in 375°F oil for 4.5 minutes. Approximately 20 untrained panelists rated the fries on a 1 to 5 (5=best) scale for taste, texture, internal flesh color, and weak units (limpness). The average rating of the four fry characteristics is reported and was used in calculating the total rating score for each clone.

Calculation of Total Score - The overall postharvest rating for each clone is equal to the sum of the individual ratings for each of the following quality characteristics:

Quality Parameter	Maximum Rating*
Fry color prior to storage (0-5 ±1 uniformity)	6**
Specific gravity (0-5)	5
Length to Width Ratio (0-5)	5
Taste panel (avg of 5 pts for taste, texture, internal flesh color and limpness of cooked fries) (1-5)	5
Fry color after 60 days storage at:	
48°F fry color (0-5 ±1 uniformity)	6**
44°F fry color (0-5 ±1 uniformity)	6**
40°F fry color (0-5)	5
Postharvest rating =	38

*All characteristics are rated from 0-5 or 1-5 as indicated. A rating of 5 is best. **Uniformity of color from bud to stem end is also evaluated. The fry color ratings of samples prior to storage and after 60 days at 44 and 48°F will gain or lose a point, depending on uniformity. For example, if the difference between stem and bud end fry color is <9 photovolt reflectance units, indicating highly uniform fry color, a point is added to determine the overall score. On the other hand, if the difference between stem and bud end fry color is ≥9 photovolt reflectance units (non-uniform fry color), a point is subtracted to end up with the final score. Hence, a clone can receive a maximum of 38 points.

Evaluations of Non-Rated Characteristics

Reducing sugars - concentrations in tuber stem and bud ends were determined on a percent dry weight basis. Reducing sugars were assayed spectrophotometrically or were estimated based on fry color in tubers stored at 44° and 48°F.

Bruise potential and severity - For each clone, 12 tubers were warmed to room temperature for one day. Each tuber was then held under a device that dropped a 4-ounce weight from a height of 23 inches. Each tuber received four such impacts, two on the stem end and two on the bud end. After 24 hours, the tubers were peeled and the percentage of impacts resulting in a blackspot or shatter bruise was calculated. In addition, the severity of bruise was also rated on a 1-5 scale as indicated below. Bruises that rated 3, 4, or 5 were used in the overall percentage calculation.

Bruise Severity Ratings:

1 = No bruise
2 = White Knot bruise
3 = Less than 50% of the impact area darkened
4 = Greater than 50% of the impact area darkened, or the whole impact area is light brown
5 = 100% of the impact area is dark

Soft rot index - Bacterial soft rot susceptibility was determined by wounding the stem and bud ends of room-temperature tubers, inoculating the wounds with *Pectobacterium carotovorum* subsp. *carotovorum*, and incubating the tubers (6 tubers per clone) for 24 hours at 72°F in a mist chamber. The percentage fresh weight of tissue lost due to rot is reported.

Reconditioning potential - Reconditioning ability of tubers stored at 40°F for approximately 60 days was determined by subsequently storing the tubers at 60°F for 21 days. The change in fry color over the reconditioning interval provides a relative measure of the reconditioning potential for each clone.

Sprouting - The degree of sprout development in tubers stored at 40 and 48°F was assessed after all other tests had been completed (usually late December). The percentage of tubers that sprouted and the average sprout length per tuber were recorded for 15 tubers of each clone.

Long-term Storage Characteristics of Clones in the 2017 Tri-State and Regional Variety Trials

For evaluation of long-term storability, tubers were held at 48°F until late December and then transferred to 44°F. The tubers were processed into French fries, and reducing sugars were measured in late April or early May of the following year. Tubers were not reconditioned prior to frying. Results from clones that were advanced from the Tri-State to the Regional Trial are reported in the Regional Trial section.

2018 Early Harvest Tri-State Trial

Location: WSU Research Center – Othello, WA
Planting Date: April 5 Vine Kill Date: July 20
Harvest Date: August 1 Days Grown: 106

The Tri-State trial is conducted annually in Washington, Idaho, and Oregon. The Tri-State committee designates which clones are entered in the trial. Selected cultivars and clones in the early trial are grown and managed for an early harvest (July/Aug). The 2018 trial compared 4 local reference varieties to 8 new clones. The following is a summary of the Washington field and post-harvest results. See also: grading comments and merit scores near front of book

Fresh Market Standout(s): POR12NCK50-1, AOR08540-1
Process Market Standout(s): OR12133-10, AOR08540-1, and POR12NCK50-1

Standcounts

- **40 Day**
  Slow emergence: A08422-4VRSto (53%), A07705-4 and A08510-1LB (56%).
  Best emergence: A07547-4adg (100%), OR12133-10 and Russet Burbank (96%).

- **50 Day**
  Slow emergence: All entries were greater than 93% emerged.

Plant and Tuber Growth & Development

- **Above Ground Stem Number Per Plant**
  Most: A07705-4 and A08510-1LB (3.1).
  Least: A08422-4VRsto (1.7) and A07547-4adg (1.8).

- **Average Tuber Number Per Plant**
  Most: A07705-4 (10.5), and A07098-4 (8.6)
  Least: A07547-4adg (5.2), Shepody (5.3), and A08422-4VRsto (5.6).

- **Average Tuber Size (oz)**
  Largest: Shepody (10.6), A07547-4adg (9.8), and AOR10204-3 (9.3).
  Smallest: A07705-4 (5.1) and A08510-1LB (5.8).

- **Undersized Tubers (< 4 oz)**
  Most: A07705-4 and A08510-1LB.
  Fewest: A07547-4adg and A08422-4VRsto.

Yield and Economic Data

- **Total Yield and U.S. #1 Yield**
  Highest: A07098-4 had the highest total yield (550 CWT/A) and the U.S. #1 yield (478 CWT/A). OR12133-10 had the second highest total yield (536 CWT/A); and AOR10204-3 had the second highest U.S. #1 yield (478 CWT/A).

  Lowest: A09022-4 had the lowest total yield (386 CWT/A) and the U.S. #1 yield (319 CWT/A). A08422-4VRsto had the second lowest total yield (418 CWT/A); and Ranger Russet had the second lowest U.S. #1 yield (378 CWT/A).

- **% U.S. #1's (greater than 4 oz)**
  Highest: A08422-4VRsto (95%) and A07547-4adg (92%).
  Lowest: A07705-4 (77%); A09022-4 (82%) and A08510-1LB (83%).

- **Carton Yield (100 to 50 Count (7 to 18 oz U.S. #1 Tubers))**
  Highest: OR12133-10 (15.5 Tons/A), AOR10204-3 and A08422-4VRsto (14.9 Tons/A).
  Lowest: A07705-4 (6.0 Tons/A).

- **Gross Return ($/acre)**
  Fresh Market Highest: A07098-4 and OR12133-10.
  Fresh Market Lowest: A07705-4, A09022-4, and A08510-1LB.
  Process Market Highest: A07098-4, OR12133-10, and A07545-4adg.

Tuber Defects (30 tuber sample of 8-12 oz tubers)

- **External Defects**
  Notable Defects: Most entries had little to no external defects.

- **Internal Defects**
  Notable Defects: Russet Burbank had 10% brown center, most entries had little to no internal defects.

- **Bruise**
  Highest Blackspot: Ranger Russet (37%) and Russet Burbank (37%).
  Highest Shatter: A08422-4VRsto (30%) and A09022-4 (23%).

2018 Early Harvest Tri-State Trial

Summaries

ENTRY	TOTAL YIELD			US # 1's* > 4 oz	US # 2's* > 4 oz	Culls* & < 4 oz	CARTON YIELD 100-50 count (US 1's 7-18 oz)		PROCESS YIELD US 1's and 2's > 6 oz	
	CWT/A	STATS**	Tons/A	% of Total Yield			% of Total Yield	Tons/A	% of Total Yield	Tons/A
Ranger Russet	421	*CD*	21.0	90	2	8	69	13.0	74	15.6
Russet Burbank	515	*AB*	25.8	84	1	15	64	13.9	66	17.2
Russet Norkotah	478	*BC*	23.9	86	0	14	63	13.0	68	16.3
Shepody	528	*AB*	26.4	88	2	10	60	14.0	82	21.7
A07098-4	550	*A*	27.5	87	4	9	54	13.0	68	18.7
A07547-4adg	490	*AB*	24.5	92	0	8	64	14.4	85	20.8
A07705-4	511	*AB*	25.5	77	1	23	31	6.0	40	10.5
A08422-4VRsto	418	*CD*	20.9	95	0	5	75	14.9	80	16.8
A08510-1LB	479	*BC*	23.9	83	1	17	55	10.5	59	14.2
A09022-4	386	*D*	19.3	82	2	16	64	10.5	66	12.7
AOR08540-1	510	*AB*	25.5	84	1	15	54	11.1	60	15.3
AOR10204-3	532	*AB*	26.6	90	4	6	67	14.9	85	22.7
OR12133-10	536	*AB*	26.8	88	2	10	68	15.5	69	18.5
POR12NCK50-1	497	*AB*	24.8	88	2	10	55	12.9	64	15.8

ENTRY	US # 1 YIELD						> 4 oz SPECIFIC GRAVITY	INTERNAL DEFECTS (%) (8-12 oz tubers)		
	> 4 oz CWT/A	STATS**	> 4 oz Tons/A	4-7 oz*	7-14 oz*	> 14 oz*		% HH	% BC	% IBS
				%						
Ranger Russet	378	*CD*	18.9	31	62	7	1.085	0	0	0
Russet Burbank	435	*ABC*	21.7	35	58	7	1.085	0	10	0
Russet Norkotah	410	*ABC*	20.5	35	56	8	1.077	0	0	0
Shepody	465	*AB*	23.2	13	42	44	1.074	0	0	0
A07098-4	478	*A*	23.9	46	53	1	1.080	0	3	0
A07547-4adg	450	*ABC*	22.5	17	57	25	1.084	0	0	0
A07705-4	394	*BC*	19.7	69	31	0	1.067	0	0	0
A08422-4VRsto	397	*BC*	19.9	25	71	3	1.083	0	3	0
A08510-1LB	396	*BC*	19.8	44	50	6	1.080	0	0	0
A09022-4	319	*D*	16.0	36	62	2	1.086	0	0	0
AOR08540-1	427	*ABC*	21.4	46	53	1	1.080	0	0	0
AOR10204-3	478	*A*	23.9	25	58	17	1.073	0	0	0
OR12133-10	473	*A*	23.7	29	55	16	1.080	0	0	0
POR12NCK50-1	438	*ABC*	21.9	43	47	10	1.082	0	0	0

ENTRY	30 DAY STAND	40 DAY STAND	50 DAY STAND	STEMS PER PLANT	AVERAGE TUBER WEIGHT	AVERAGE TUBER NUMBER	SKIN SET 1 = Poor	TUBER SHAPE 1 = Round	BRUISE (%) (8-12 oz tubers)	
	% Emerged	% Emerged	% Emerged	Above Ground	Ounces	Tubers/Plant	5 = Good	5 = Long	BLACKSPOT	SHATTER
Ranger Russet	0	93	93	2.3	7.6	5.8	4	3	37	13
Russet Burbank	0	96	96	2.2	7.1	7.7	3	3	34	14
Russet Norkotah	0	82	93	2.6	7.2	6.9	4	4	19	15
Shepody	0	84	93	2.0	10.6	5.3	4	3	7	7
A07098-4	0	87	98	2.5	6.7	8.6	4	3	17	17
A07547-4adg	0	100	100	1.8	9.8	5.2	5	2	13	7
A07705-4	0	56	93	3.1	5.1	10.5	4	3	10	10
A08422-4VRsto	0	53	98	1.6	7.7	5.6	4	3	13	30
A08510-1LB	0	56	98	3.1	5.8	8.5	4	2	3	17
A09022-4	0	76	98	2.2	6.2	6.4	4	2	23	23
AOR08540-1	0	91	98	2.2	6.2	8.5	4	4	3	7
AOR10204-3	0	67	98	2.3	9.3	5.9	2	4	3	3
OR12133-10	0	96	96	2.2	7.2	7.8	4	3	13	10
POR12NCK50-1	0	64	98	2.1	6.7	7.8	3	3	10	5

* Percent values may not total 100% due to rounding

2018 Plantings



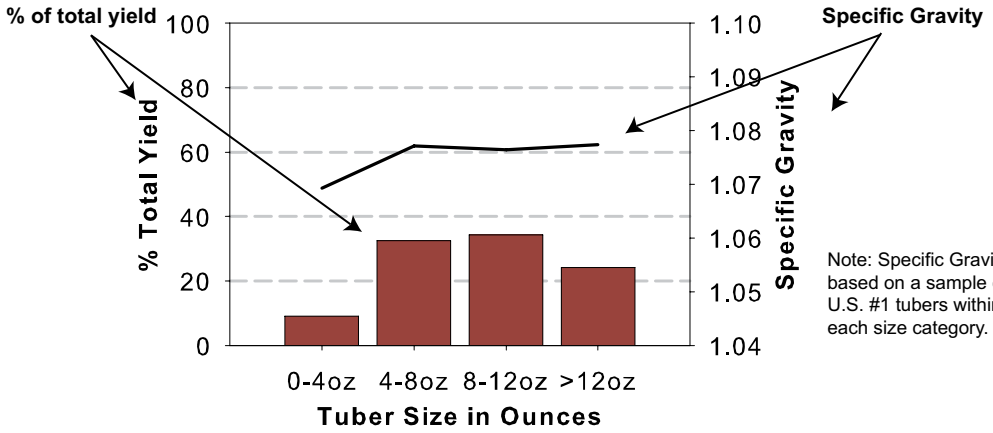




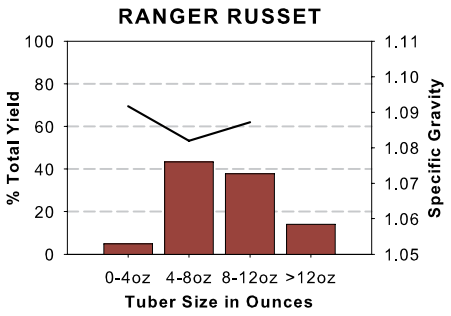

2018 Early Harvest Tri-State Trial

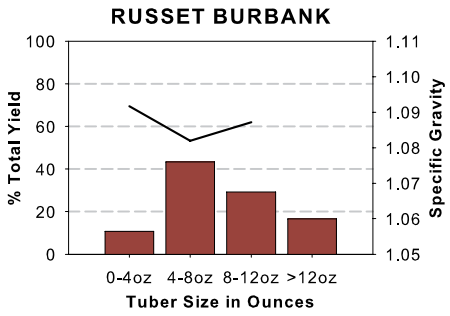
Tuber Yield and Specific Gravity Distributions

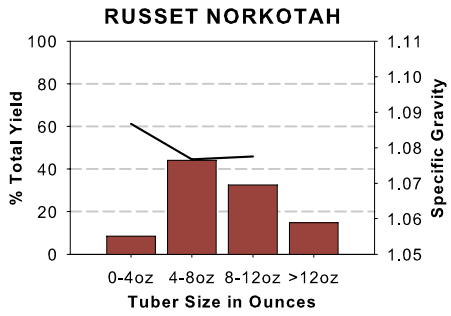
12 inch In-Row Spacing

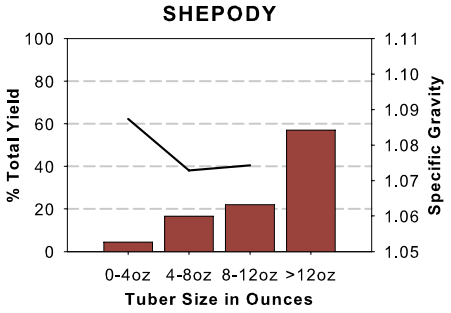


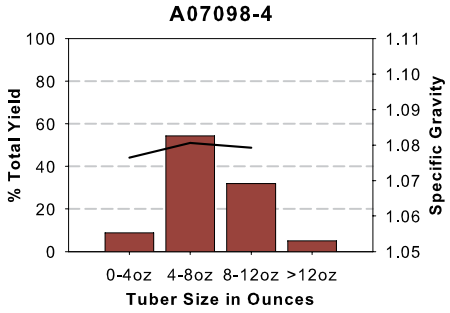
Note: Specific Gravity is based on a sample of U.S. #1 tubers within each size category.

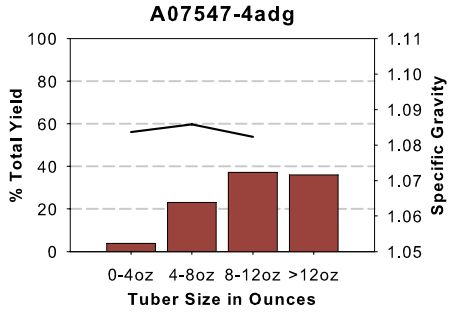


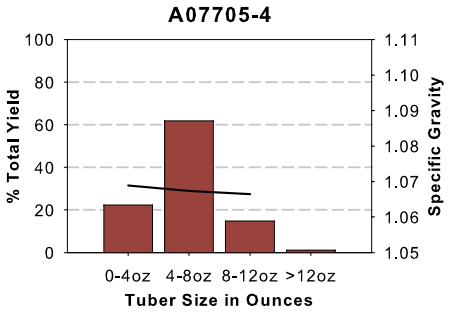


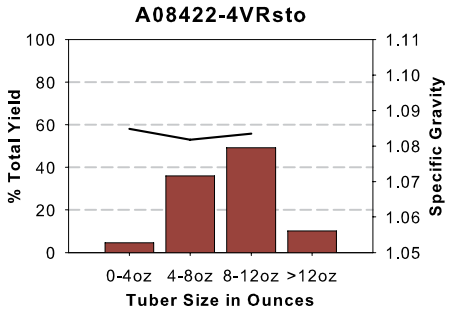


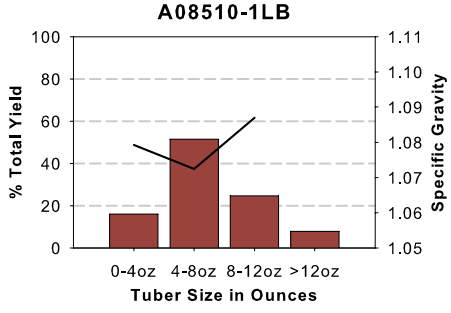


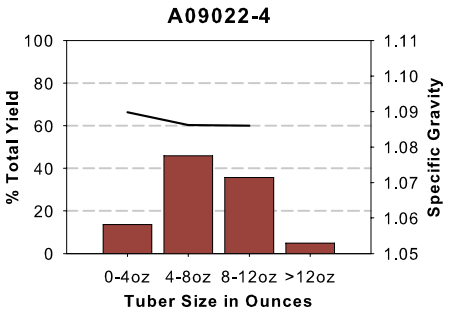


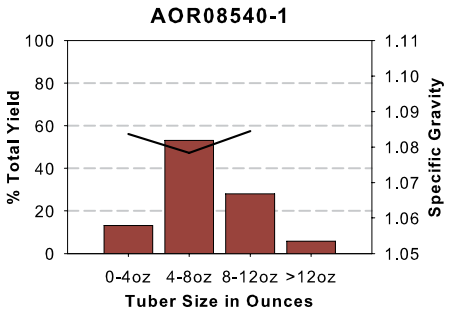


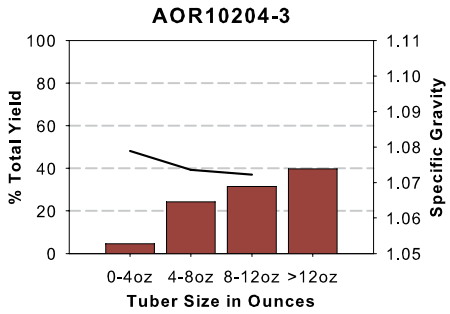


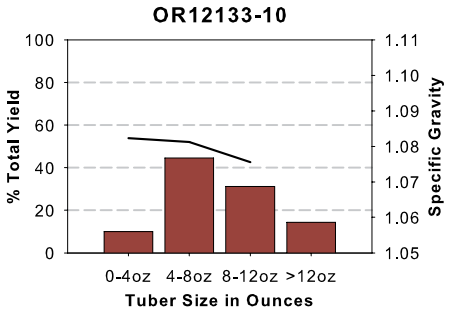


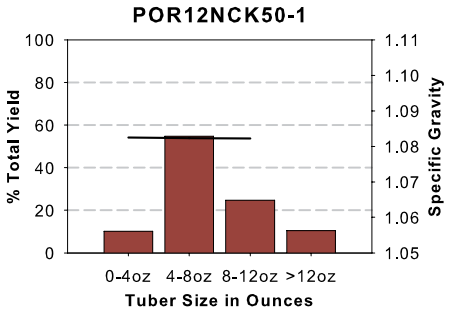



A09022-4
% Total Yield
Specific Gravity
100
80
60
40
20
0
1.11
1.10
1.09
1.08
1.07
1.06
1.05
0-4oz
4-8oz
8-12oz
>12oz
Tuber Size in Ounces


AOR08540-1
% Total Yield
Specific Gravity
100
80
60
40
20
0
1.11
1.10
1.09
1.08
1.07
1.06
1.05
0-4oz
4-8oz
8-12oz
>12oz
Tuber Size in Ounces


AOR10204-3
% Total Yield
Specific Gravity
100
80
60
40
20
0
1.11
1.10
1.09
1.08
1.07
1.06
1.05
0-4oz
4-8oz
8-12oz
>12oz
Tuber Size in Ounces


OR12133-10
% Total Yield
Specific Gravity
100
80
60
40
20
0
1.11
1.10
1.09
1.08
1.07
1.06
1.05
0-4oz
4-8oz
8-12oz
>12oz
Tuber Size in Ounces


POR12NCK50-1
% Total Yield
Specific Gravity
100
80
60
40
20
0
1.11
1.10
1.09
1.08
1.07
1.06
1.05
0-4oz
4-8oz
8-12oz
>12oz
Tuber Size in Ounces

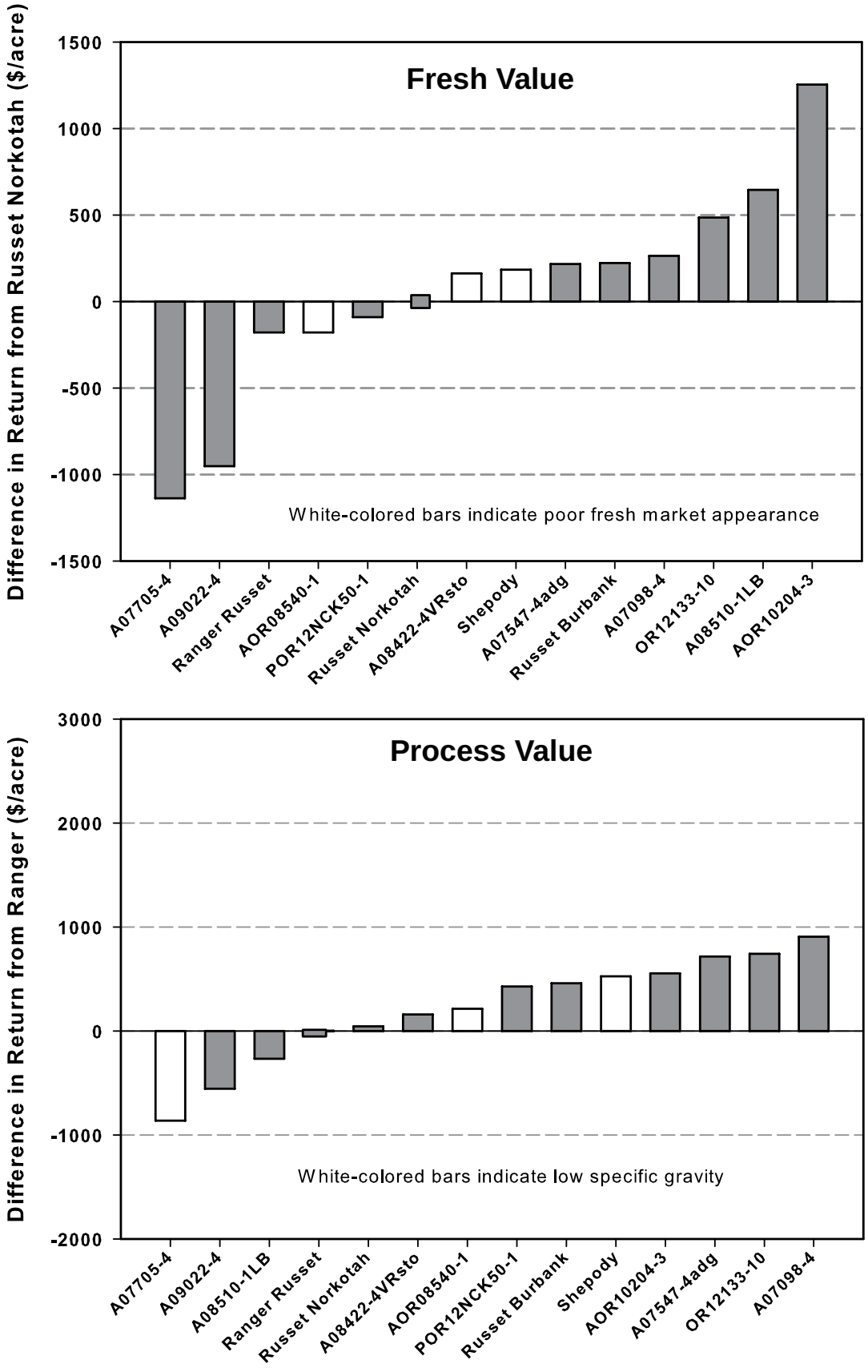


Figure 1 (Top). Difference in gross return per acre (Fresh Market) from Russet Norkotah calculated by subtracting the gross return of Russet Norkotah from the gross return of the particular entry.
Figure 2 (Bottom). Difference in gross return per acre (Process Market) from Ranger Russet calculated by subtracting the gross return of Ranger Russet from the gross return of the particular entry. Entries with the white-colored bars would be penalized due to a low specific gravity.

2018 Early Harvest Tri-State Trial

Tubers

Ranger Russet

A07098-4

OR12133-10

POR12NCK50-1

Russet Burbank

A07547-4adg

A08422-4VRsto

AOR08540-1

Russet Norkotah

A07705-4

A08510-1LB

A09022-4

Shepody

AOR10204-3

2018 Late Harvest Tri-State Trial

Location: WSU Research Center – Othello, WA
Planting Date: April 3 Vine Kill Date: September 4
Harvest Date: September 10 Days Grown: 154

The Tri-State trial is a part of the cooperative cultivar development program conducted at locations in Washington, Oregon, and Idaho. The Tri-State committee selects all official entries in this trial. All entries are grown for full season late harvest in each of the three states to determine how they perform when grown under different management and climatic conditions. The following is a summary of the Washington field and post harvest results. See also: grading comments and merit scores near front of book.

Fresh Market Standout(s): Russet Norkotah
Process Market Standout(s): OR12133-10, POR12NCK50-1, and AOR08540-1.

Standcounts

- **30 Day**
  Slow emergence: AOR10204-3 (3%) and A08510-1LB.
  Best emergence: OR12133-10 (79%).

- **40 Day**
  Slow emergence: All entries were greater than 93% emerged by 40 days after planting.

Plant and Tuber Growth & Development

- **Above Ground Stem Number Per Plant**
  Most: A07705-4 (2.6) and AOR10204-3 (2.4).
  Least: Ranger Russet (1.7).

- **Average Tuber Number Per Plant**
  Most: A07705-4 (12.7) and A07098-4 (11.6).
  Least: A07547-4adg (6.3) and Ranger Russet (7.3).

- **Average Tuber Size (oz)**
  Largest: A07547-4adg (12.7) and AOR10204-3 (12.6).
  Smallest: A07098-4 (8.6) and A07705-4 (8.6).

- **Undersized Tubers (< 4 oz)**
  Most: A07098-4 and A07705-4.
  Least: A07547-4adg and AOR10204-3.

Yield and Economic Data

- **Total and US #1**
  Highest: OR12133-10 had the highest total yield (1271 CWT/A) and the highest US #1 yield (1128 CWT/A). A07705-4 had the second highest total yield (1147 CWT/A) and the second highest US #1 yield (1029 CWT/A).
  Lowest: A07547-4adg and Russet Norkotah had the lowest total yield (834 CWT/A) and Russet Burbank had the lowest US #1 yield (718 CWT/A).

- **% U.S. #1's Greater Than 4 oz.**
  Highest: POR12NCK50-1 (94%), A07547-4adg (93%).
  Lowest: AOR08540-1 and AOR10204-3 (82%).

- **Carton Yield (100 to 50 Count (7 to 18 oz US #1 Tubers))**
  Highest: OR12133-10 (41.5 Tons/A), A07705-4 (39.3Tons/A).
  Lowest: A07547-4adg (23.2 Tons/A), Russet Burbank (26.9 Tons/A), and A08510-1LB (27.0 Tons/A).

- **Gross Return ($/acre)**
  Fresh Market Highest: OR12133-10, AOR08540-1, and A07705-4.
  Fresh Market Lowest: Russet Norkotah, Russet Burbank, and A09022-4.
  Process Market Highest: OR12133-10, AOR08540-1, and A07705-4.
  Process Market Lowest: Russet Norkotah, Russet Burbank, and A09022-4.

Tuber Defects (40 tuber sample of 8-12 oz tubers)

- **External Defects**
  Notable Defects: Russet Burbank and AOR10204-3 had 5% tubers with growth cracks. AOR08540-1 had 9% tubers with greening on them. All other entries had little to no external defects.

- **Internal Defects**
  Notable Defects: All entries were free of internal defects like hollow heart, brown center, and internal brown spots.

- **Bruise**
  Highest Blackspot: Ranger Russet (48%), Russet Burbank (25%).
  Lowest Blackspot: AOR08540-1 (3%), A07705-4 and A07547-4adg (5%).
  Highest Shatter: A09022-4 (74%) and Russet Burbank (70%).
  Lowest Shatter: Ranger Russet (35%) and Russet Norkotah (30%).

2018 Late Harvest Tri-State Trial

Postharvest Information

Samples were obtained from the Washington, Idaho and Oregon field adaptation trials for analysis in Pullman. Eight numbered entries and two cultivars were tested from ID, WA and OR. Overall postharvest performance ratings of the clones compared with Russet Burbank appear in the Table (next page). Details are summarized below. An "*" in the summary below indicates similar performance and/or ranking in trials from previous years.

- **Overall Postharvest Rating**
  Highest scoring clones: A09022-4, POR12NCK50-1*, RR
  Lowest scoring clones: AOR10204-3, RB*, AOR08540-1, A07098-4

- **Low Temperature Sweetening**
  Most resistant: A09022-4, A08510-1LB*, POR12NCK50-1, OR12133-10
  Most susceptible: RB*, AOR08540-1

- **Taste Panel**
  Highest rated: POR12NCK50-1*, A09022-4, RR
  Lowest rated: A07098-4, RB*

- **Blackspot Bruise Susceptibility**
  Most resistant: A07547-4adg, AOR10204-3
  Most susceptible: RR*, OR12133-10, RB

- **Variability in Tuber Shape & Fry Yield (8- to 10-oz tubers)**
  Lowest L/W: A07547-4adg, A08510-1LB*
  Highest L/W: RR*, RB*, AOR08540-1
  Least variable: AOR10204-3
  Most variable: A07098-4

Details

- A09022-4, POR12NCK50-1*, and RR were the highest rated entries, scoring 30.8, 29.5, and 28.1 out of 38 points, respectively.

- A09022-4, A08510-1LB*, POR12NCK50-1, and OR12133-10 were resistant to cold sweetening, with tuber samples from all states producing acceptably light colored fries following storage for 60 days at 44 or 40°F (USDA 0 at 44°F; USDA 0 or 1 at 40°F; average of stem ends).

- When stored at 48 or 44°F for 60 days, the majority of entries produced non-uniform fry color (bud to stem end photovolt difference ≥9), regardless of production site (WA, ID, OR). The exception was A09022-4 (top performer), which mostly maintained uniform fry color from harvest through storage.

- Retention of process quality during storage of AOR10204-3 and A07547-4adg at 44°F was highly variable across production sites. By contrast, growing location had the least effect on the change in fry color of Ranger and POR12NCK50-1 following 60 days at 44°F.

- AOR10204-3, RB*, AOR08540-1, and A07098-4 received the lowest overall postharvest scores.

- Average (across states) gravities of AOR10204-3, A07098-4, and RB were 1.075, 1.076, and 1.077, respectively; too low for frozen processing contracts. The gravities of the other entries ranged from 1.078 to 1.085 when averaged across states. When averaged across the 10 entries, gravities were 1.079 (OR), 1.083 (ID), and 1.079 (WA).

- POR12NCK50-1*, A09022-4, and RR were the favorites in the taste panels - all 3 entries scored 3.8/5 when averaged across growing locations (5 is best). A07098-4 and RB* received the lowest taste panel score of 3.0.

- In addition to rating overall bruise susceptibility, blackspot bruise severity was rated from 1 to 5 (max. bruise) based on color intensity and percentage of the impacted area showing color (1= no bruise, 2= white knot bruise, 3= less than 50% of impact area with color, 4= >50% of impact area darkened or whole area light brown, 5= full impact area dark). RR*, OR12133-10, and RB were the most susceptible, scoring 94, 83, and 63% bruise (stem end), respectively, in the controlled impact study. RR* and OR12133-10 also had the highest bruise severity, averaging 3.1/5. A07547-4adg and AOR10204-3 were the most resistant, averaging 15 and 35% bruise (stem end), respectively, and 1.3 and 1.8 severity ratings.

- The 8- to 10-oz tubers of A07547-4adg and A08510-1LB* had low length to width ratios (avg. L/W=1.36), resulting in yields of 3-inch or longer fries averaging only 76% by weight. A07098-4 had the greatest variation in L/W ratio; usable fry yields ranged from 81 to 91% across production sites. Tuber L/W ratios for A07547-4adg were 1.22 and 1.27 when grown in WA and OR, respectively. RR*, RB*, and AOR08540-1 had the highest L/W ratios across all states, resulting in an average of 92% yield of French fries by weight.

- Reconditioning (60°F, 21 days) tubers of A07547-4adg, RB, and OR12133-10 that had been stored at 40°F for 60 days resulted in the greatest improvement in stem end fry color compared with the other clones. By contrast, fry color of POR12NCK50-1, A07098-4, A08510-1LB, AOR08540-1, and A09022-4 changed little in response to reconditioning. Process fry color of AOR10204-3 darkened with reconditioning. RR, A08510-1LB, and POR12NCK50-1* appeared more susceptible to sugar end development based on attenuated reconditioning of the stem versus bud end of tubers following storage at 40°F.

- Following 60 days of storage at 48°F, 100% of OR12133-10 tubers were sprouting with an average sprout length of 2.2 inches. On average, 89% of tubers of A09022-4, A08510-1LB, AOR10204-3, and A07098-4 had 0.6-inch-long sprouts. This compares with 80% of RR tubers with 0.3-inch-long sprouts and no sprouting from RB tubers.

Overall Tri-State Postharvest Merit Scores

		Postharvest Merit Scores			3 state
	Clone	WA	ID	OR	Average
6	A09022-4	3.7	4.5	4.0	4.1
10	POR12NCK50-1	3.7	4.3	3.7	3.9
1	Ranger Russet	3.3	3.7	4.2	3.7
9	OR12133-10	2.6	4.3	3.6	3.5
5	A08510-1LB	2.6	3.5	4.3	3.5
4	A07547-4adg	2.9	3.4	3.3	3.2
3	A07098-4	1.9	3.5	2.6	2.7
7	AOR08540-1	2.6	2.2	3.1	2.6
2	Russet Burbank	2.3	2.2	3.0	2.5
8	AOR10204-3	1.8	2.0	2.6	2.1

2018 Late Harvest Tri-State Trial

Summaries

ENTRY	TOTAL YIELD			US # 1's* > 4 oz	US # 2's* > 4 oz	Culls* & < 4 oz	CARTON YIELD 100-50 count (US 1's 7-18 oz)		PROCESS YIELD US 1's and 2's > 6 oz	
	CWT/A	STATS**	Tons/A	% of Total Yield			% of Total Yield	Tons/A	% of Total Yield	Tons/A
Ranger Russet	899	*EF*	44.9	87	6	7	64	28.8	89	39.8
Russet Burbank	869	*EF*	43.5	83	4	13	62	26.9	81	35.2
Russet Norkotah	834	*F*	41.7	87	3	10	72	29.9	85	35.4
A07098-4	1036	*CD*	51.8	89	3	8	68	35.2	83	42.9
A07547-4adg	834	*F*	41.7	93	1	6	56	23.2	90	37.5
A07705-4	1147	*B*	57.3	90	2	9	69	39.3	82	46.9
A08510-1LB	950	*DE*	47.5	91	2	7	57	27.0	84	40.2
A09022-4	836	*F*	41.8	87	3	9	69	28.9	86	36.1
AOR08540-1	1113	*BC*	55.7	82	6	12	63	34.8	81	45.2
AOR10204-3	1087	*BC*	54.3	82	6	11	61	33.3	85	46.4
OR12133-10	1271	*A*	63.5	89	5	6	65	41.5	88	56.1
POR12NCK50-1	885	*EF*	44.2	94	2	4	71	31.3	89	39.3

ENTRY	US # 1 YIELD						> 4 oz SPECIFIC GRAVITY	INTERNAL DEFECTS (%) (8-12 oz tubers)		
	> 4 oz CWT/A	STATS**	> 4 oz Tons/A	4-7 oz*	7-14 oz*	> 14 oz*		% HH	% BC	% IBS
				%						
Ranger Russet	777	*DEF*	38.9	8	46	46	1.082	0	0	0
Russet Burbank	718	*F*	35.9	11	48	41	1.079	0	0	0
Russet Norkotah	726	*F*	36.3	11	55	34	1.067	0	0	0
A07098-4	923	*C*	46.2	18	61	21	1.073	0	0	0
A07547-4adg	772	*DEF*	38.6	7	37	56	1.078	0	0	0
A07705-4	1029	*B*	51.4	18	60	23	1.074	0	0	0
A08510-1LB	866	*CD*	43.3	15	43	42	1.080	0	0	0
A09022-4	733	*EF*	36.7	9	47	43	1.081	0	0	0
AOR08540-1	913	*C*	45.6	13	48	40	1.079	0	0	0
AOR10204-3	896	*C*	44.8	6	41	53	1.074	0	0	0
OR12133-10	1128	*A*	56.4	10	48	42	1.080	0	0	0
POR12NCK50-1	829	*CDE*	41.4	16	59	26	1.082	0	0	0

ENTRY	30 DAY STAND	40 DAY STAND	50 DAY STAND	STEMS PER PLANT	AVERAGE TUBER WEIGHT	AVERAGE TUBER NUMBER	SKIN SET 1 = Poor 5 = Good	TUBER SHAPE 1 = Round 5 = Long	BRUISE (%) (8-12 oz tubers)	
	% Emerged	% Emerged	% Emerged	Above Ground	Ounces	Tubers/Plant			BLACKSPOT	SHATTER
Ranger Russet	46	90	97	1.7	11.8	7.3	4	4	48	35
Russet Burbank	33	97	99	1.8	10.9	7.6	4	3	25	70
Russet Norkotah	57	99	99	2.0	10.0	8.0	4	4	8	30
A07098-4	38	96	97	2.1	8.6	11.6	4	2	11	68
A07547-4adg	33	93	97	1.8	12.7	6.3	4	1	5	65
A07705-4	11	100	100	2.6	8.6	12.7	4	3	5	58
A08510-1LB	7	93	97	2.3	9.8	9.2	3	2	7	53
A09022-4	10	97	99	1.8	10.6	7.4	4	3	5	74
AOR08540-1	40	97	100	2.3	10.4	10.2	4	3	3	68
AOR10204-3	3	96	97	2.4	12.6	8.3	4	3	15	53
OR12133-10	79	97	99	1.8	11.1	11.0	4	3	13	68
POR12NCK50-1	21	94	99	1.8	9.8	8.5	4	3	7	59

* Percent values may not total 100% due to rounding

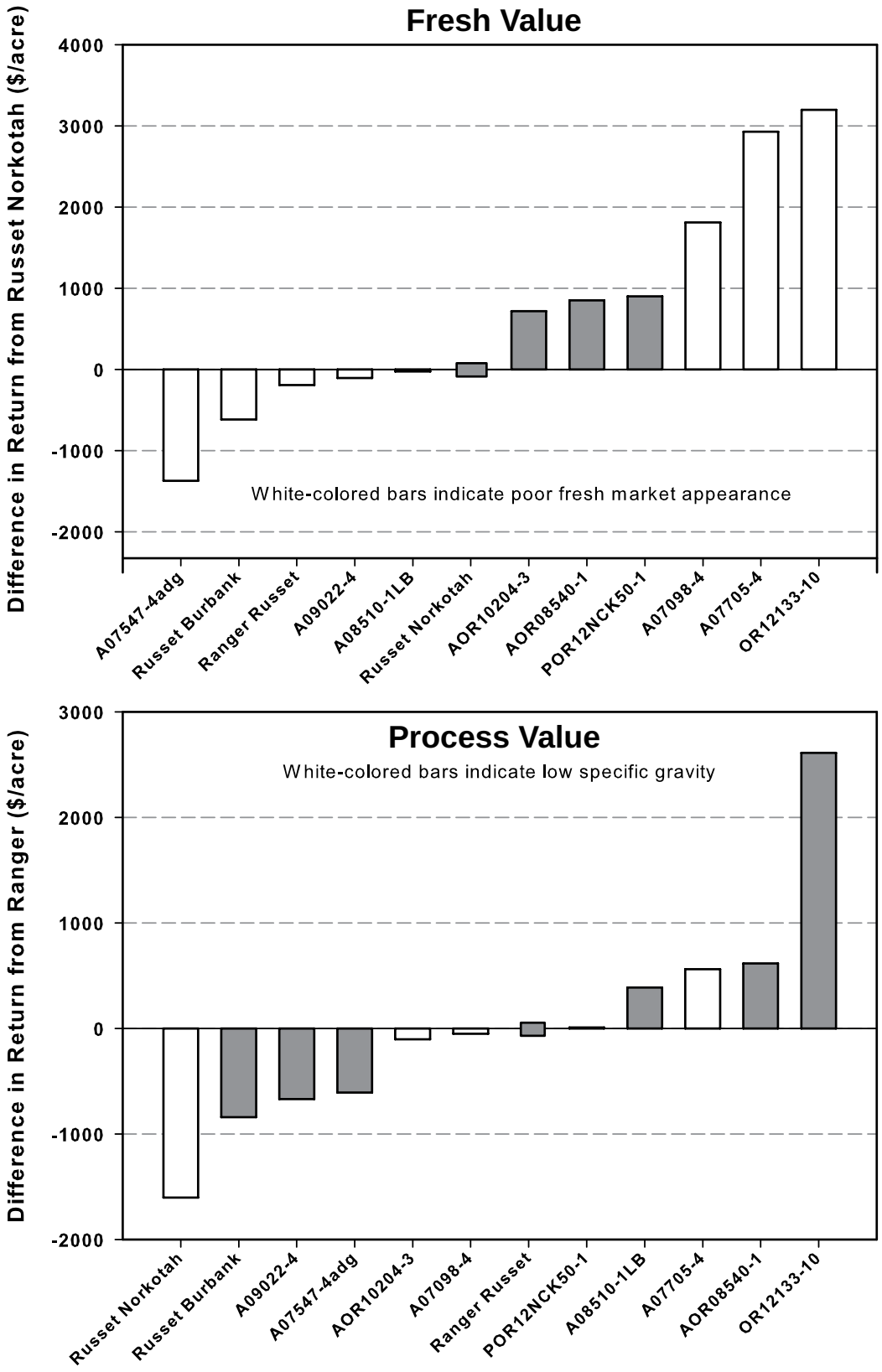
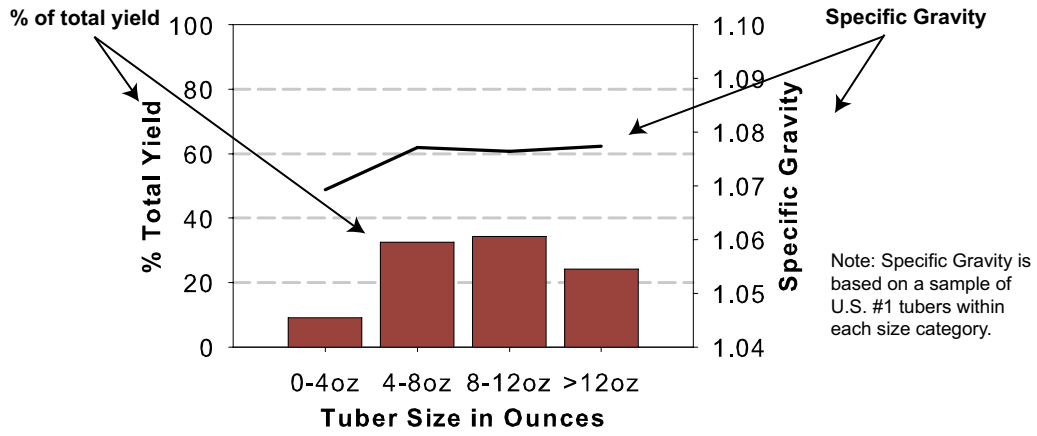


Figure 1 (Top). Difference in gross return per acre (Fresh Market) from Russet Norkotah calculated by subtracting the gross return of Russet Norkotah from the gross return of the particular entry. Entries with the white-colored bars may not appeal to fresh market consumers due to undesirable shape or appearance. **Figure 2 (Bottom)** Difference in gross return per acre (Process Market) from Ranger Russet calculated by subtracting the gross return of Ranger Russet from the gross return of the particular entry. Entries with the white-colored bars would be penalized (under the mock contract parameters) due to a specific gravity less than 1.075.

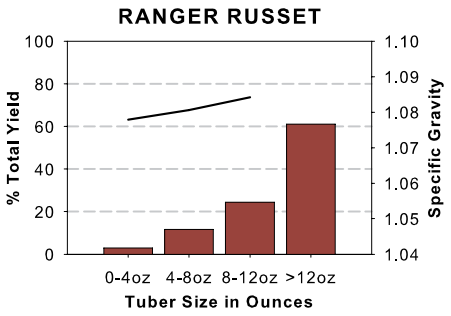
2017 Late Harvest Tri-State Trial

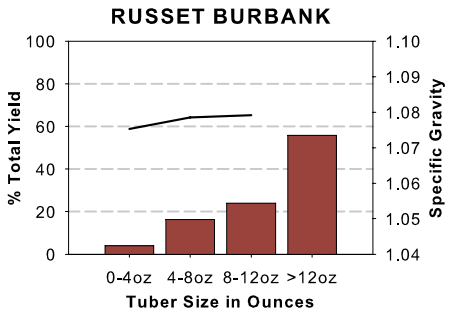
Tuber Yield and Specific Gravity Distributions

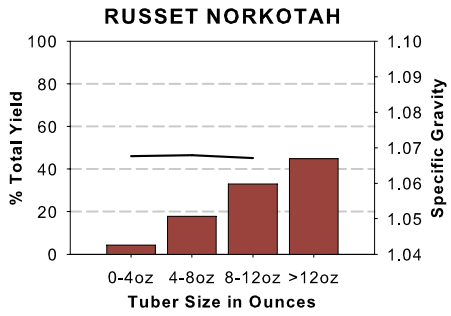
11 inch In-Row Spacing

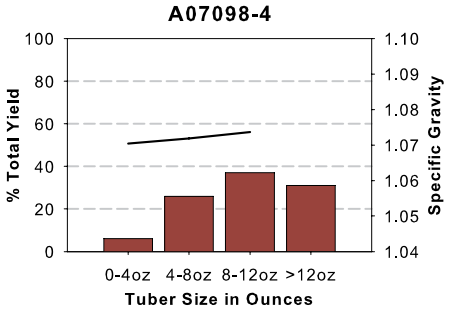


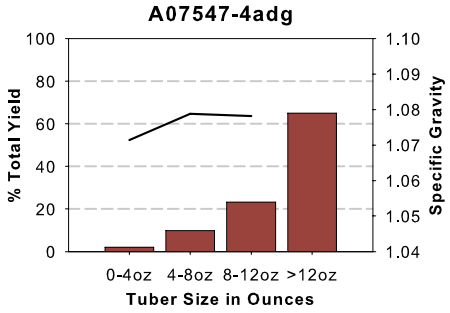
Note: Specific Gravity is based on a sample of U.S. #1 tubers within each size category.

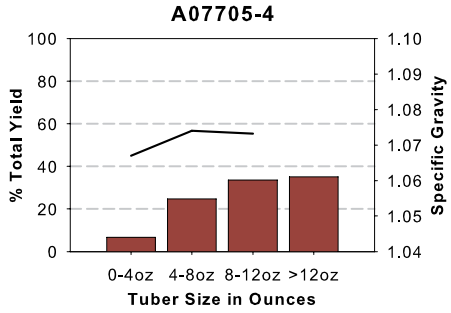


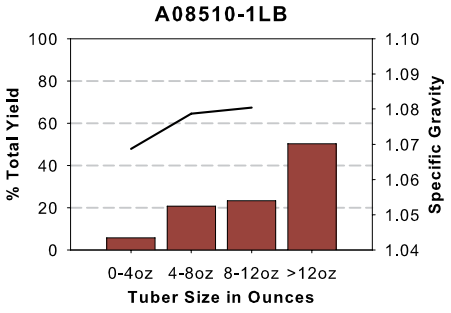


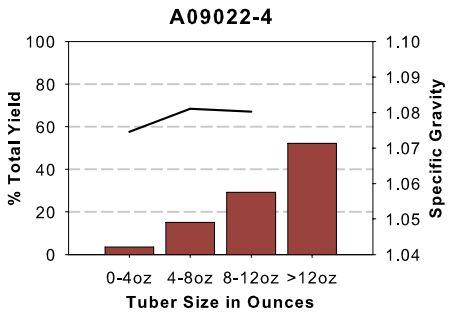


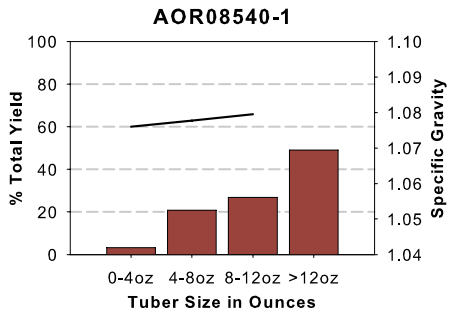


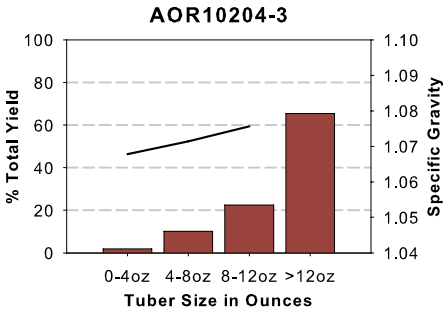


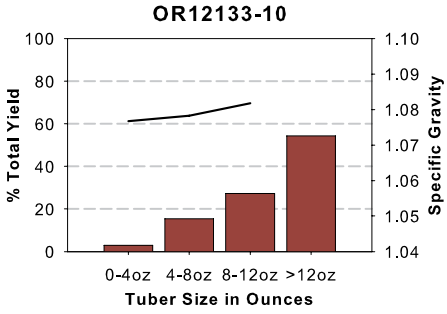


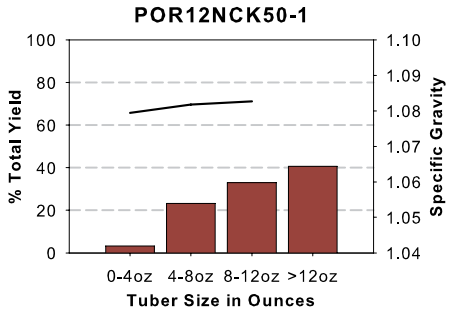




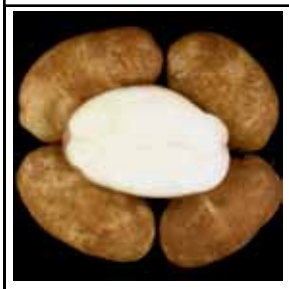






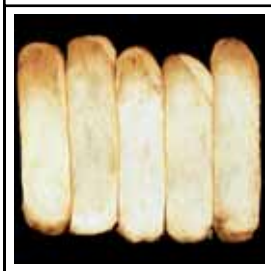
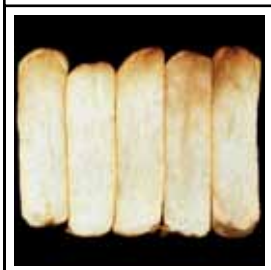


2018 Field Day

Tubers	WA Late Harvest Tri-State Trial Comments
Ranger Russet	
	**Tubers:** Oblong to long tubers. Good skin set; moderate eye depth. **Fry color:** At harvest= light, uniform; 48°F = light, non-uniform; 44°F = light, non-uniform; 40°F = relatively dark, non-uniform; Reconditioned = relatively dark, non-uniform.
Russet Burbank	
	**Tubers:** Oblong tubers. Good skin set; moderate eye depth. **Fry color:** At harvest= light, non-uniform; 48°F = light, non-uniform; 44°F = relatively dark, non-uniform; 40°F = unnaceptably dark, non-uniform; Reconditioned = relatively dark, non-uniform.
A07098-4	
	**Tubers:** Round to oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= light, uniform; 48°F = relatively dark, uniform; 44°F = unnaceptably darkuniform; 40°F = unnaceptably dark, uniform; Reconditioned = unnaceptably dark, uniform.
A07547-4adg	
	**Tubers:** Round tubers. Good skin set; moderate eye depth. **Fry color:** At harvest= light, uniform; 48°F = light, non-uniform; 44°F = light, uniform; 40°F = relatively dark, uniform; Reconditioned = relatively dark, uniform.
A08510-1LB	
	**Tubers:** Round to oblong tubers. Fair skin set; shallow eyes. **Fry color:** At harvest= light, uniform; 48°F = light, non-uniform; 44°F = light, uniform; 40°F = relatively dark, uniform; Reconditioned = relatively dark, uniform.

Initial Fries	48º F Storage	44º F Storage	40º F Storage	40º F Recon.
Ranger Russet				
				
Russet Burbank				
				
A07098-4				
				
A07547-4adg				
				
A08510-1LB				
				

Tubers	WA Late Harvest Tri-State Trial Comments
A09022-4	
	**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= light, uniform; 48°F = light, uniform; 44°F = light, uniform; 40°F = light, non-uniform; Reconditioned = light, uniform.
AOR08540-1	
	**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= light, uniform; 48°F = light, non-uniform; 44°F = relatively dark, non-uniform; 40°F = unnaceptably dark, uniform; Reconditioned = unnaceptably dark, uniform.
AOR10204-3	
	**Tubers:** Oblong tubers. Good skin set; moderate eye depth. **Fry color:** At harvest= light, uniform; 48°F = relatively dark, non-uniform; 44°F = relatively dark, non-uniform; 40°F = unnaceptably dark, uniform; Reconditioned = unnaceptably dark, uniform.
OR12133-10	
	**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= light, non-uniform; 48°F = light, non-uniform; 44°F = light, non-uniform; 40°F = unnaceptably dark, uniform; Reconditioned = light, non-uniform.
POR12NCK50-1	
	**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= light, uniform; 48°F = light, non-uniform; 44°F = light, non-uniform; 40°F = relatively dark, non-uniform; Reconditioned = light, non-uniform.

Initial Fries	48º F Storage	44º F Storage	40º F Storage	40º F Recon.
A09022-4				
				
AOR08540-1				
				
AOR10204-3				
				
OR12133-10				
				
POR12NCK50-1				
				

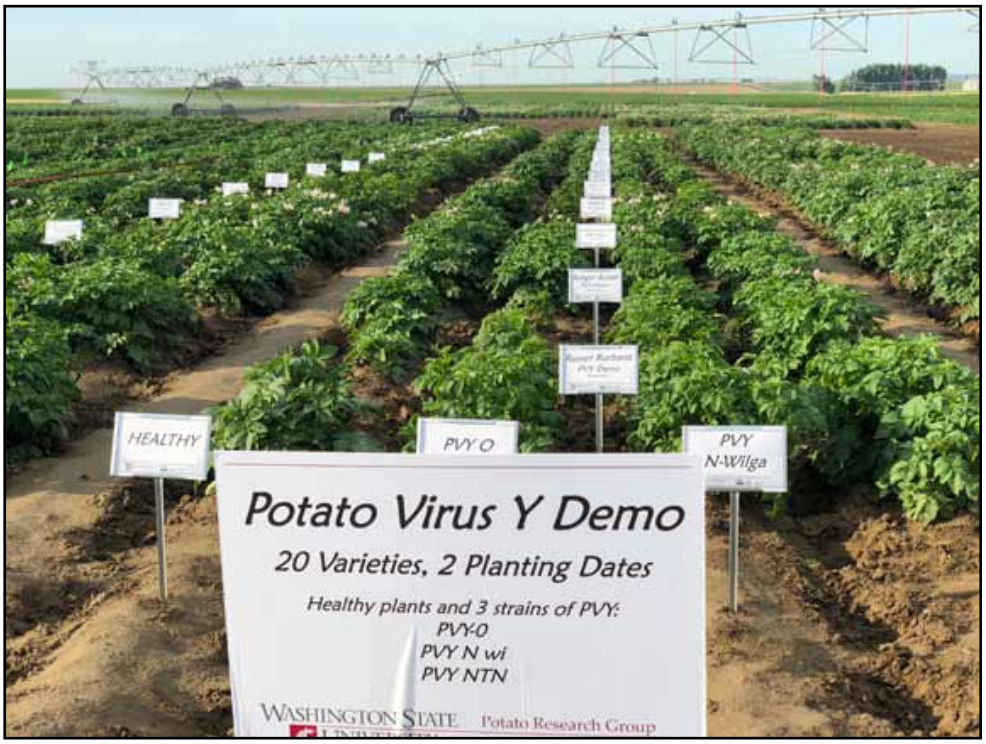
2018 Late Harvest Tri-State Trial

Accumulated Total Postharvest Rating of Clones

		WA		ID		OR		3 State av.
	Clone	Rating Total §	Discard §§	Rating Total §	Discard §§	Rating Total §	Discard §§	Rating Total
6	A09022-4	27.8	Sp.Gr	34.0		30.7		30.8
10	POR12NCK50-1	28.2		32.6		27.8		29.5
1	Ranger Russet	24.7		27.8		31.9		28.1
9	OR12133-10	19.4	40°F	32.6		27.7		26.6
5	A08510-1LB	19.4		26.8		32.8		26.3
4	A07547-4adg	21.7		25.8		24.7		24.1
3	A07098-4	14.7	44°F, 40°F	26.3		19.9	Sp. Gr.	20.3
7	AOR08540-1	19.5	40°F	16.9		23.3		19.9
2	Russet Burbank	17.3	40°F	16.7	Sp. Gr.	23.1		19.0
8	AOR10204-3	13.9	40°F	14.9		19.4	Sp. Gr.	16.1
		20.7		25.4		26.1		24.1

§ maximum rating possible = 38

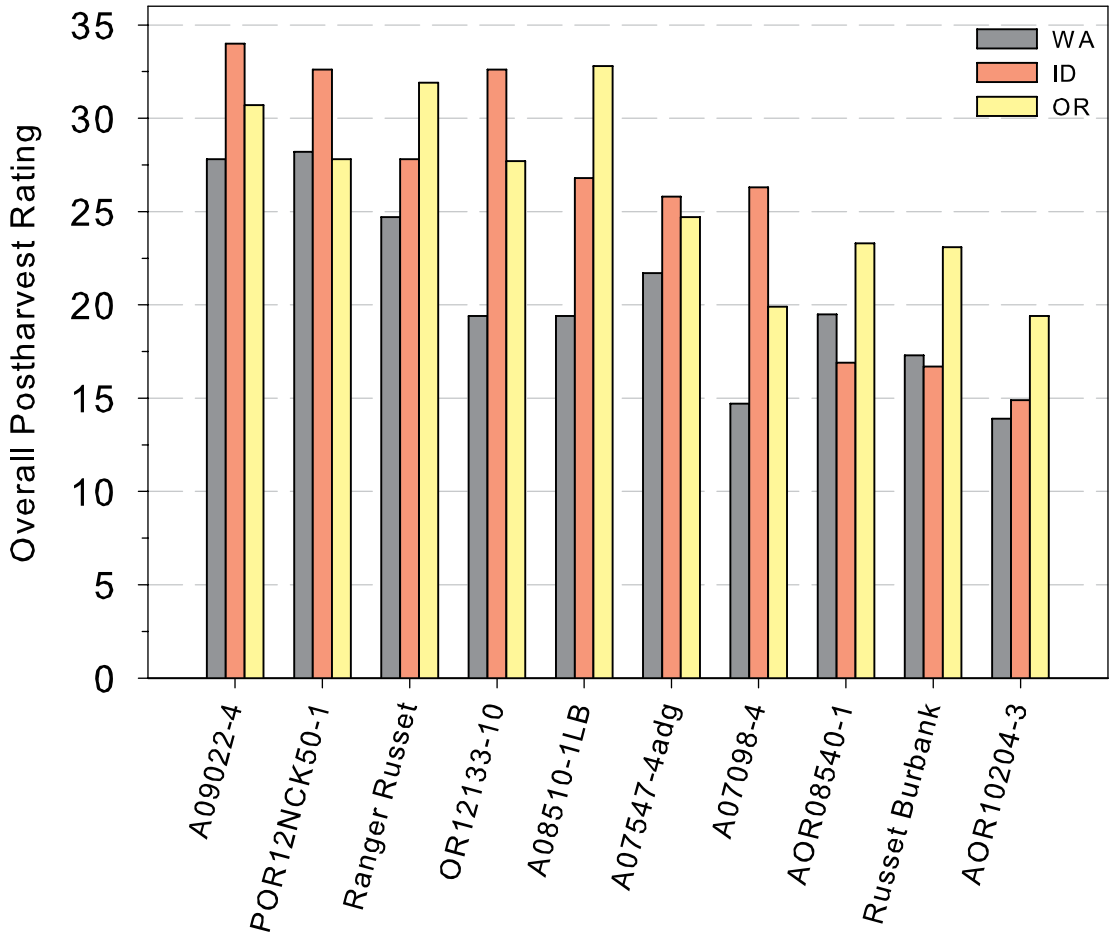
§§ Values for the indicated evaluation are lower than the rejection level.



The 2018 Potato Virus Y Demo included two planting dates, 3 PVY strains, and 20 varieties.

2018 Late Harvest Tri-State Trial

Late Harvest Tri-State Postharvest Ratings



2018 Late Harvest Tri-State Trial

Entries Retained from the 2017 Trials Currently in the Tri-State Trial

Harvested fall of 2017
Held at 48° F until December 14, 2018
Stored at 44° F until analysis

A07098-4, A08510-1LB, and POR12NCK50-1 were retained from the 2017 Tri-State Trial into the 2018 Trial. When averaged across states, POR12NCK50-1 produced the lightest fries (46.3 ref units). The uniformity of fry color was unacceptable for RB and POR12NCK50-1 across all states and for Ranger grown in WA. A07098-4 and A08510-1LB produced fries with acceptable stem to bud color differences regardless of production site. Sprout lengths ranged from 0.1 to 0.75 inches, with Russet Burbank sprouting the least (avg = 0.17 in) and Ranger (0.67 in) and A07098-4 (0.75 in) sprouting the most.

	PHOTOVOLT READING				USDA	% REDUCING SUGAR			Sprouting	
Clone	stem	bud	avg	DIFF	COLOR	stem	bud	avg	percent	length (in.)
Washington										
1 Ranger Russet	30.8	44.5	37.6	13.6	0	1.3	0.6	0.9	100	0.75
2 Russet Burbank	29.6	50.7	40.1	21.1	1	1.4	0.5	1.0	100	0.13
3 A07098-4	19.8	21.6	20.7	2.7	2	2.7	2.4	2.6	100	0.50
4 A08510-1LB	35.2	39.5	37.5	8.1	0	1.0	0.8	0.9	100	0.75
5 POR12NCK50-1	38.8	56.5	47.6	17.7	0	0.8	0.5	0.6	100	0.25
		LSD 0.05	*3.4*	*4.3*						
Average	30.8	42.5	36.7	12.6	0.6	1.4	1.0	1.2	100	
Idaho										
1 Ranger Russet			No Sample				No Sample			No Sample
2 Russet Burbank	26.7	46.0	36.3	21.5	1	1.7	0.5	1.1	100	0.13
3 A07098-4	52.4	52.3	52.3	4.2	0	0.5	0.5	0.5	100	0.25
4 A08510-1LB	45.2	43.7	46.2	4.1	0	0.6	0.6	0.6	100	0.50
5 POR12NCK50-1	42.8	53.0	47.9	10.5	0	0.6	0.5	0.6	100	0.25
		LSD 0.05	4.8	*5.0*						
Average	41.8	48.8	45.7	10.1	0.3	0.9	0.6	0.7	100	
Oregon										
1 Ranger Russet	33.2	38.9	36.1	6.9	0	1.1	0.8	0.9	100	1.25
2 Russet Burbank	28.1	38.7	33.4	11.6	1	1.6	0.8	1.2	100	0.25
3 A07098-4	16.5	16.2	16.3	3.0	3	3.3	3.4	3.3	100	1.50
4 A08510-1LB	30.2	31.9	31.4	6.1	1	1.4	1.2	1.3	100	0.25
5 POR12NCK50-1	37.6	49.4	43.5	14.3	0	0.8	0.5	0.7	100	0.25
		LSD 0.05	*5.0*	*4.2*						
Average	29.1	35.0	32.1	8.4	1.0	1.6	1.3	1.5	100	

Date test performed:

Washington	April 21
Idaho	April 21
Oregon	April 21

2018 Late Harvest Tri-State Trial
Prior to Storage

Clone	PHOTOVOLT READING stem	bud	av	rtg §	DIFF	USDA COLOR	SPECIFIC GRAVITY	rtg
Washington								
1 Ranger Russet	46.6	52.2	49.4	**5+**	7.1	0	1.082	**4**
2 Russet Burbank	35.3	56.1	45.7	**5-**	20.8	0	1.078	**2**
3 A07098-4	41.5	43.9	42.7	**5+**	6.6	0	1.076	**1**
4 A07547-4adg	64.1	63.1	63.9	**5+**	3.0	0	1.078	**2**
5 A08510-1LB	38.3	46.2	42.3	**5+**	8.5	0	1.077	**1**
6 A09022-4	49.1	51.2	50.2	**5+**	3.7	0	1.075	**0**
7 AOR08540-1	44.3	46.0	45.2	**5+**	6.5	0	1.082	**4**
8 AOR10204-3	35.6	42.4	39.0	**4+**	7.8	0	1.076	**1**
9 OR12133-10	44.7	54.7	49.7	**5-**	10.0	0	1.079	**2**
10 POR12NCK50-1	61.4	66.7	64.1	**5+**	7.4	0	1.083	**5**
		LSD 0.05	*3.5*		*4.3*		*0.005*	
Average	46.1	52.3	49.2		8.1	0	1.079	
Idaho								
1 Ranger Russet	45.1	44.6	44.9	**5+**	6.2	0	1.089	**4**
2 Russet Burbank	34.4	46.4	40.4	**4-**	11.9	0	1.074	**0**
3 A07098-4	49.9	47.0	48.4	**5+**	4.9	0	1.081	**4**
4 A07547-4adg	52.2	51.9	52.1	**5+**	3.7	0	1.085	**5**
5 A08510-1LB	47.1	45.9	46.5	**5+**	3.3	0	1.092	**3**
6 A09022-4	55.6	54.7	55.2	**5+**	3.4	0	1.084	**5**
7 AOR08540-1	34.1	42.3	38.2	**4-**	9.4	0	1.081	**4**
8 AOR10204-3	30.9	38.1	34.5	**3+**	8.9	0	1.077	**1**
9 OR12133-10	50.7	54.5	52.6	**5+**	6.4	0	1.088	**5**
10 POR12NCK50-1	51.2	52.3	51.7	**5+**	3.2	0	1.084	**5**
		LSD 0.05	*4.2*		*3.5*		*0.005*	
Average	45.1	47.8	46.4		6.1	0	1.083	
Oregon								
1 Ranger Russet	48.9	51.5	50.2	**5+**	3.5	0	1.085	**5**
2 Russet Burbank	35.2	55.5	45.3	**5-**	20.3	0	1.080	**3**
3 A07098-4	40.8	45.8	43.3	**5+**	6.8	0	1.071	**0**
4 A07547-4adg	48.9	51.6	49.9	**5+**	4.1	0	1.076	**1**
5 A08510-1LB	49.6	51.7	50.6	**5+**	6.3	0	1.085	**5**
6 A09022-4	62.9	64.0	63.4	**5+**	2.6	0	1.076	**1**
7 AOR08540-1	40.4	54.7	47.5	**5-**	14.3	0	1.080	**3**
8 AOR10204-3	28.8	40.6	34.7	**3-**	12.9	1	1.071	**0**
9 OR12133-10	44.1	49.9	47.0	**5+**	6.6	0	1.078	**2**
10 POR12NCK50-1	48.0	58.8	53.4	**5-**	11.5	0	1.086	**5**
		LSD 0.05	*3.2*		*4.7*		*0.004*	
Average	44.7	52.4	48.5		8.9	0	1.079	

Date test performed:

Washington	Sept. 18	Sept. 13
Idaho	Sept. 25	Sept. 18
Oregon	Sept. 27	Sept. 25

§ rtg = rating (1-5, 5 is best); av = average Photovolt reading; Diff = Absolute difference between stem and bud Photovolt reading. Stem to bud differences of nine or greater (-) lose one point and differences of less than nine (+) gain one point in the accumulated total postharvest rating.

2018 Late Harvest Tri-State Trial

Stored at 48°F after Arrival

Clone	FRENCH FRY TASTE PANEL rating	BRUISE POTENTIAL (percent) stem	bud	[color 5=darkest] stem	bud	SOFT ROT INDEX (percent) stem	bud
Washington							
1 Ranger Russet	**3.7**	96	13	4.3	1.3	22	25
2 Russet Burbank	**3.3**	88	42	3.3	1.4	18	31
3 A07098-4	**2.7**	83	67	3.2	2.5	24	30
4 A07547-4adg	**3.7**	38	0	1.8	1.0	28	24
5 A08510-1LB	**3.4**	42	8	2.0	1.2	22	21
6 A09022-4	**3.8**	67	8	2.5	1.2	17	14
7 AOR08540-1	**3.5**	63	0	2.5	1.0	28	31
8 AOR10204-3	**2.9**	63	0	2.5	1.0	15	17
9 OR12133-10	**3.4**	88	25	3.3	1.5	24	21
10 POR12NCK50-1	**4.2**	58	13	2.3	1.3	12	17
LSD 0.05	*0.4*	*29*	*35*			*8*	*9*
Average	3.5	68.3	17.5	2.8	1.3	21.1	23.2
Idaho							
1 Ranger Russet	**3.8**	92	4	3.4	1.1	12.2	11
2 Russet Burbank	**2.7**	25	0	1.5	1.0	16	13
3 A07098-4	**3.3**	0	0	1.0	1.0	18	21
4 A07547-4adg	**3.8**	4	4	1.1	1.1	15	15
5 A08510-1LB	**3.8**	21	0	1.4	1.0	18	19
6 A09022-4	**4.0**	21	8	1.4	1.2	9	11
7 AOR08540-1	**2.9**	8	0	1.2	1.0	18	16
8 AOR10204-3	**2.9**	21	0	1.5	1.0	10	11
9 OR12133-10	**3.6**	71	13	2.6	1.3	14	15
10 POR12NCK50-1	**3.6**	38	0	1.8	1.0	9	9
LSD 0.05	*0.4*	*25*	*9*			*5*	*6*
Average	3.4	30.0	2.9	1.7	1.1	13.8	14.2
Oregon							
1 Ranger Russet	**3.9**	96	13	1.3	1.3	17	16
2 Russet Burbank	**3.1**	75	8	1.3	1.3	16	19
3 A07098-4	**2.9**	58	38	1.8	1.8	17	18
4 A07547-4adg	**3.7**	4	0	1.0	1.0	14	15
5 A08510-1LB	**3.8**	58	13	2.5	1.3	10	14
6 A09022-4	**3.7**	21	4	1.4	1.1	9	8
7 AOR08540-1	**3.3**	46	21	2.0	1.4	14	20
8 AOR10204-3	**3.4**	21	0	1.5	1.0	9	9
9 OR12133-10	**3.7**	92	25	3.6	1.5	10	9
10 POR12NCK50-1	**3.8**	58	8	2.5	1.2	8	10
LSD 0.05	*0.4*	*25*	*22*			*4*	*4*
Average	3.5	52.9	12.9	1.9	1.3	12.4	13.8

Date test performed:

Washington	Oct. 11	Oct. 23	Nov. 6
Idaho	Oct. 12	Oct. 25	Nov. 8
Oregon	Oct. 15	Oct. 31	Nov. 14

2018 Late Harvest Tri-State Trial

Stored at 48°F for 60 Days

Clone	PHOTOVOLT READING stem	bud	average	rtg §	DIFF	USDA COLOR	% REDUCING SUGAR stem	bud	SPROUTING (%)	length (in)
Washington										
1 Ranger Russet	26.0	46.3	36.2	**4-**	20.3	1	1.8	0.5	100	0.50
2 Russet Burbank	25.4	48.4	36.9	**4-**	23.0	1	1.9	0.5	0	
3 A07098-4	19.7	28.5	24.1	**1+**	8.8	2	2.7	1.5	100	1.00
4 A07547-4adg	42.4	49.2	45.8	**5-**	9.4	0	0.6	0.5	73	0.25
5 A08510-1LB	27.8	35.4	31.6	**3-**	10.5	1	1.6	1.0	100	0.25
6 A09022-4	46.1	52.9	49.5	**5+**	7.2	0	0.5	0.5	87	0.50
7 AOR08540-1	20.0	44.2	32.1	**3-**	24.2	2	2.7	0.6	67	0.13
8 AOR10204-3	20.9	35.7	28.3	**2-**	14.8	2	2.5	1.0	100	1.00
9 OR12133-10	26.6	51.6	39.1	**4-**	25.0	1	1.8	0.5	100	3.00
10 POR12NCK50-1	32.9	54.3	43.6	**5-**	21.4	0	1.1	0.5	80	0.50
		LSD 0.05	*3.0*		*5.7*				*17*	
Average	28.8	44.6	36.7		16.4	1	1.7	0.7	81	
Idaho										
1 Ranger Russet	32.7	47.3	40.0	**4-**	18.0	0	1.2	0.5	67	0.25
2 Russet Burbank	27.4	44.4	35.9	**4-**	17.5	1	1.7	0.6	0	
3 A07098-4	38.5	46.1	42.3	**5-**	9.2	0	0.8	0.5	53	0.25
4 A07547-4adg	43.9	52.0	48.4	**5-**	10.3	0	0.6	0.5	7	0.13
5 A08510-1LB	39.6	49.4	44.5	**5-**	9.9	0	0.8	0.5	80	0.13
6 A09022-4	49.5	54.8	52.2	**5+**	8.6	0	0.5	0.5	100	0.50
7 AOR08540-1	21.2	33.5	27.3	**2-**	12.9	2	2.5	1.1	7	0.50
8 AOR10204-3	22.2	37.8	30.0	**2-**	15.6	2	2.3	0.8	93	0.25
9 OR12133-10	40.6	47.3	43.9	**5+**	8.7	0	0.7	0.5	100	1.50
10 POR12NCK50-1	38.4	51.3	44.8	**5-**	14.5	0	0.8	0.5	7	0.13
		LSD 0.05	*4.4*		*6.3*				*19*	
Average	35.4	46.4	40.9		12.5	1	1.2	0.6	51	
Oregon										
1 Ranger Russet	38.8	45.3	42.1	**5+**	6.8	0	0.8	0.6	73	0.25
2 Russet Burbank	29.2	44.2	36.7	**4-**	15.0	1	1.5	0.6	0	
3 A07098-4	23.7	24.5	24.1	**1+**	2.4	2	2.1	2.0	100	0.75
4 A07547-4adg	45.5	48.8	47.0	**5+**	6.1	0	0.6	0.5	100	0.25
5 A08510-1LB	42.6	49.9	46.2	**5+**	7.6	0	0.6	0.5	87	0.25
6 A09022-4	50.8	55.9	53.3	**5+**	6.1	0	0.5	0.5	100	1.50
7 AOR08540-1	31.9	43.7	37.8	**4-**	12.4	0	1.2	0.6	73	0.25
8 AOR10204-3	32.4	44.5	38.4	**4-**	12.7	0	1.2	0.6	73	1.00
9 OR12133-10	36.6	49.4	43.0	**5-**	13.3	0	0.9	0.5	100	2.00
10 POR12NCK50-1	40.7	54.2	47.5	**5-**	14.2	0	0.7	0.5	67	0.13
		LSD 0.05	*3.9*		*4.7*				*18*	
Average	37.2	46.0	41.6		9.6	0	1.0	0.7	77	

Date test performed:

Washington	Nov. 26	Nov. 26	Dec. 15
Idaho	Dec. 2	Dec. 2	Dec. 15
Oregon	Dec. 7	Dec. 7	Dec. 15

§ rtg = rating (1-5, 5 is best); av = average Photovolt reading; Diff = Absolute difference between stem and bud Photovolt reading. Stem to bud differences of nine or greater (-) lose one point and differences of less than nine (+) gain one point in the accumulated total post-harvest rating.

2018 Late Harvest Tri-State Trial

Stored at 44°F for 60 Days

Clone	PHOTOVOLT READING stem	bud	average	rtg §	DIFF	USDA COLOR	% REDUCING SUGAR stem	bud
Washington								
1 Ranger Russet	28.9	44.3	36.6	**4-**	15.4	1	1.5	0.6
2 Russet Burbank	18.8	38.0	28.4	**2-**	19.2	3	2.9	0.8
3 A07098-4	18.3	20.4	19.3	**0+**	3.1	3	3.0	2.6
4 A07547-4adg	28.6	34.3	32.7	**3+**	8.2	1	1.5	1.0
5 A08510-1LB	31.4	37.2	34.3	**3+**	6.2	0	1.3	0.9
6 A09022-4	52.6	54.0	53.3	**5+**	2.4	0	0.5	0.5
7 AOR08540-1	16.7	27.0	21.9	**1-**	10.9	3	3.3	1.7
8 AOR10204-3	17.8	29.4	23.6	**1-**	11.6	3	3.1	1.5
9 OR12133-10	30.2	43.3	36.8	**4-**	13.2	1	1.4	0.6
10 POR12NCK50-1	34.3	52.0	43.1	**5-**	17.8	0	1.0	0.5
		LSD 0.05	*3.4*		*4.4*			
Average	27.8	38.0	33.0		10.8	2	1.9	1.1
Idaho								
1 Ranger Russet	32.9	45.6	39.2	**4-**	13.2	0	1.1	0.6
2 Russet Burbank	23.6	41.2	32.4	**3-**	18.5	2	2.1	0.7
3 A07098-4	33.1	43.0	38.1	**4-**	11.5	0	1.1	0.6
4 A07547-4adg	41.6	58.8	50.1	**5-**	19.0	0	0.7	0.1
5 A08510-1LB	35.3	53.4	44.3	**5-**	18.1	0	1.0	0.6
6 A09022-4	41.6	55.8	48.7	**5-**	14.3	0	0.7	0.5
7 AOR08540-1	17.4	28.0	22.7	**1-**	10.5	3	3.1	1.6
8 AOR10204-3	19.3	33.7	26.5	**2-**	14.3	3	2.8	1.1
9 OR12133-10	26.4	49.1	37.8	**4-**	22.7	1	1.8	0.5
10 POR12NCK50-1	35.8	52.0	43.9	**5-**	16.2	0	0.9	0.5
		LSD 0.05	*4.9*		*6.5*			
Average	30.7	46.1	38.4		15.8	1	1.5	0.7
Oregon								
1 Ranger Russet	38.3	48.5	43.4	**5-**	10.2	0	0.8	0.5
2 Russet Burbank	30.8	49.4	40.1	**4-**	18.7	0	1.3	0.5
3 A07098-4	28.8	33.6	31.2	**3+**	5.8	1	1.5	1.1
4 A07547-4adg	46.5	55.2	50.4	**5-**	9.7	0	0.5	0.5
5 A08510-1LB	51.3	53.7	52.5	**5+**	8.6	0	0.5	0.5
6 A09022-4	52.8	58.9	55.8	**5+**	7.3	0	0.5	0.1
7 AOR08540-1	31.5	47.8	39.6	**4-**	16.3	0	1.3	0.5
8 AOR10204-3	34.5	47.6	41.1	**5-**	13.8	0	1.0	0.5
9 OR12133-10	35.6	42.2	38.9	**4+**	7.0	0	1.0	0.6
10 POR12NCK50-1	36.1	51.3	43.7	**5-**	15.2	0	0.9	0.5
			3.8		4.4			
Average	38.6	48.8	43.7		11.2	0	0.9	0.6

Date test performed:

Washington	Nov. 27	Nov. 27
Idaho	Dec. 3	Dec. 3
Oregon	Dec. 9	Dec. 9

§ rtg = rating (1-5, 5 is best); av = average Photovolt reading; Diff = Absolute difference between stem and bud Photovolt reading. Stem to bud differences of nine or greater (-) lose one point and differences of less than nine (+) gain one point in the accumulated total postharvest rating.

2018 Late Harvest Tri-State Trial

Stored at 40°F for 60 Days and Reconditioned

Clone	SPROUTING (%)	PHOTOVOLT(60 Days at 40°F) stem	bud	average	rtg §	DIFF	USDA COLOR	PHOTOVOLT AFTER RECONDITIONING (21 days at 60°F) stem	bud	average	DIFF	USDA COLOR
Washington												
1 Ranger Russet	0	13.9	25.4	19.6	**1**	11.6	4	18.3	40.0	29.2	21.8	3
2 Russet Burbank	0	10.3	23.0	16.6	**0**	12.7	4	17.9	31.1	24.5	13.2	3
3 A07098-4	0	14.0	15.4	14.7	**0**	2.8	4	15.6	17.1	16.3	3.5	3
4 A07547-4adg	0	16.8	24.6	21.2	**1**	8.8	3	25.5	31.6	28.3	8.7	1
5 A08510-1LB	0	20.2	20.8	20.5	**1**	4.6	2	18.9	25.6	22.3	8.3	3
6 A09022-4	20	28.6	40.0	34.3	**3**	15.3	1	44.0	47.1	45.6	7.4	0
7 AOR08540-1	0	10.7	14.9	12.8	**0**	4.2	4	15.4	21.2	18.3	5.9	3
8 AOR10204-3	0	13.4	15.5	14.4	**0**	5.2	4	17.3	21.3	19.3	4.2	3
9 OR12133-10	0	14.1	22.2	18.2	**0**	8.3	4	22.9	40.3	31.6	17.4	2
10 POR12NCK50-1	0	14.2	25.6	19.9	**1**	11.4	4	26.8	44.5	35.7	17.7	1
LSD 0.05	*9.5*			*2.2*		*3.8*				*4.1*	*5.2*	
Average	2	15.6	22.7	19.2		8.5	3	22.3	32.0	27.1	10.8	2
Idaho												
1 Ranger Russet	0	28.5	34.3	31.4	**3**	6.3	1	28.6	42.4	35.5	14.5	1
2 Russet Burbank	0	20.5	27.3	23.9	**1**	7.1	2	25.2	30.4	27.8	6.7	1
3 A07098-4	0	26.6	29.1	27.9	**2**	4.4	1	26.4	30.2	28.3	5.5	1
4 A07547-4adg	0	18.5	25.5	22.2	**1**	9.1	3	38.0	40.6	39.2	6.2	0
5 A08510-1LB	0	34.6	38.3	36.4	**4**	4.5	0	47.0	54.0	50.5	7.0	0
6 A09022-4	0	53.6	54.4	54.0	**5**	3.8	0	58.1	57.7	57.9	3.1	0
7 AOR08540-1	0	17.6	21.5	19.5	**1**	3.9	3	22.4	27.5	25.0	5.5	2
8 AOR10204-3	0	18.8	23.2	21.0	**1**	5.1	3	21.3	26.4	23.9	7.0	2
9 OR12133-10	0	33.8	40.8	37.3	**4**	7.6	0	43.5	55.0	49.2	11.5	0
10 POR12NCK50-1	0	38.1	47.8	43.0	**5**	9.7	0	30.1	40.6	35.4	10.5	1
LSD 0.05	ns			*3.4*		*3.5*				*3.9*	*4.4*	
Average	0	29.0	34.2	31.6		6.1	1	34.1	40.5	37.3	7.7	1
Oregon												
1 Ranger Russet	0	17.6	32.2	24.9	**2**	15.6	3	26.1	44.1	35.1	18.4	1
2 Russet Burbank	0	17.9	31.0	24.5	**2**	13.1	3	21.4	40.5	30.9	19.1	2
3 A07098-4	0	19.1	23.7	21.4	**1**	5.4	3	18.9	22.1	20.5	5.0	3
4 A07547-4adg	0	27.1	35.9	30.5	**3**	8.7	1	31.0	34.9	32.9	7.9	0
5 A08510-1LB	0	36.9	39.7	38.3	**4**	7.3	0	27.8	41.3	34.6	14.0	1
6 A09022-4	20	47.2	52.0	49.6	**5**	5.0	0	35.2	43.8	39.5	10.5	0
7 AOR08540-1	0	20.8	32.3	26.5	**2**	11.9	2	16.8	29.9	23.3	13.1	3
8 AOR10204-3	0	31.9	34.2	33.0	**3**	5.6	0	19.8	29.6	24.7	9.9	2
9 OR12133-10	7	31.6	42.1	36.9	**4**	10.5	0	28.0	37.6	32.8	10.2	1
10 POR12NCK50-1	0	28.2	40.7	34.4	**3**	13.7	1	21.1	43.9	32.5	22.8	2
LSD 0.05	*11*			*4.1*		*4.2*				*5.3*	*6.2*	
Average	3	27.8	36.4	32.0		9.7	1	24.6	36.8	30.7	13.1	2

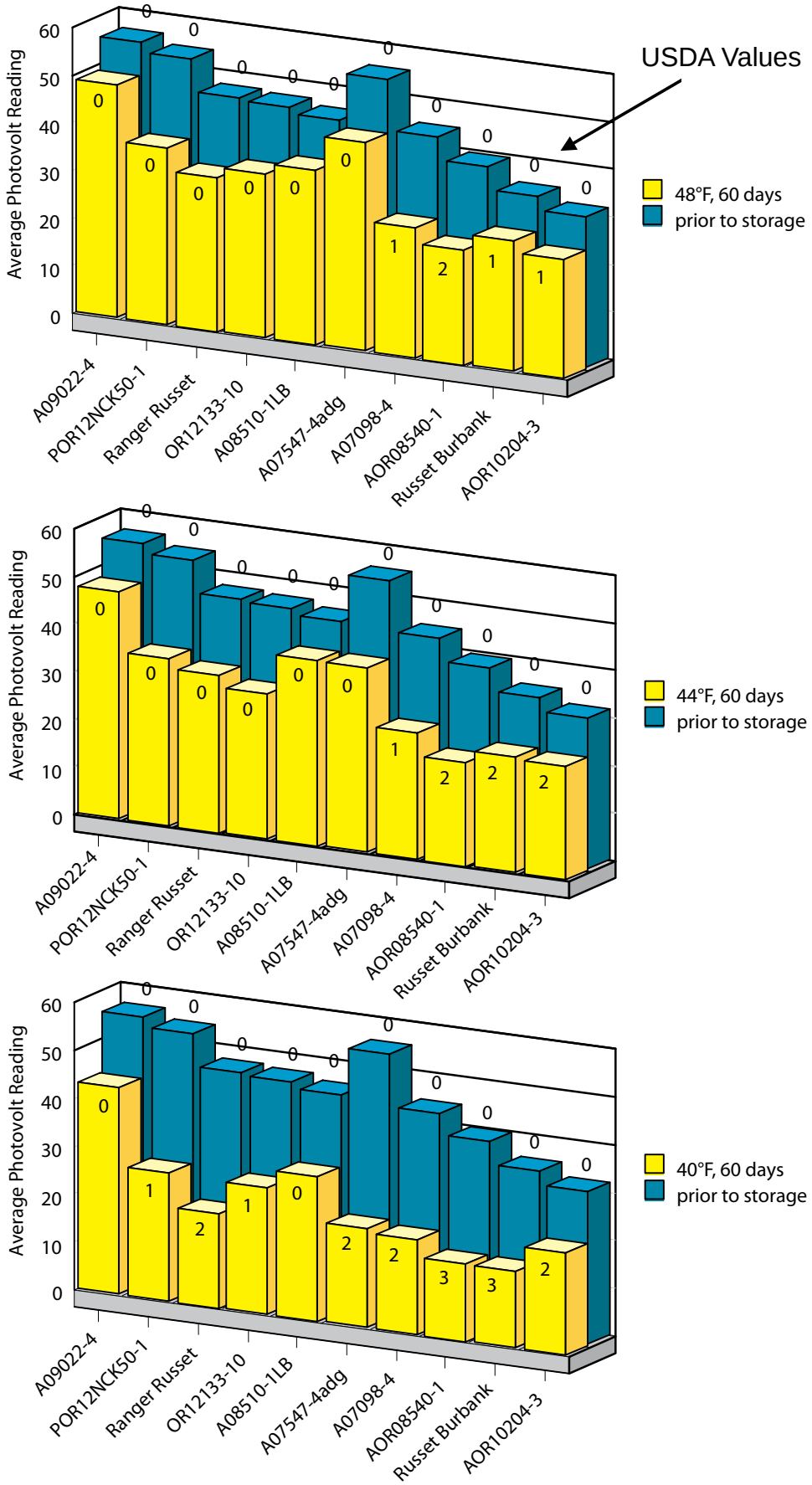
Date test performed:

Washington	Dec. 10	Nov. 2	Dec. 13
Idaho	Dec. 10	Dec. 4	Dec. 13
Oregon	Dec. 10	Dec. 10	Dec. 14

DIFF = Absolute difference between bud and stem Photovolt reading.

2018 Late Harvest Tri-State Trial

Tri-State Trial - 3 State Average of Stem End



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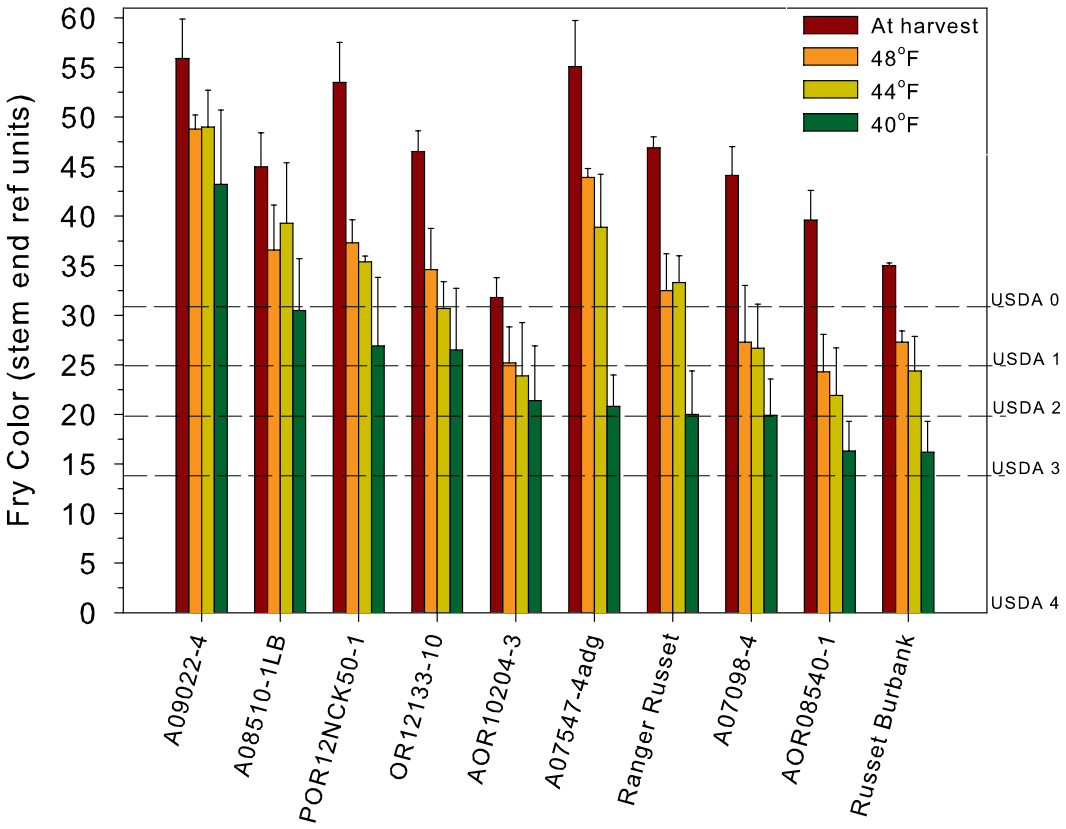
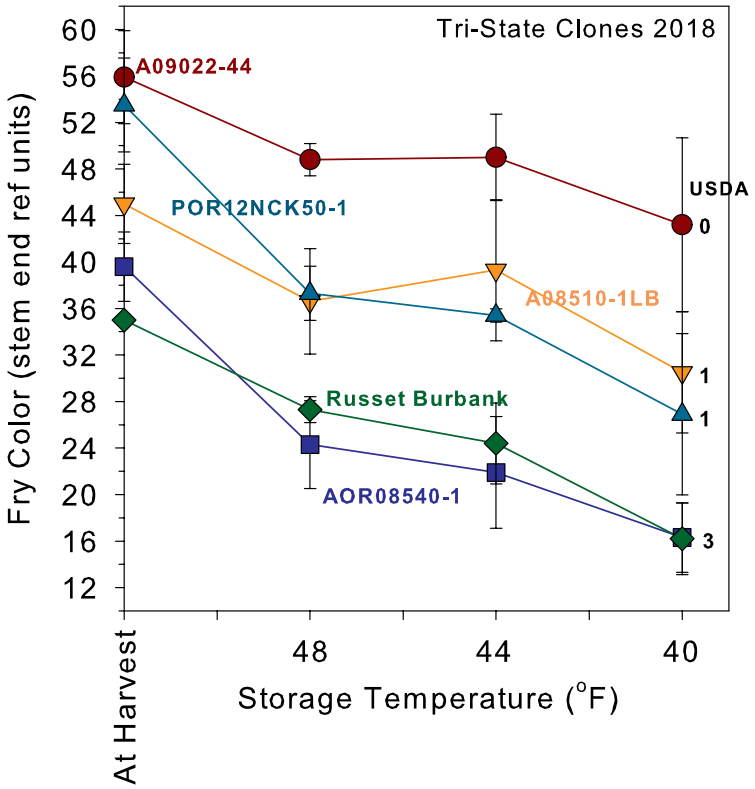
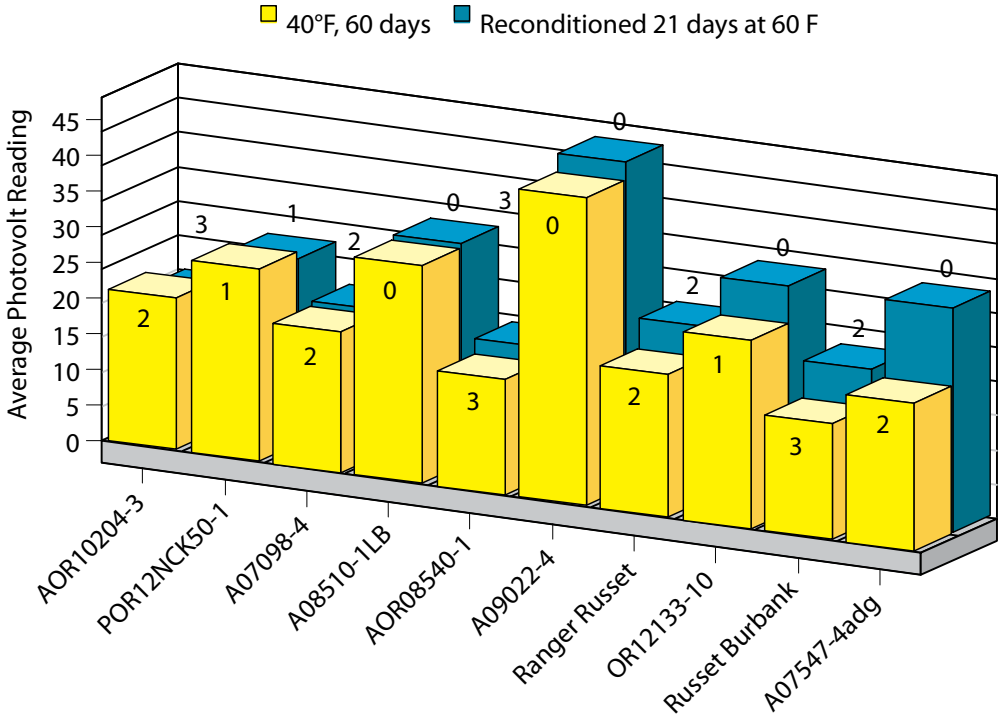


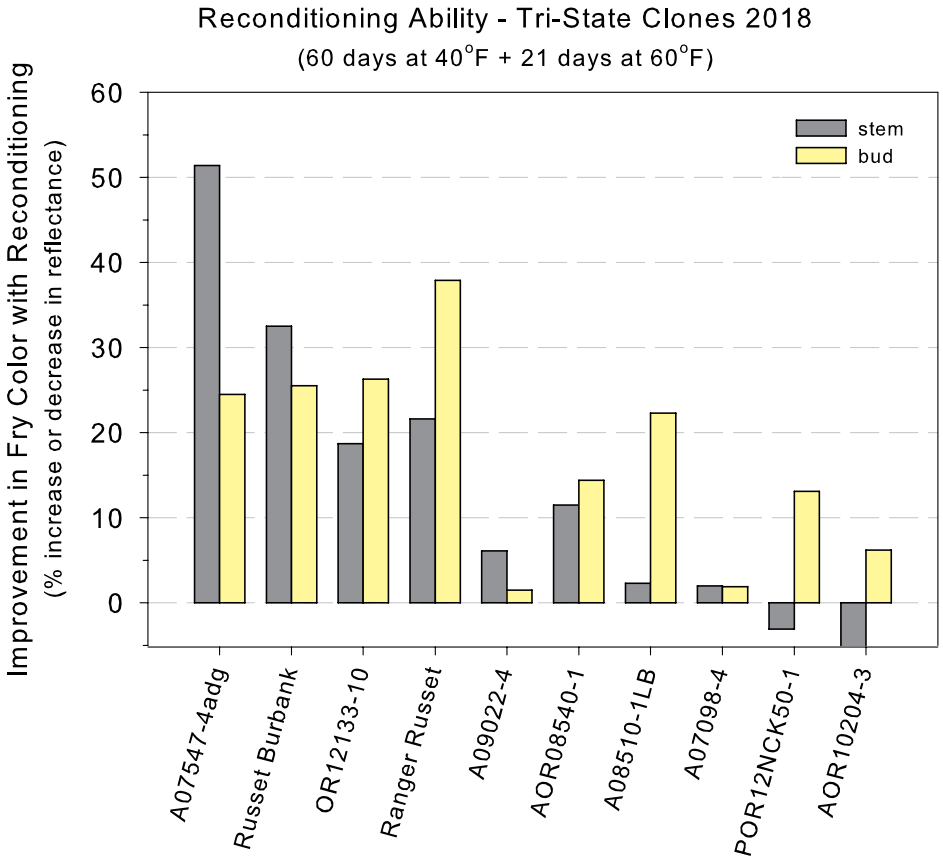


Top: At-harvest and after-storage French fry colors (stem end) of clones in the Tri-State Trial. Tubers were stored for 60 days at 48, 44, and 40°F. The clones are ranked from best to worst on fry color of the 40°F-stored tubers. High reflectance values indicate light colored fries.

Bottom: Line graph depicting the effects of storage temperature on change in French fry processing quality (stem end fry color) of the most cold sweetening resistant (A09022-4, A08510-1LB, and POR12NCK50-1) and susceptible (AOR08540-1 and Russet Burbank) clones in the Tri-State Trial. *Indicates similar performance of the clones last year.

2018 Late Harvest Tri-State Trial



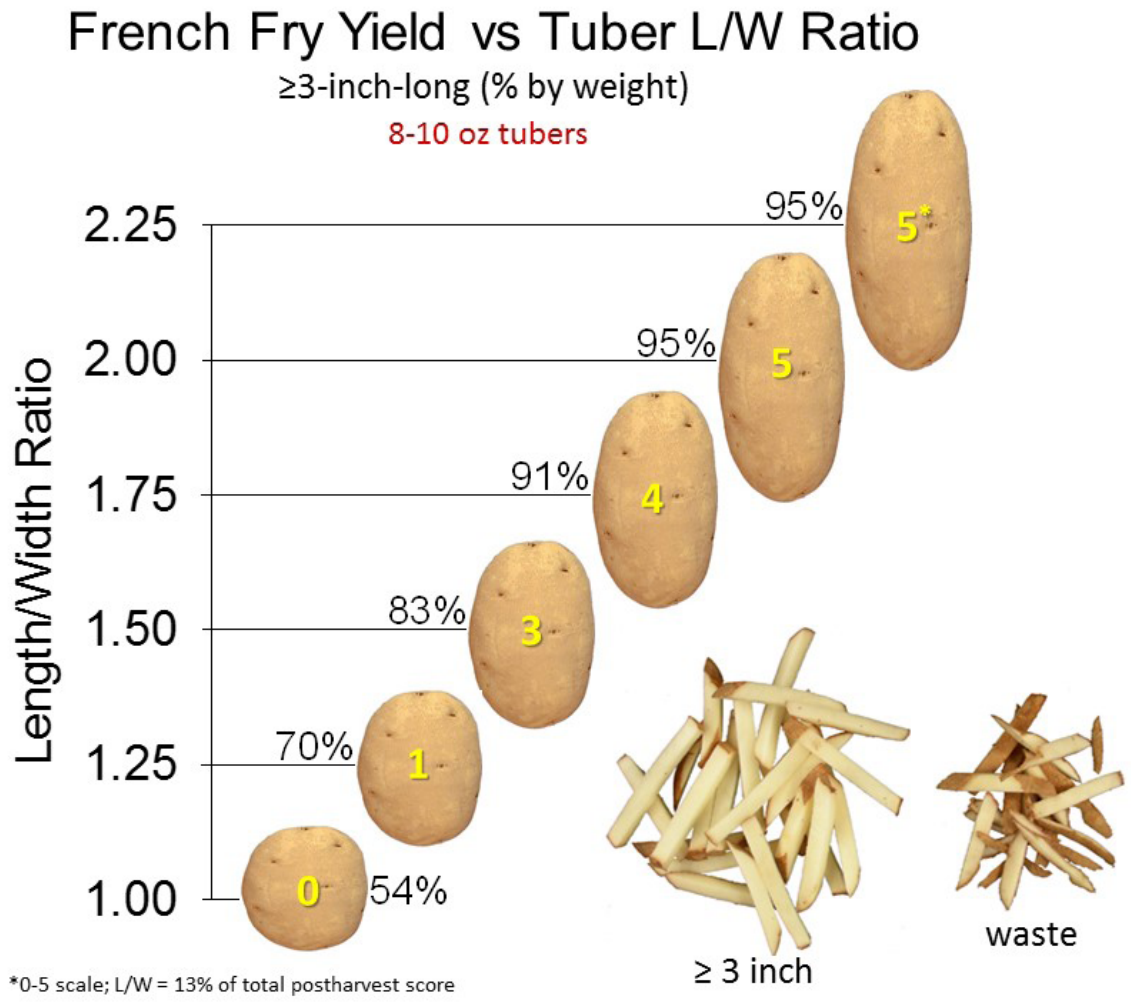


Reconditioning abilities of clones in the 2018 Tri-State Trial (3-state averages). Clones were stored at 40°F for 60 days after harvest and then reconditioned at 60°F for 21 days. **Top:** Stem end fry color before and after reconditioning. Numbers in bars indicate the USDA color rating of the stem end. **Bottom:** Percent improvement of stem and bud end fry color with reconditioning.

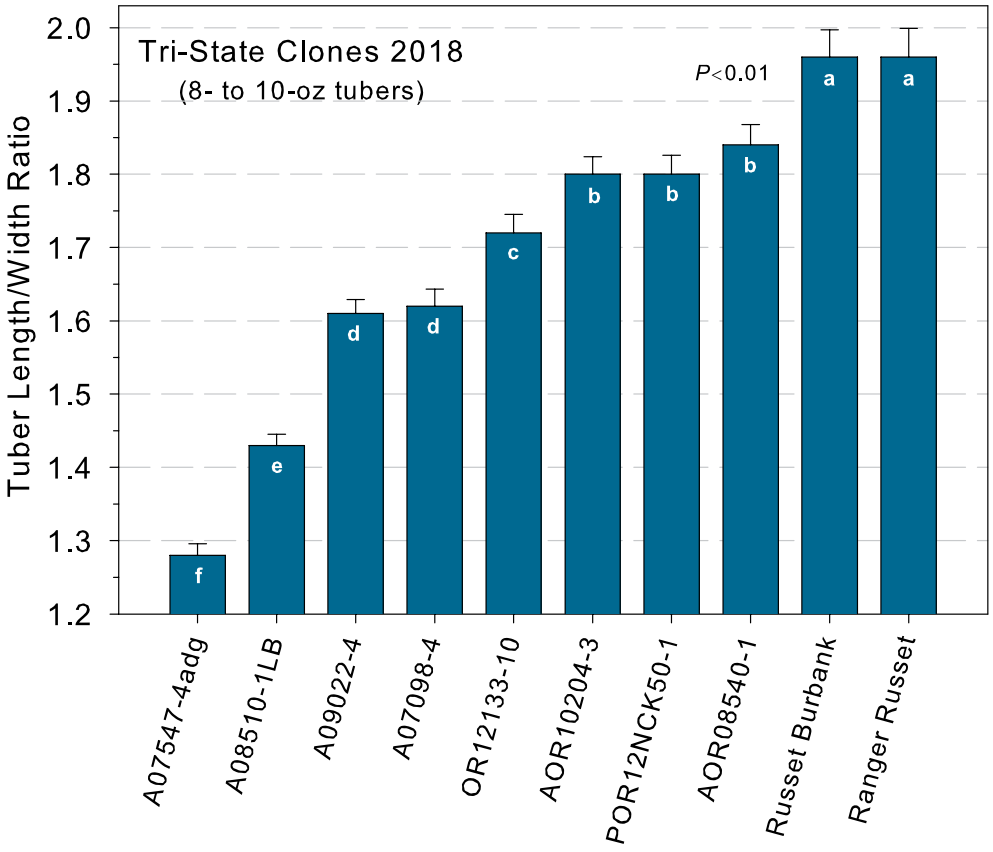
2018 Late Harvest Tri-State Trial

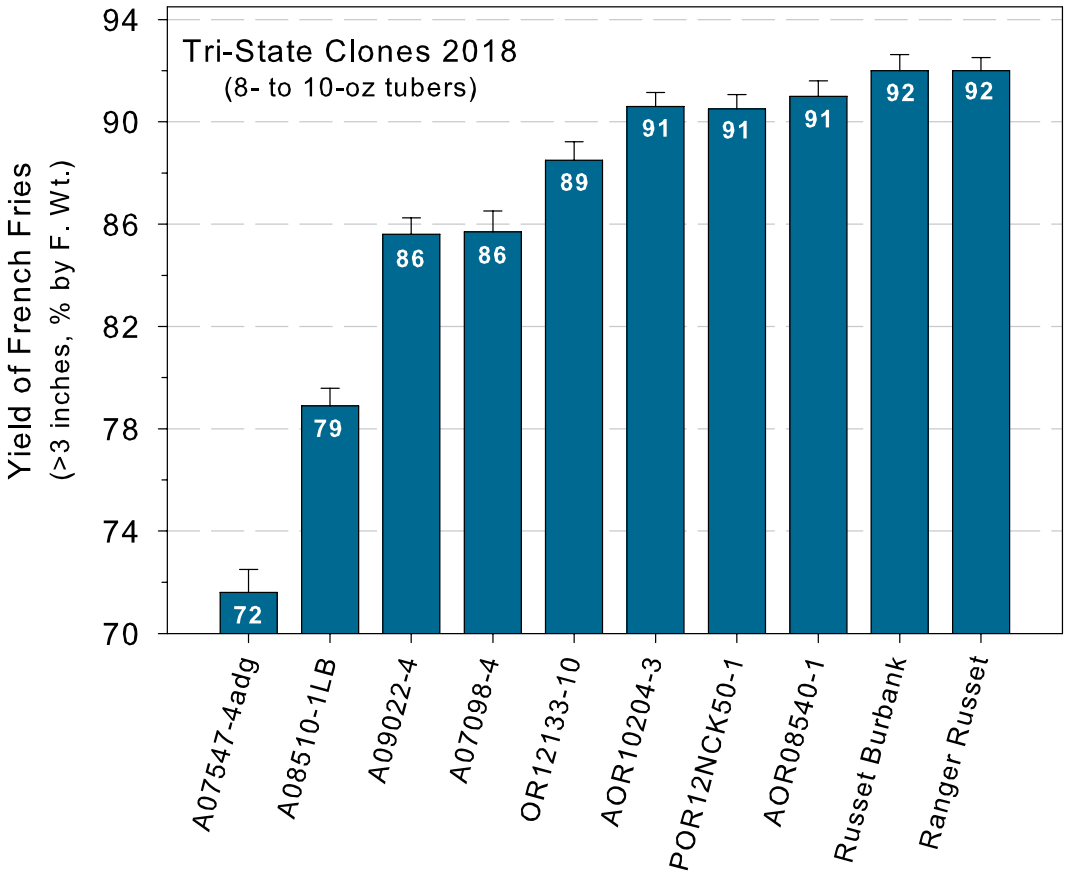
Length to Width Ratios of 8-10 oz Tubers

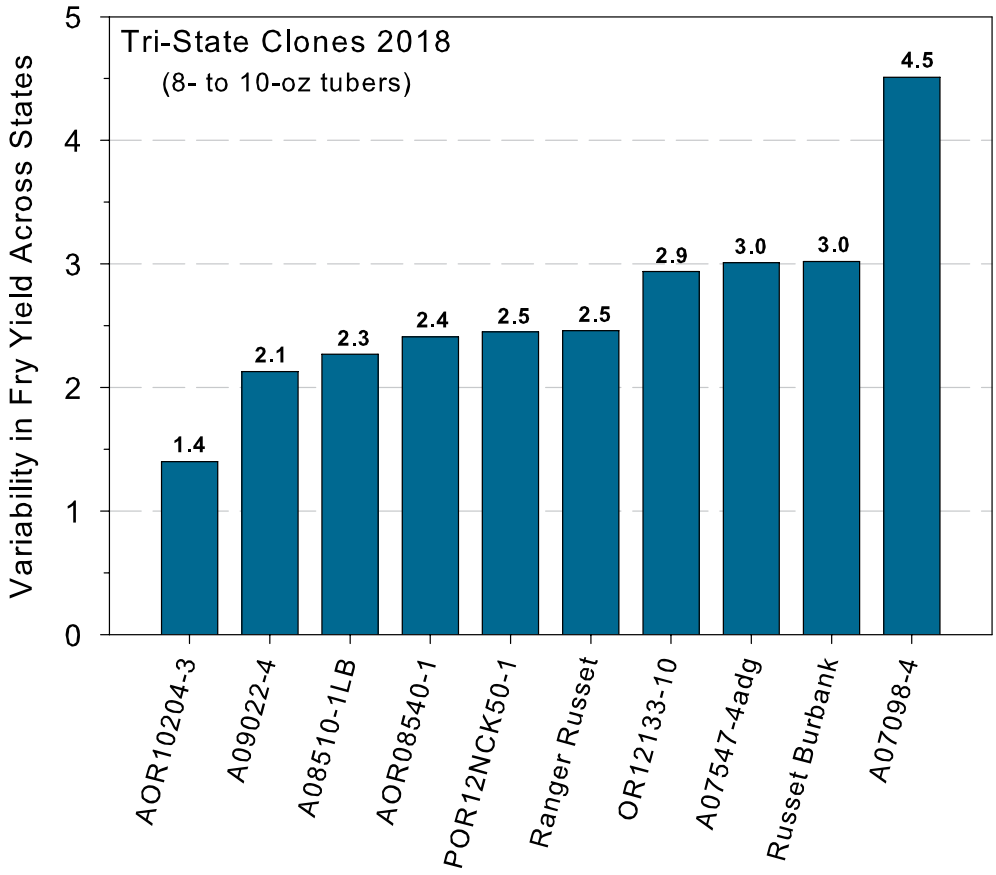
Clone	Length to width ratio WA	rtg §	ID	rtg §	OR	rtg §	3 State Avg.
1 Ranger Russet	1.72	**4**	2.24	**5**	1.93	**5**	1.96
2 Russet Burbank	1.70	**4**	2.24	**5**	1.95	**5**	1.96
3 A07098-4	1.45	**2**	1.74	**4**	1.66	**4**	1.62
4 A07547-4adg	1.22	**1**	1.36	**2**	1.27	**1**	1.28
5 A08510-1LB	1.40	**2**	1.49	**2**	1.39	**2**	1.43
6 A09022-4	1.64	**3**	1.66	**4**	1.52	**3**	1.61
7 AOR08540-1	1.70	**4**	2.01	**5**	1.81	**5**	1.84
8 AOR10204-3	1.73	**4**	1.90	**5**	1.77	**4**	1.80
9 OR12133-10	1.71	**4**	1.83	**5**	1.61	**3**	1.72
10 POR12NCK50-1	1.68	**4**	1.99	**5**	1.73	**4**	1.80
Average	1.59		1.85		1.66		1.70



2018 Late Harvest Tri-State Trial







Relative ranking of clones in the Late Season Tri-State Trial for variability in yield of French fries prepared from 8- to 10-oz tubers. Variability is expressed as the standard deviation (calculated across ID, WA and OR production sites) for the yield of fries ≥3 inches in length (% by fresh weight) from 8- to 10-oz tubers. High values reflect more variation in tuber shape and thus fry yield from state to state. For example, A07098-4 had a length to width ratio of 1.62, resulting in 86% of the tuber producing usable French fries ≥3 inches in length (page 54). However, tuber shape of this entry also varied the most across production sites (see above), resulting in fry yields ranging from 81 to 91% (86±4.5%).

Pages 53-54: Tuber length to width ratios and the associated percentage yield of fries. Bars with same letter are not significantly different (P≤0.01).

2018 Early Harvest Regional Trial

Location: WSU Research Center – Othello, WA
Planting Date: April 5 Vine Kill Date: July 20
Harvest Date: August 1 Days Grown: 106

Regional trials are conducted throughout the western region of the United States, including Washington. Entries in the Regional Trial are chosen by a coordinating committee and are grown for both early (Early Regional) and full (Late Regional) season harvest. The 2018 early harvest trial compared 4 local reference varieties to 18 new clones on the WSU Othello Research Station. The following is a summary of the Washington field and post-harvest results. See also: grading comments and merit scores near front of book.

Fresh Market Standout(s): AO06191-1

Standcounts

- **40 Day**
  Slow emergence: AOR07821-1 (44%) and AO06191-1 (2%).
  Best emergence: Ranger Russet and A071012-4BF (93%).

- **50 Day**
  Slow emergence: All entries were greater than 90% emerged by 50 days.

Plant and Tuber Growth & Development

- **Above Ground Stem Number Per Plant**
  Most: COTX05095-2Ru/Y (3.8) and AOR07781-5 (3.7).
  Least: AO06191-1 (1.1) and A08433-4VR (1.4).

- **Average Tuber Number Per Plant**
  Most: CO09205-2RU (11.1) and COTX05095-2Ru/Y (9.8).
  Least: AO06191-1 (6.3) and Shepody (5.1).

- **Average Tuber Size (oz)**
  Largest: Shepody (12.6), A10021-5 (8.6), and Russet Burbank (8.5).
  Smallest: CO09205-2RU and CO09036-2RU (4.9).

- **Undersized Tubers (< 4oz)**
  Most: CO09036-2RU and CO09205-2RU.
  Fewest: Shepody, A08433-4VR, and A10021-5TE.

Yield and Economic Data

- **Total Yield and U.S. #1 Yield**
  Highest: Russet Burbank had the highest total yield (633 CWT/A) and the U.S. #1 yield (534 CWT/A). Shepody had the second highest total yield (621 CWT/A) and second highest U.S. #1 yield (529 CWT/A).

  Lowest: A06030-23 had the lowest total yield (391 CWT/A) and CO09036-2RU had the lowest U.S. #1 yield (305 CWT/A). CO09036-2RU had the second lowest total yield (434 CWT/A); A06030-23 had the second lowest U.S. #1 yield (317 CWT/A).

- **% U.S. #1's (greater than 4 oz)**
  Highest: AO06191-1 (91%) and A07769-4 (90%).
  Lowest: CO09036-2RU (69%) and CO09205-2RU (71%).

- **Carton Yield (100 to 50 Count (7 to 18 oz U.S. #1 Tubers))**
  Highest: Russet Burbank (21.8 Tons/A) and A10021-5TE (20.7 Tons/A).
  Lowest: CO09205-2RU (5.2 Tons/A).

- **Gross Return ($/acre)**
  Fresh Market Highest: Russet Burbank and A071012-4BF.
  Fresh Market Lowest: CO09036-2RU, CO09205-2RU, and A06030-23.
  Process Market Highest: Russet Burbank and A071012-4BF.

Tuber Defects (30 tuber sample of 8-12 oz tubers)

- **External Defects**
  Notable Defects: A10021-5TE had 7% growth cracks, and CO08155-2RU/Y had 5% growth cracks. Most entries had little to no external defects.

- **Internal Defects**
  Notable Defects: CO08231-1RU had 7% internal brown spots, while CO08155-2RU/Y had 5% IBS; all other entries were free of internal defects.

- **Bruise**
  Highest Blackspot: Ranger Russet (15%), A06030-23 (13%).
  Highest Shatter: A07769-4 (43%), COTX05095-2Ru/Y (27%), and A071012-4BF (26%).

2018 Early Harvest Regional Trial

Summaries

ENTRY	TOTAL YIELD			US # 1's* > 4 oz	US # 2's* > 4 oz	Culls* & < 4 oz	CARTON YIELD 100-50 count (US 1's 7-18 oz)		PROCESS YIELD US 1's and 2's > 6 oz	
	CWT/A		Tons/A	% of Total Yield			% of Total Yield	Tons/A	% of Total Yield	Tons/A
Ranger Russet	491	*EFG*	24.6	87	3	10	69	16.9	76	18.8
Russet Burbank	633	*A*	31.7	84	3	13	69	21.8	78	24.6
Russet Norkotah	511	*CDEFG*	25.5	88	2	10	59	15.2	71	18.2
Shepody	621	*AB*	31.0	85	5	10	54	16.7	87	27.2
A06030-23	391	*H*	19.6	81	3	16	44	8.7	59	11.4
A07061-6	517	*CDEFG*	25.8	81	1	18	35	9.0	48	12.5
A071012-4BF	543	*BCDEF*	27.2	88	4	8	68	18.6	80	21.8
A07769-4	554	*ABCDEF*	27.7	90	3	8	69	19.2	83	23.0
A08433-4VR	570	*ABCDE*	28.5	88	4	8	68	19.3	80	22.8
A10021-5TE	575	*ABCDE*	28.8	85	3	12	72	20.7	78	22.5
AO02183-2	537	*CDEF*	26.8	84	2	14	49	13.2	60	16.8
AO06191-1	494	*EFG*	24.7	92	1	7	73	18.0	82	20.3
AOR06576-1	586	*ABC*	29.3	86	2	13	54	15.8	65	19.1
AOR07781-5	529	*CDEF*	26.4	86	4	10	64	16.8	75	20.0
AOR07821-1	521	*CDEF*	26.0	83	1	16	47	12.4	58	15.1
AOTX05043-1Ru	482	*FG*	24.1	79	4	17	59	14.2	66	15.8
CO08155-2RU/Y	543	*BCDEF*	27.2	77	3	20	35	9.6	47	12.7
CO08231-1RU	498	*DEFG*	24.9	80	2	18	44	10.9	54	13.6
CO09036-2RU	434	*GH*	21.7	69	2	29	27	5.8	41	9.2
CO09076-3RU	618	*AB*	30.9	80	6	14	58	18.0	70	21.8
CO09205-2RU	521	*CDEF*	26.1	71	2	28	20	5.2	37	9.7
COTX05095-2Ru/Y	581	*ABCD*	29.1	81	2	17	52	15.1	61	17.7

ENTRY	US # 1 YIELD						> 4 oz SPECIFIC GRAVITY	INTERNAL DEFECTS (%) (8-12 oz tubers)		
	> 4 oz CWT/A	STATS**	> 4 oz Tons/A	4-7 oz*	7-14 oz*	> 14 oz*		% HH	% BC	% IBS
				%						
Ranger Russet	428	*BCDE*	21.4	23	63	14	1.083	0	0	0
Russet Burbank	534	*A*	26.7	22	64	13	1.076	0	0	0
Russet Norkotah	452	*ABCDE*	22.6	34	58	8	1.075	0	0	0
Shepody	529	*A*	26.5	6	37	57	1.072	0	0	0
A06030-23	317	*FG*	15.9	47	53	0	1.085	0	0	0
A07061-6	422	*BCDE*	21.1	59	41	0	1.073	0	0	0
A071012-4BF	478	*ABC*	23.9	20	64	16	1.083	0	0	0
A07769-4	498	*AB*	24.9	19	63	18	1.077	0	0	0
A08433-4VR	504	*AB*	25.2	24	63	12	1.072	0	0	0
A10021-5TE	488	*ABC*	24.4	20	62	18	1.075	0	0	0
AO02183-2	457	*ABCDE*	22.9	44	55	1	1.077	0	0	0
AO06191-1	455	*ABCDE*	22.7	21	66	13	1.079	0	0	0
AOR06576-1	501	*AB*	25.1	39	57	4	1.073	0	0	0
AOR07781-5	457	*ABCDE*	22.8	28	60	12	1.084	0	0	0
AOR07821-1	433	*BCDE*	21.7	43	52	5	1.085	0	0	0
AOTX05043-1Ru	380	*DEFG*	19.0	34	60	6	1.079	0	0	0
CO08155-2RU/Y	417	*BCDE*	20.9	62	37	1	1.082	0	0	5
CO08231-1RU	403	*CDEF*	20.1	47	49	3	1.073	0	0	7
CO09036-2RU	305	*G*	15.2	64	36	0	1.075	0	0	0
CO09076-3RU	498	*AB*	24.9	25	52	23	1.072	0	0	0
CO09205-2RU	370	*EFG*	18.5	72	28	0	1.070	0	0	0
COTX05095-2Ru/Y	473	*ABCD*	23.6	39	58	3	1.076	0	0	0

* Percent values may not total 100% due to rounding

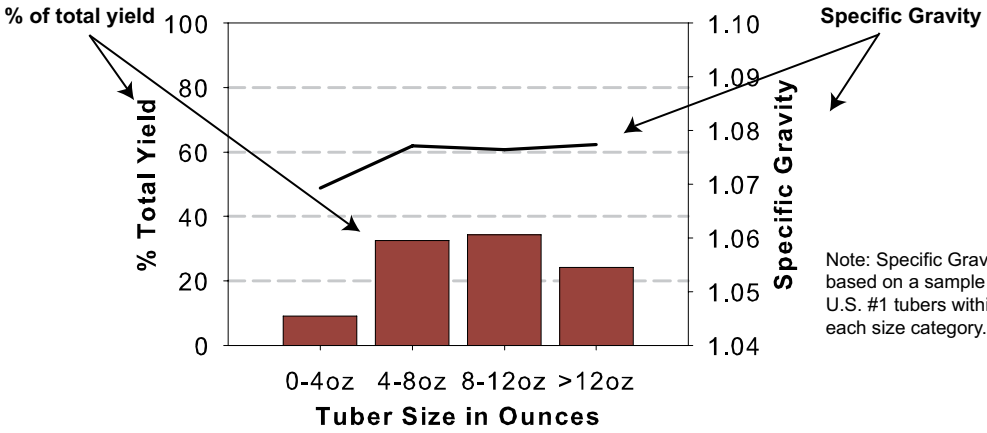
ENTRY	30 DAY STAND % Emerged	40 DAY STAND % Emerged	50 DAY STAND % Emerged	STEMS PER PLANT Above Ground	AVERAGE TUBER WEIGHT Ounces	AVERAGE TUBER NUMBER Tubers/Plant	SKIN SET 1 = Poor 5 = Good	TUBER SHAPE 1 = Round 5 = Long	BRUISE (%) (8-12 oz tubers) BLACKSPOT	BRUISE (%) (8-12 oz tubers) SHATTER
Ranger Russet	0	93	100	2.1	8.1	6.3	3.3	3.3	15	5
Russet Burbank	0	89	100	2.0	8.5	7.8	3.0	3.0	3	17
Russet Norkotah	0	84	100	2.5	7.3	7.4	3.7	4.0	10	3
Shepody	0	82	100	1.6	12.6	5.1	3.3	3.0	3	0
A06030-23	0	51	100	2.4	6.0	6.8	4.0	2.0	13	3
A07061-6	0	73	100	2.5	5.8	9.3	4.0	2.0	7	0
A071012-4BF	0	93	98	2.3	8.2	6.9	4.0	2.5	4	26
A07769-4	0	67	93	2.7	8.2	7.0	2.7	2.7	3	43
A08433-4VR	0	49	98	1.4	8.3	7.1	4.0	2.7	5	5
A10021-5TE	0	56	100	2.4	8.6	7.0	4.0	4.0	3	7
AO02183-2	0	62	98	2.2	6.4	8.7	2.7	4.0	0	10
AO06191-1	0	2	98	1.1	8.3	6.3	2.7	4.0	3	10
AOR06576-1	0	69	96	2.6	6.6	9.3	3.0	3.0	3	3
AOR07781-5	0	58	96	3.7	7.6	7.3	3.0	2.8	3	10
AOR07821-1	0	44	98	2.9	6.1	8.8	4.0	2.7	0	17
AOTX05043-1Ru	0	49	96	2.6	6.7	7.5	3.0	3.0	3	3
CO08155-2RU/Y	0	56	93	2.9	5.8	9.7	4.0	4.0	0	25
CO08231-1RU	0	67	96	2.7	5.7	9.0	3.0	2.5	7	20
CO09036-2RU	0	78	100	2.9	4.9	9.1	4.0	4.0	0	7
CO09076-3RU	0	73	100	3.2	7.7	8.3	4.0	3.3	3	20
CO09205-2RU	0	69	98	3.6	4.9	11.1	4.0	3.0	0	7
COTX05095-2Ru/Y	0	84	98	3.8	6.1	9.8	4.0	2.5	0	27

Mark Pavek welcomes guests to the 2018 Othello Field Day.

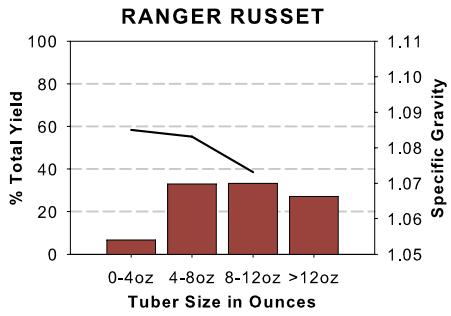
2018 Early Harvest Regional Trial

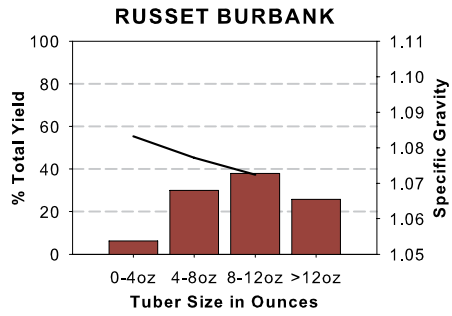
Tuber Yield and Specific Gravity Distributions

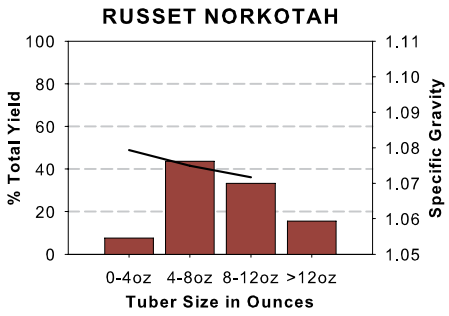
12 inch In-Row Spacing

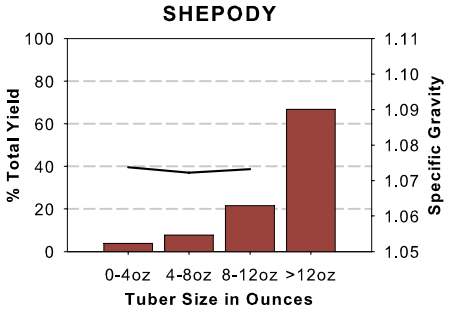


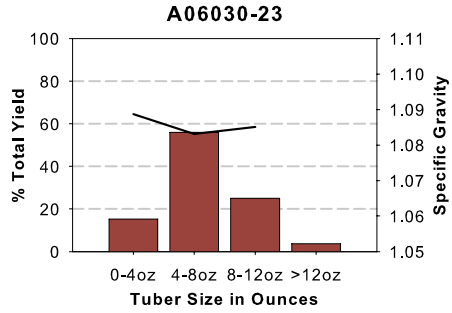
Note: Specific Gravity is based on a sample of U.S. #1 tubers within each size category.

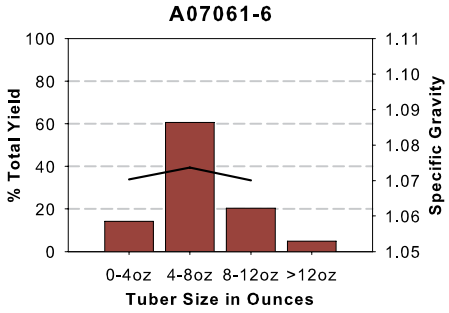


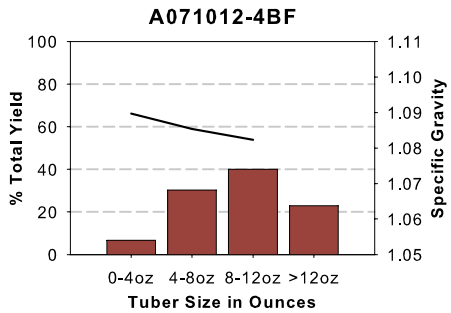


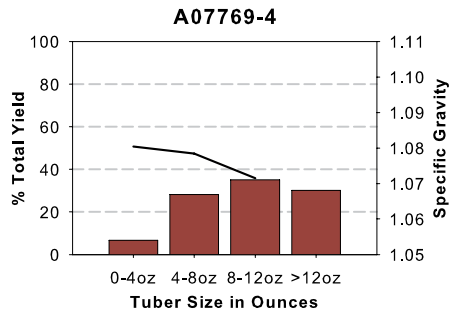


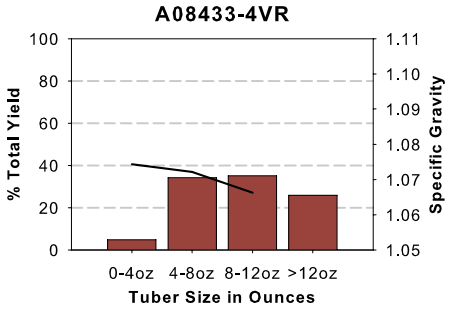


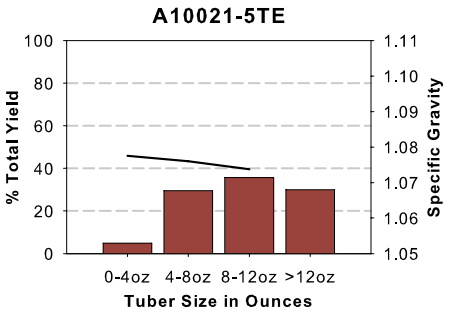


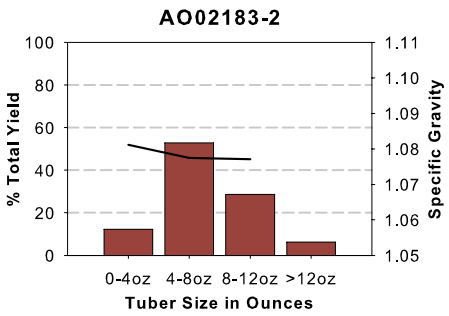









A10021-5TE
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


AO02183-2
% Total Yield
Specific Gravity
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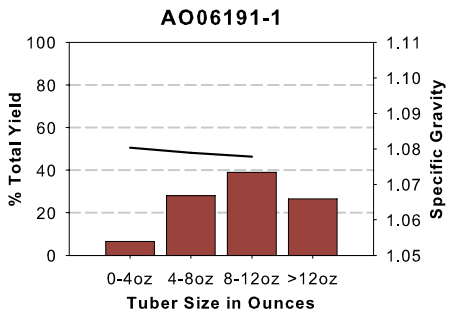
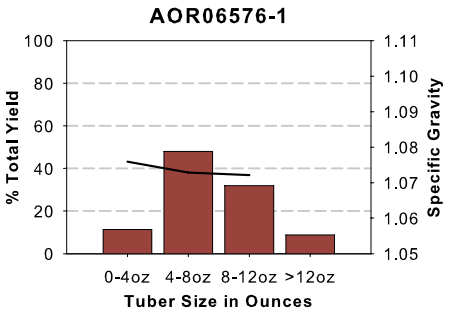
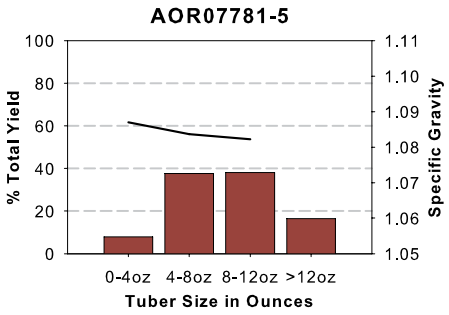
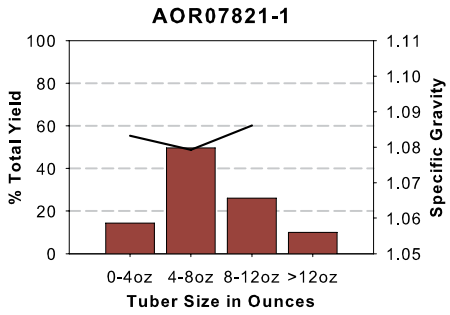
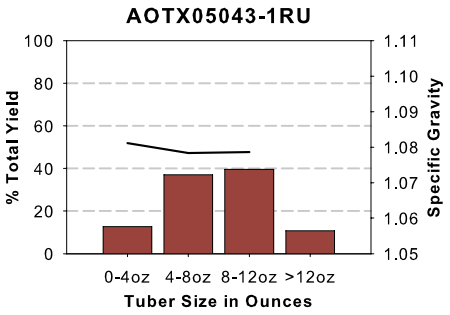
Tuber Size in Ounces

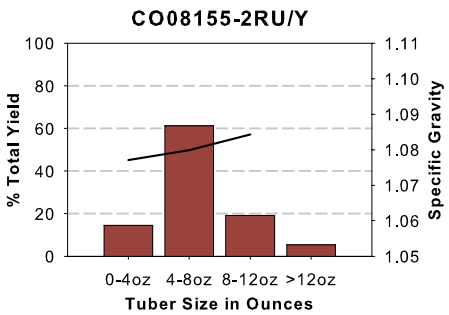

AO06191-1
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

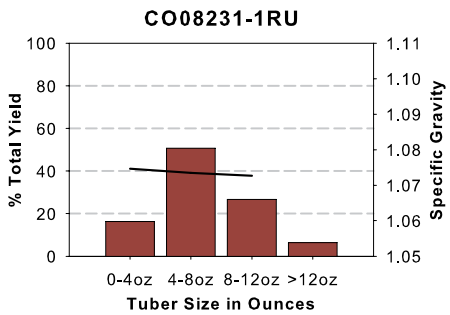

AOR06576-1
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

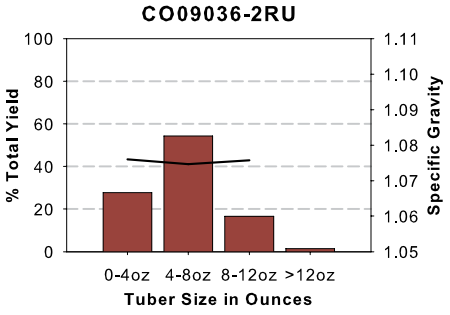

AOR07781-5
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

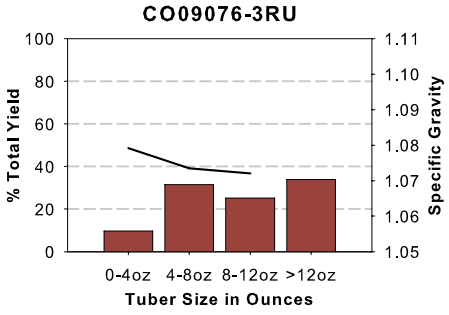

AOR07821-1
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

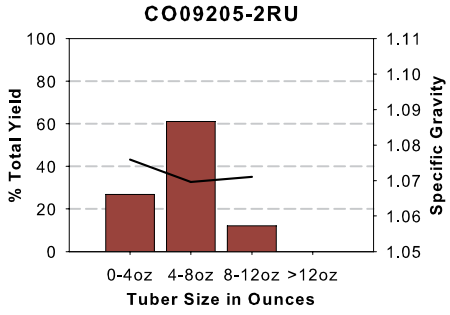

AOTX05043-1RU
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

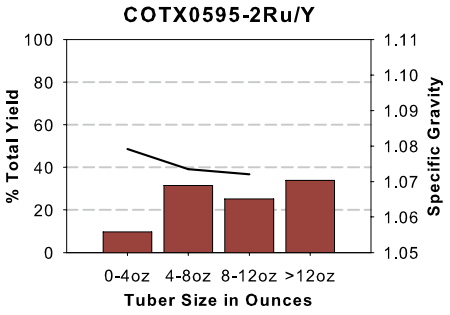

CO08155-2RU/Y
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


CO08231-1RU
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


CO09036-2RU
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


CO09076-3RU
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


CO09205-2RU
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


COTX0595-2Ru/Y
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

2018 Early Harvest Regional Trial

Tubers

Ranger Russet

A06030-23

A071012-4BF

A10021-5TE

Russet Burbank

A07061-6

A08433-4VR

AOR06576-1

Russet Norkotah

AO02183-2

AOR07781-5

AOR07821-1

Shepody

AO06191-1

A07769-4

AOTX05043-1Ru

CO09036-2RU

CO09076-3RU

CO09205-2RU

AOTX05043-1Ru

CO08155-2RU/Y

CO08231-1RU

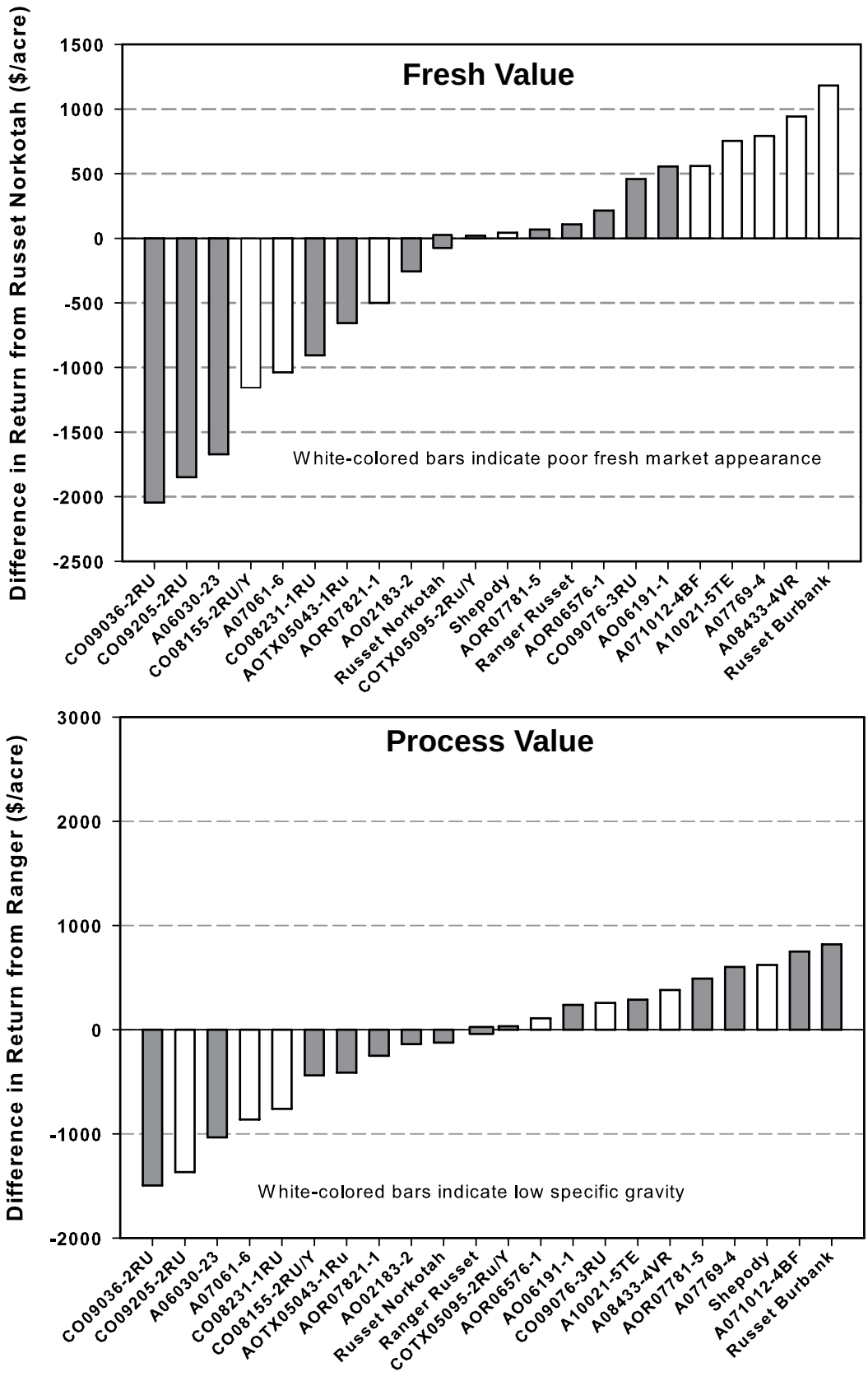


Figure 1 (Top). Difference in gross return per acre (Fresh Market) from Russet Norkotah calculated by subtracting the gross return of Russet Norkotah from the gross return of the particular entry. Entries with the white-colored bars may not appeal to fresh market consumers due to the undesirable shape or appearance. **Figure 2 (Bottom).** Difference in gross return per acre (Process Market) from Ranger Russet calculated by subtracting the gross return of Ranger Russet from the gross return of the particular entry.

2018 Late Harvest Regional Trial

Location: WSU Research Center – Othello, WA
Planting Date: April 3 Vine Kill Date: Sept 4
Harvest Date: Sept 10 Days Grown: 154

Regional trials are conducted throughout the western region of the United States, including Washington. Entries in the Regional Trial are chosen by a coordinating committee and are grown for both early (Early Regional) and full (Late Regional) season harvest. This year's trial included 3 local reference varieties and 17 new clones. The following is a summary of the Washington field and post harvest results. For additional information, see the grading comments and merit scores near front of book.

Fresh Market Standout(s):
Process Market Standout(s):

Standcounts

- **30 Day**
  Slow emergence: A08433-4VR and AO06191-1 (0%).
  Best emergence: Russet Burbank (64%) and A071012-4BF (57).

- **40 Day**
  Slow emergence: AO06191-1 (81%) and AOR07821-1 (85%).
  Best emergence: CO09076-3RU (100%).

- **50 Day**
  Best emergence: All entries were at least 93% emerged at 50 DAP.

Plant and Tuber Growth & Development

- **Above Ground Stem Number Per Plant**
  Most: AOR07781-5, CO09036-2RU, and COTX05095-2Ru/Y (3.8).
  Least: AO06191-1 (1.3) and A08433-4VR (1.4).

- **Average Tuber Number Per Plant**
  Most: CO09036-2RU (12.0) and CO08231-1RU (11.4).
  Least: AO06191-1 (5.9) and A071012-4BF (6.9).

- **Average Tuber Size (oz)**
  Largest: A071012-4BF (14.1), A07769-4 (13.3), and A08433-4VR (12.0).
  Smallest: CO09205-2RU (6.8), COTX05095-2Ru/Y (6.9).

- **Undersized Tubers (< 4 oz)**
  Most: CO09205-2RU, COTX05095-2Ru/Y, and CO09036-2RU.
  Least: A071012-4BF, A07769-4, and A08433-4VR.

Yield and Economic Data

- **Total and U.S. #1 Yield**
  Highest: A071012-4BF had the highest total yield (1017 CWT/A) and AO02183-2 had the highest U.S. # 1 yield (900 CWT/A). A07061-6 had the second highest total yield (1001 CWT/A) and A07769-4 had the second highest U.S. #1 yield (898 CWT/A).
  Lowest: AOTX05043-1Ru had the lowest total yield (712 CWT/A) and lowest U.S. #1 yield (606 CWT/A).

- **% U.S. #1 Yield Greater Than 4oz.**
  Highest: AO02183-2 (92%) and A08433-4VR (91%).
  Lowest: A10021-5TE (77%), CO09076-3RU (81%).

- **Carton Yield (100 to 50 Count (7 to 18 oz US #1 Tubers))**
  Highest: A07061-6 (33.7 Tons/A), AO02183-2 (32.0 Tons/A).
  Lowest: AO06191-1 (20.6 Tons/A), CO09205-2RU (20.6 Tons/A).

- **Gross Return ($/acre)**
  Fresh Market Highest: AO02183-2, A071012-4BF, and A07769-4.
  Fresh Market Lowest: CO09205-2RU, AOTX05043-1Ru, and Russet Norkotah.
  Process Market Highest: AO02183-2, A071012-4BF, and A07769-4.
  Process Market Lowest: CO09205-2RU, AOTX05043-1Ru, and Russet Norkotah.

Tuber Defects (40 tuber sample of 8-12 oz tubers)

- **External Defects**
  Notable Defects: A10021-5TE had 7% growth cracks and 6 % green tubers. A07769-4 had 6% green tubers, and A071012-4BF had 7% green tubers, all other entries had little to no external defects.

- **Internal Defects**
  Notable Defects: Most entries were relatively free of internal defects.

- **Bruise**
  Highest Blackspot: Ranger Russet (60%), Russet Burbank (48%) and A071012-4BF (33%).
  Lowest Blackspot: CO09036-2RU (5%) and Russet Norkotah (25%).
  Highest Shatter: A07769-4 (90%) and AOR07781-5 (68%).
  Lowest Shatter: CO09036-2RU (5%) and Russet Norkotah (25%).

2018 Late Harvest Regional Trial

Postharvest Information

The 2018 trial evaluated thirteen numbered clones along with Ranger Russet and Russet Burbank as check cultivars from each growing location. When averaged across states, all entries received higher overall postharvest scores than Russet Burbank (RB) (Table pg 68). An asterisk in the summary below indicates similar performance and/or ranking in trials from previous years.

- **Overall Postharvest Rating**
  Highest scoring: AO02183-2, AOR07781-5, A10021-5TE*, CO09036-2RU
  Lowest scoring: RB*, A08433-4VR*, A071012-4BF

- **Low Temperature Sweetening**
  Most resistant: AO02183-2, A10021-5TE*, CO09036-2RU, A07769-4*, AOR07781-5
  Most susceptible: RB*, A071012-4BF, A08433-4VR*, RR*

- **Tuber asparagine content** (WA Regional Trial samples)
  Highest concentration: CO09205-2RU, A07061-6*, RB*
  Lowest concentration: A08433-4VR*, AO02183-2

- **Taste Panel**
  Highest rated: A07769-4, A10021-5TE, AO02183-2, AOR07781-5
  Lowest rated: RB*, CO09205-2RU

- **Blackspot Bruise Susceptibility**
  Most resistant: CO08155-2RU/Y*, CO09205-2RU, AOR07781-5*
  Most susceptible: RR*, A071012-4BF*

- **Variability in Tuber Shape & Fry Yield (8- to 10-oz tubers)**
  Lowest L/W: A08433-4VR, A07061-6*, A07769-4
  Highest L/W: A10021-5TE*, AO02183-2, CO09205-2RU, RR*, RB*
  Least variable: CO08155-2RU/Y*, CO09205-2RU, CO09036-2RU, RB*
  Most variable: A07061-6

Details

- AO02183-2, AOR07781-5, A10021-5TE*, and CO09036-2RU were the highest rated entries, accumulating an average of 34.0, 31.3, 30.4, and 29.9 of 38 possible points, respectively. Overall scores were generally higher in 2018 compared with last year.

- AO02183-2, A10021-5TE*, CO09036-2RU, A07769-4*, and AOR07781-5 were resistant to cold sweetening, producing USDA 0-1 fries (stem end) when stored for 60 days at 40°F averaged across locations. RB*, A071012-4BF, A08433-4VR*, and RR* were susceptible to LTS, producing USDA 2-3 fries after 60 days at 40°F.

- A08433-4VR* and AO02183-2 had 48 and 38% lower concentrations ($P<0.05$) of asparagine (asn) (acrylamide precursor) than RB, respectively. A08433-4VR also averaged 42% lower asparagine than RB in the 2017 trials. However, A08433-4VR was susceptible to buildup in reducing sugars with decreasing storage temperature and would therefore probably not have a low acrylamide forming phenotype. By contrast, AO02183-2 was highly resistant to cold sweetening, which when coupled with its low asn phenotype would likely limit acrylamide formation during processing. Low asparagine and reducing sugars are indicators of low acrylamide forming potential.

- RB*, A08433-4VR*, and A071012-4BF scored lowest on overall postharvest performance with 18.7, 21.4, and 21.5 of 38 possible points, respectively.

- CO09205-2RU, A07061-6*, and RB* had gravities of 1.071, 1.077, and 1.078 when averaged across states (too low for processing contracts). Average gravities of the nine remaining entries ranged from 1.080-1.097. Seven of thirteen entries from OR had gravities ≤1.079.

- A07769-4, A10021-5TE, AO02183-2, and AOR07781-5 were the favorites in the French fry taste panels, averaging 3.7/5 across growing locations (5 is best). RB* and CO09205-2RU were the lowest scoring clones (avg=3.0/5). However, the narrow range of taste panel scores (3.0-3.7) indicates that panelists rated all entries favorably for French fry culinary quality.

- On average, tubers grown in WA produced the lightest fry colors at harvest. The Regional entries averaged 104 and 100% of their at-harvest process quality (stem end fry color) when stored at 48 and 44°F for 60 days, respectively.

- Uniformity of fry color (bud to stem end fry color difference) at harvest was an issue this year with 8/15 clones from WA, 10/15 clones from ID, and 14/15 clones from OR rated unacceptable for fry color uniformity. Moreover, fry color uniformity got worse for most WA entries stored at 48 and 44°F but improved (on average) for entries grown in ID and OR. AO02183-2 and AO06191-1 varied the most in ability to maintain process quality during storage for 60 days at 44°F across production sites.

- AOR07781-5, AO02183-2, A08433-4VR*, and RR showed the greatest improvement in stem end fry color when reconditioned at 60°F following storage for 60 days at 40°F. Reconditioning tubers of CO08155-2RU/Y*, CO09205-2RU, A10021-5TE, and CO09036-2RU had little effect on change in stem end fry color. Differences between bud and stem end fry color following reconditioning were highest in CO09205-2RU, CO09036-2RU, RB*, and A071012-4BF, reflecting less improvement of stem vs bud end fry color and indicating that these clones may be more susceptible to sugar ends.

- CO08155-2RU/Y*, CO09205-2RU, and AOR07781-5* were resistant to blackspot, averaging 14% bruise (stem end) in the controlled impact study (3-state average). These entries also scored lowest in bruise severity, averaging 1.4/5 (1= no bruise; 5= 100% of impact area is dark). RR* and A071012-4BF* were highly susceptible averaging 94% bruise. Bruise severity was also greatest in these two entries (average 3.4/5).

- ID-grown tubers (8-10 oz) had the highest L/W ratios (1.94) compared with those grown in OR (1.73) and WA (1.71). A08433-4VR, A07061-6*, and A07769-4 had the lowest L/W ratios (avg. 1.60), reflecting a rounder tuber shape phenotype. A10021-5TE*, AO02183-2, CO09205-2RU, RR*, and RB* had the highest L/W ratios (1.93-2.06). A07061-6 showed the greatest variation in L/W ratios of 8- to 10-oz tubers across production sites. By contrast, the L/W ratios of CO08155-2RU/Y*, CO09205-2RU, and CO09036-2RU, RB* were least affected by growing location.

- On average, 87% of AOR07781-5*, A07061-6*, CO09205-2RU, and RR tubers sprouted with sprout lengths ranging from 0.5 to 1 inch during 60 days of storage at 48°F, indicating relatively short dormancy. By contrast, sprouting of AO06191-1, AOR07821-1, and AOTX5043-1RU only averaged 21% (0.1-inch-long sprouts). RB tubers did not sprout.

- In longer term (7-month) storage studies, A07061-6*, A071012-4BF, and AOR07781-5 had relatively short dormancy, producing sprouts averaging 1.3, 1.3, and 1.1 inches in length, respectively, after 7 months of storage (RB=0.3 and RR=0.9 inches). By contrast, AO06191-1* did not sprout over the 7-month storage period, indicating longer dormancy than RB and RR.

- When stored for 7 months, A10021-5TE (43.8 ref units) and AOR07781-5 (43.5 ref units) produced the lightest fries. A071012-4BF, A07769-4, and A08433-4VR fried unacceptably dark when grown in OR. Uniformity of fry color was unacceptable for all WA entries, as well as many of the OR entries. RB and A08433-4VR were the only entries producing non-uniform fry color from ID.

Overall Regional Postharvest Merit Scores

		Postharvest Merit Scores			3 state
	Clone	WA	ID	OR	Average
8	AO02183-2	4.7	4.3	4.5	4.5
10	AOR07781-5	3.9	4.2	4.3	4.1
7	A10021-5TE	4.2	3.9	3.9	4.0
14	CO09036-2RU	3.5	4.3	4.0	3.9
1	Ranger Russet	4.0	3.5	4.2	3.9
5	A07769-4	3.6	4.1	3.4	3.7
13	CO08155-2RU/Y	2.7	4.2	3.7	3.5
9	AO06191-1	3.5	3.3	3.7	3.5
12	AOTX05043-1Ru	2.8	3.8	3.1	3.2
15	CO09205-2RU	2.8	3.6	2.6	3.0
3	A07061-6	2.1	3.6	3.2	3.0
11	AOR07821-1	2.3	3.5	3.0	3.0
4	A071012-4BF	2.3	3.0	3.2	2.8
6	A08433-4VR	2.9	3.0	2.5	2.8
2	Russet Burbank	2.2	2.1	3.1	2.5

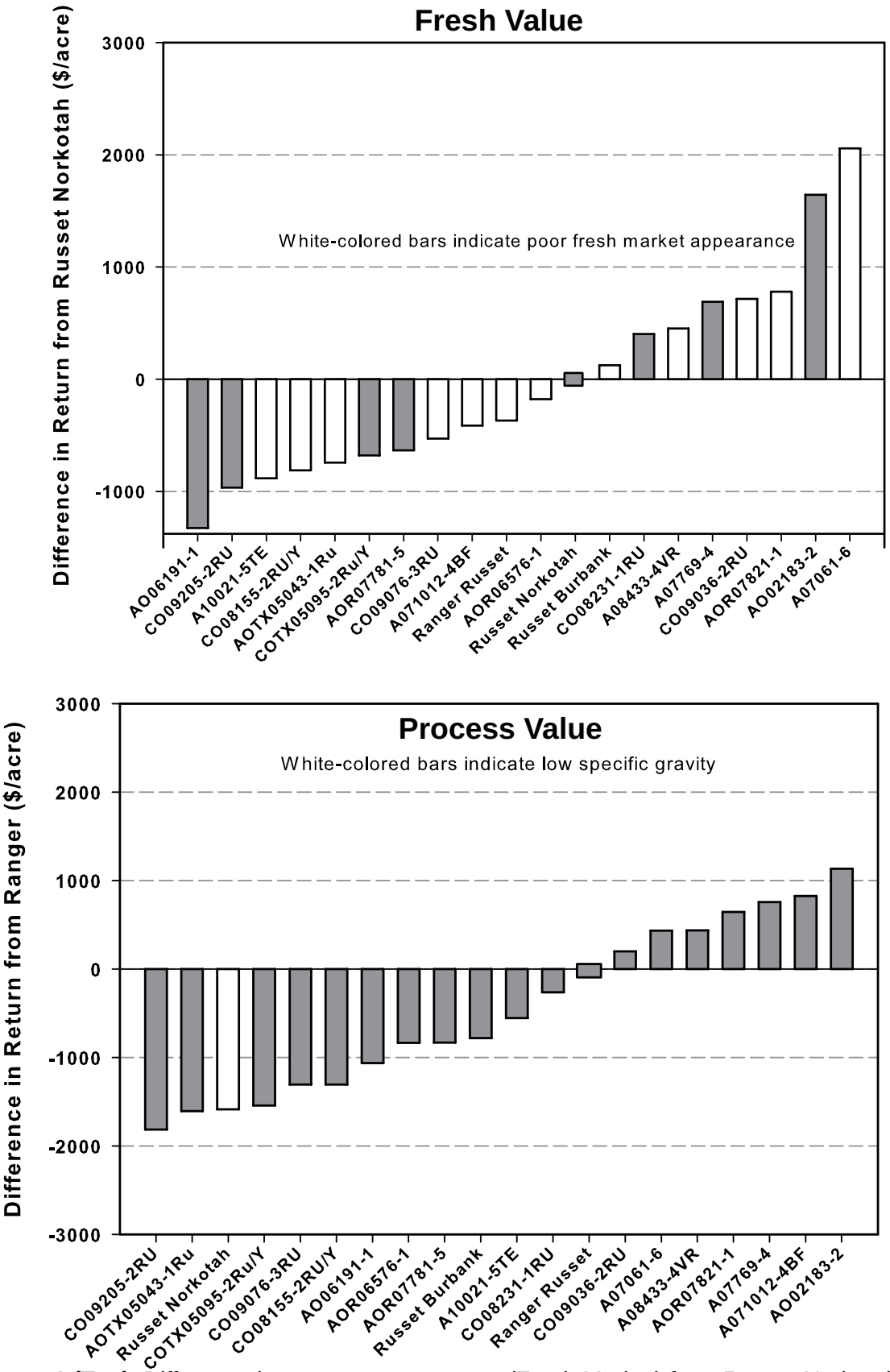


Figure 1 (Top). Difference in gross return per acre (Fresh Market) from Russet Norkotah calculated by subtracting the gross return of Russet Norkotah from the gross return of the particular entry. Entries with the white-colored bars may not appeal to fresh market consumers due to the undesirable shape or appearance. **Figure 2 (Bottom).** Difference in gross return per acre (Process Market) from Ranger Russet calculated by subtracting the gross return of Ranger Russet from the gross return of the particular entry.

2018 Late Harvest Regional Trial

Summaries

ENTRY	TOTAL YIELD			US # 1's* > 4 oz	US # 2's* > 4 oz	Culls* & < 4 oz	CARTON YIELD 100-50 count (US 1's 7-18 oz)		PROCESS YIELD US 1's and 2's > 6 oz	
	CWT/A	STATS**	Tons/A	% of Total Yield			% of Total Yield	Tons/A	% of Total Yield	Tons/A
Ranger Russet	899	*BCDE*	44.9	87	4	9	52	23.6	86	38.8
Russet Burbank	863	*CDEF*	43.1	83	4	13	61	26.2	81	35.0
Russet Norkotah	785	*FG*	39.3	88	3	8	67	26.3	86	34.0
A07061-6	1001	*AB*	50.1	90	2	8	67	33.7	82	41.1
A071012-4BF	1017	*A*	50.8	86	5	9	47	23.7	87	44.5
A07769-4	1001	*AB*	50.1	90	2	9	55	27.6	88	44.3
A08433-4VR	923	*ABC*	46.1	91	4	5	59	27.0	90	41.7
A10021-5TE	899	*BCDE*	44.9	77	7	16	48	21.7	80	35.9
AO02183-2	980	*AB*	49.0	92	3	5	65	32.0	88	43.4
AO06191-1	725	*G*	36.2	90	2	8	57	20.6	88	31.8
AOR06576-1	907	*BCD*	45.4	82	5	13	54	24.6	84	37.9
AOR07781-5	773	*FG*	38.6	85	7	8	59	22.9	85	32.7
AOR07821-1	944	*ABC*	47.2	89	4	7	59	28.0	87	41.2
AOTX05043-1Ru	712	*G*	35.6	85	5	11	65	23.0	81	28.8
CO08155-2RU/Y	789	*FG*	39.5	83	1	16	56	22.3	67	26.3
CO08231-1RU	924	*ABC*	46.2	85	2	13	56	26.0	75	34.4
CO09036-2RU	943	*ABC*	47.1	84	3	13	57	27.1	75	35.2
CO09076-3RU	795	*EFG*	39.8	81	3	16	58	23.2	74	29.4
CO09205-2RU	805	*DEFG*	40.2	82	2	16	51	20.6	65	26.3
COTX05095-2Ru/Y	773	*FG*	38.6	85	1	14	60	23.1	71	27.7

ENTRY	US # 1 YIELD						> 4 oz SPECIFIC GRAVITY	INTERNAL DEFECTS (%) (8-12 oz tubers)		
	> 4 oz CWT/A	STATS**	> 4 oz Tons/A	4-7 oz*	7-14 oz*	> 14 oz*		% HH	% BC	% IBS
				%						
Ranger Russet	782	*CDE*	39.1	9	40	50	1.082	0	0	3
Russet Burbank	718	*EF*	35.9	12	56	32	1.080	0	0	3
Russet Norkotah	694	*EFG*	34.7	10	52	38	1.071	0	0	0
A07061-6	897	*AB*	44.8	18	58	24	1.077	0	0	3
A071012-4BF	874	*ABC*	43.7	6	29	65	1.094	0	0	0
A07769-4	898	*AB*	44.9	4	34	61	1.080	0	0	0
A08433-4VR	839	*ABCD*	42.0	8	43	48	1.082	0	0	0
A10021-5TE	698	*EFG*	34.9	9	37	54	1.083	0	0	3
AO02183-2	900	*A*	45.0	12	51	37	1.087	0	0	0
AO06191-1	651	*FG*	32.5	8	39	53	1.088	0	0	0
AOR06576-1	747	*DEF*	37.4	9	48	43	1.075	0	0	0
AOR07781-5	659	*FG*	33.0	13	50	37	1.084	0	0	0
AOR07821-1	837	*ABCD*	41.9	11	46	43	1.085	0	0	0
AOTX05043-1Ru	606	*G*	30.3	18	54	28	1.082	0	0	0
CO08155-2RU/Y	653	*FG*	32.6	32	64	4	1.082	0	0	0
CO08231-1RU	781	*CDE*	39.0	23	54	23	1.080	0	0	3
CO09036-2RU	794	*BCDE*	39.7	26	57	17	1.084	3	0	0
CO09076-3RU	643	*FG*	32.1	18	53	29	1.081	0	0	0
CO09205-2RU	663	*FG*	33.2	36	59	5	1.075	0	0	3
COTX05095-2Ru/Y	662	FG	33.1	29	63	8	1.077	0	0	0

* Percent values may not total 100% due to rounding

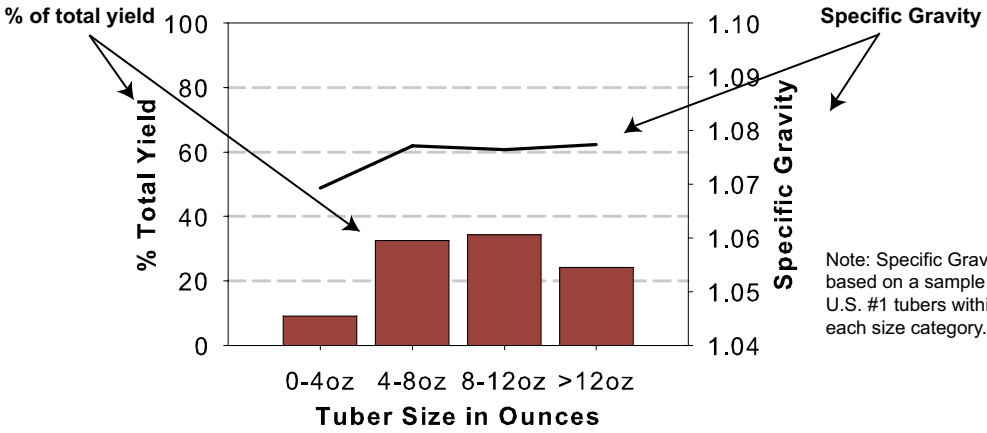
ENTRY	30 DAY STAND % Emerged	40 DAY STAND % Emerged	50 DAY STAND % Emerged	STEMS PER PLANT Above Ground	AVERAGE TUBER WEIGHT Ounces	AVERAGE TUBER NUMBER Tubers/Plant	SKIN SET 1 = Poor 5 = Good	TUBER SHAPE 1 = Round 5 = Long	BRUISE (%) (8-12 oz tubers) BLACKSPOT	BRUISE (%) (8-12 oz tubers) SHATTER
Ranger Russet	54	97	100	2.2	11.8	7.3	4.0	4.0	60	30
Russet Burbank	64	97	100	2.2	10.4	7.9	3.8	3.0	48	58
Russet Norkotah	36	93	97	2.6	10.4	7.1	4.0	4.0	25	25
A07061-6	32	99	100	2.8	8.7	10.9	4.0	2.0	28	38
A071012-4BF	57	94	98	2.4	14.1	6.9	3.5	3.0	33	43
A07769-4	6	94	98	2.7	13.3	7.3	4.0	2.9	18	90
A08433-4VR	0	96	100	1.4	12.0	7.4	4.0	3.5	13	33
A10021-5TE	1	94	98	2.9	12.0	7.2	4.0	4.3	20	43
AO02183-2	1	96	100	2.3	10.3	9.1	4.0	4.0	3	33
AO06191-1	0	81	95	1.3	11.8	5.9	3.8	4.0	13	63
AOR06576-1	19	94	99	2.4	10.9	7.9	3.5	4.0	30	53
AOR07781-5	3	92	100	3.8	10.1	7.3	4.0	3.0	30	68
AOR07821-1	3	85	97	3.0	11.3	8.0	4.0	3.0	20	65
AOTX05043-1Ru	1	92	99	3.1	8.9	7.6	4.0	3.0	15	46
CO08155-2RU/Y	21	89	98	3.1	7.1	10.6	4.0	3.0	24	31
CO08231-1RU	3	86	100	3.1	7.8	11.4	4.0	2.3	20	45
CO09036-2RU	13	94	100	3.8	7.5	12.0	4.0	2.3	5	5
CO09076-3RU	22	100	100	3.6	8.4	9.0	3.0	4.0	25	48
CO09205-2RU	8	94	98	3.5	6.8	11.3	3.0	3.0	11	34
COTX05095-2Ru/Y	54	99	99	3.8	6.9	10.6	4.0	2.0	26	62

Graduate Student Colton Thurgood applies alternative products to an opened furrow.

2018 Late Harvest Regional Trial

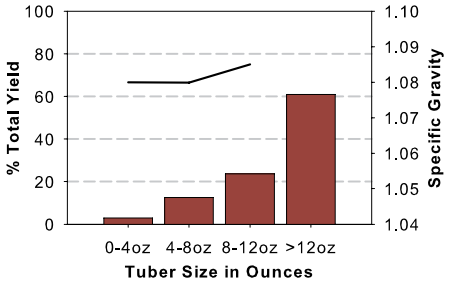
Tuber Yield and Specific Gravity Distributions

11 inch In-Row Spacing

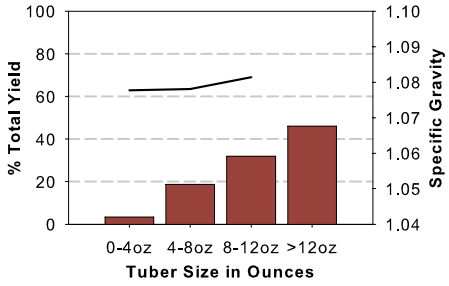


Note: Specific Gravity is based on a sample of U.S. #1 tubers within each size category.

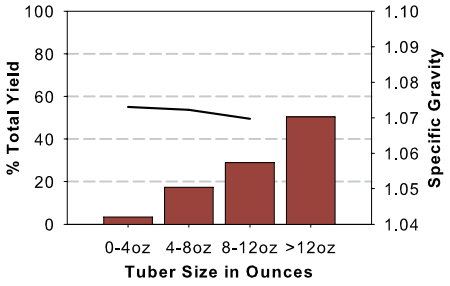
RANGER RUSSET



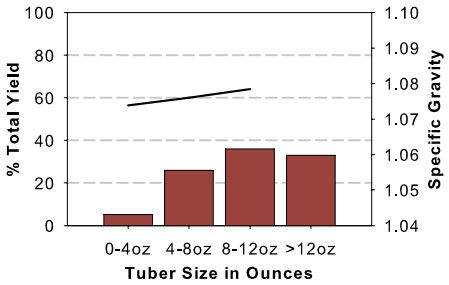
RUSSET BURBANK



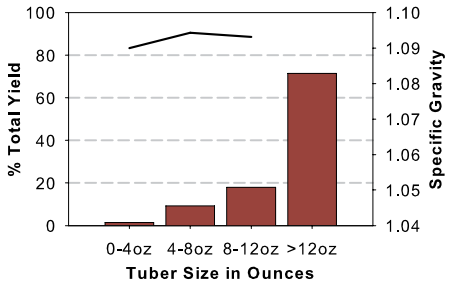
RUSSET NORKOTAH



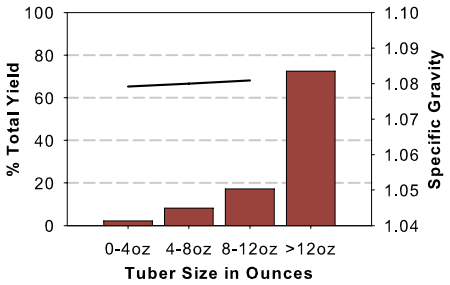
A07061-6



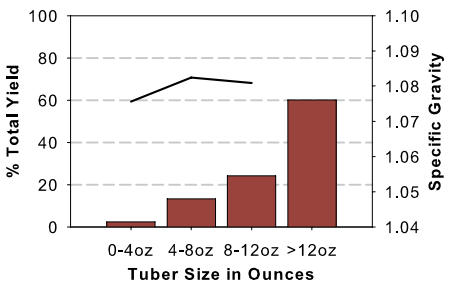
A071010-4BF



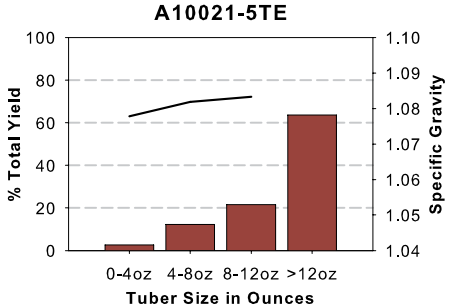
A07769-4



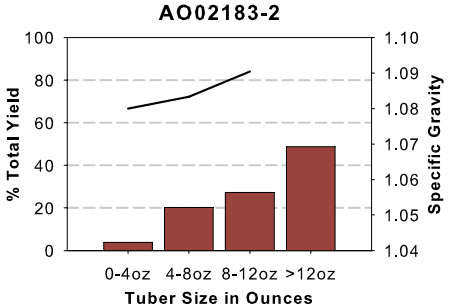
A08433-4VR



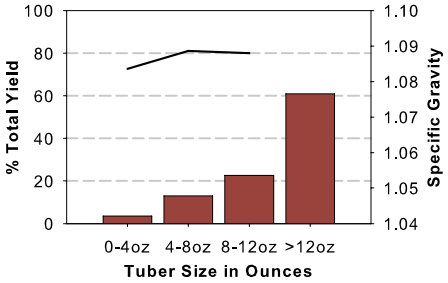
A10021-5TE



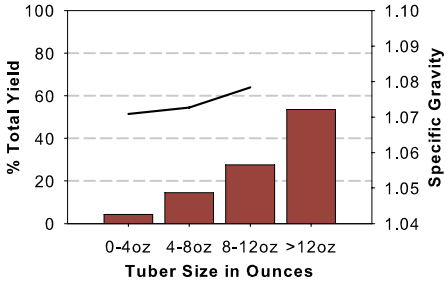
AO02183-2



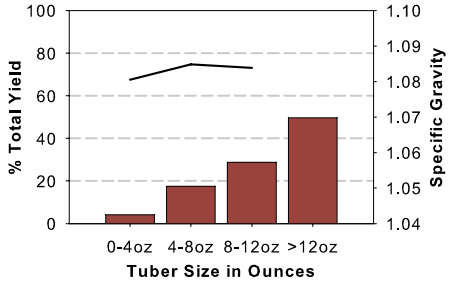
AO06191-1



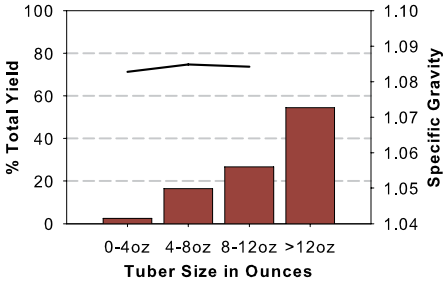
AOR06576-1



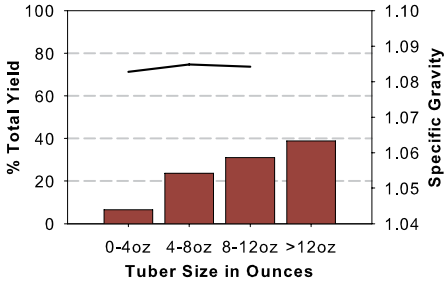
AOR07781-5



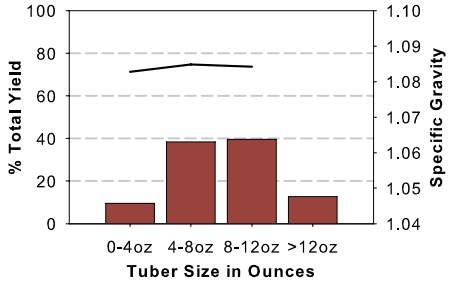
AOR07821-1



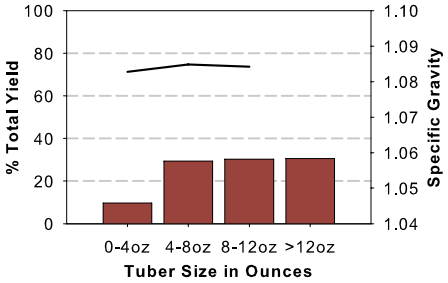
AOTX05043-1Ru



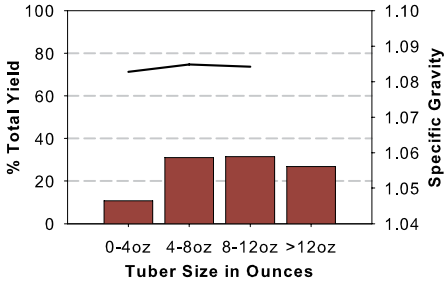
CO08155-2RU/Y



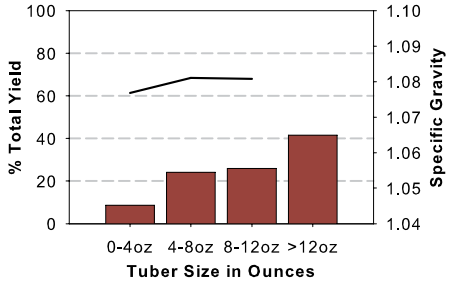
CO08231-1RU



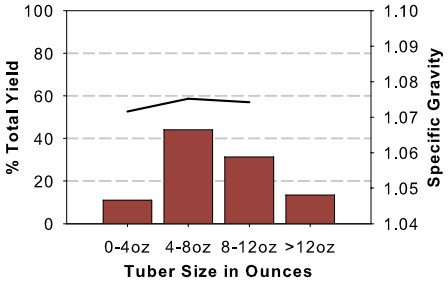
CO09036-2RU



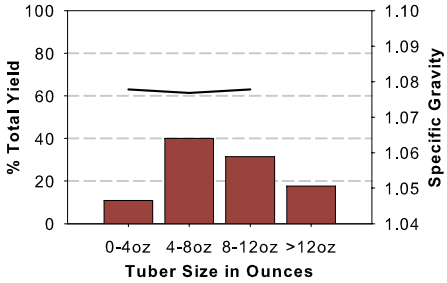
CO09076-3RU

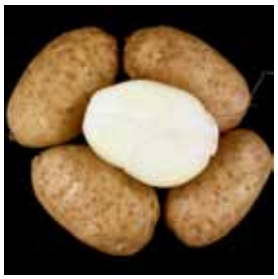


CO09205-2RU

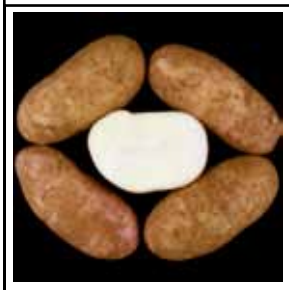


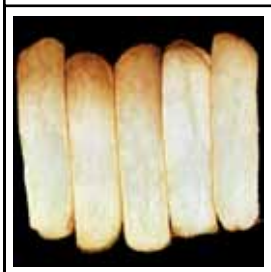
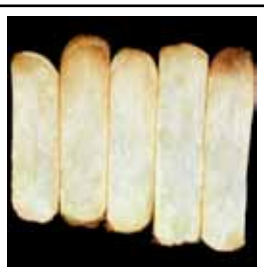
COTX05095-2Ru/Y



Tubers	WA Late Harvest Regional Trial Comments
Ranger Russet	
	**Tubers:** Oblong to long tubers. Good skin set; moderate eye depth. **Fry color:** At harvest= light, uniform; 48°F = light, uniform; 44°F = light, uniform; 40°F = relatively dark, non-uniform; Reconditioned = relatively dark, non-uniform.
Russet Burbank	
	**Tubers:** Oblong tubers. Good skin set; moderate eye depth. **Fry color:** At harvest= light, non-uniform; 48°F = light, non-uniform; 44°F = relatively dark,non-uniform; 40°F = unnaceptably dark, uniform; Reconditioned = relatively dark, non-uniform.
A07061-6	
	**Tubers:** Round to oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= light, non-uniform; 48°F = light, non-uniform; 44°F = light, non-uniform; 40°F = relatively dark, non-uniform; Reconditioned = relatively dark, non-uniform.
A071012-4BF	
	**Tubers:** Oblong tubers. Good skin set; moderate eye depth. **Fry color:** At harvest= light, non-uniform; 48°F = light, non-uniform; 44°F = light, non-uniform; 40°F = unnaceptably dark, uniform; Reconditioned = relatively dark, non-uniform.
A07769-4	
	**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= light, uniform; 48°F = light, uniform; 44°F = light, non-uniform; 40°F = relatively dark, uniform; Reconditioned = light, non-uniform.

Initial Fries	48º F Storage	44º F Storage	40º F Storage	40º F Recon.
Ranger Russet				
				
Russet Burbank				
				
A07061-6				
				
A071012-4BF				
				
A07769-4				
				

Tubers	WA Late Harvest Regional Trial Comments
A08433-4VR	
	**Tubers:** Oblong to long tubers. Good skin set; shallow eyes. **Fry color:** At harvest= light, uniform; 48°F = light, non-uniform; 44°F = light, non-uniform; 40°F = unnaceptably dark, uniform; Reconditioned = relatively dark, uniform.
A10021-5TE	
	**Tubers:** Oblong to long tubers. Good skin set; shallow eyes. **Fry color:** At harvest= light, non-uniform; 48°F = light, uniform; 44°F = light, non-uniform; 40°F = relatively dark, non-uniform; Reconditioned = light, uniform.
AO02183-2	
	**Tubers:** Oblong to long tubers. Good skin set; moderate eye depth. **Fry color:** At harvest= light, uniform; 48°F = light, uniform; 44°F = light, uniform; 40°F = relatively dark, non-uniform; Reconditioned = light, non-uniform.
AO06191-1	
	**Tubers:** Oblong to long tubers. Good skin set; shallow eyes. **Fry color:** At harvest= light, uniform; 48°F = light, non-uniform; 44°F = light, non-uniform; 40°F = relatively dark, uniform; Reconditioned = light, uniform.
AOR07781-5	
	**Tubers:** Oblong tubers. Good skin set; moderate eye depth. **Fry color:** At harvest= light, non-uniform; 48°F = light, uniform; 44°F = light, non-uniform; 40°F = relatively dark, non-uniform; Reconditioned = light, non-uniform.

Initial Fries	48º F Storage	44º F Storage	40º F Storage	40º F Recon.
A08433-4VR				
				
A10021-5TE				
				
AO02183-2				
				
AO06191-1				
				
AOR07781-5				
				

Tubers	WA Late Harvest Regional Trial Comments
AOR07821-1	
	**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= light, non-uniform; 48°F = light, non-uniform; 44°F = light, non-uniform; 40°F = unnaceptably dark, uniform; Reconditioned = relatively dark, non-uniform.
AOTX05043-1Ru	
	**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= light, uniform; 48°F = light, non-uniform; 44°F = light, non-uniform; 40°F = unnaceptably dark, uniform; Reconditioned = relatively dark, non-uniform.
CO08155-2RU/Y	
	**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= light, non-uniform; 48°F = light, non-uniform; 44°F = light, non-uniform; 40°F = relatively dark, uniform; Reconditioned = light, uniform.
CO09036-2RU	
	**Tubers:** Round to oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= light, uniform; 48°F = light, uniform; 44°F = light, non-uniform; 40°F = relatively dark, uniform; Reconditioned = light, non-uniform.
CO09205-2RU	
	**Tubers:** Oblong tubers. Fair skin set; shallow eyes. **Fry color:** At harvest= light, non-uniform; 48°F = light, non-uniform; 44°F = light, non-uniform; 40°F = relatively dark, uniform; Reconditioned = light, non-uniform.

Initial Fries	48º F Storage	44º F Storage	40º F Storage	40º F Recon.
AOR07821-1				
				
AOTX05043-1Ru				
				
CO08155-2RU/Y				
				
CO09036-2RU				
				
CO09205-2RU				
				

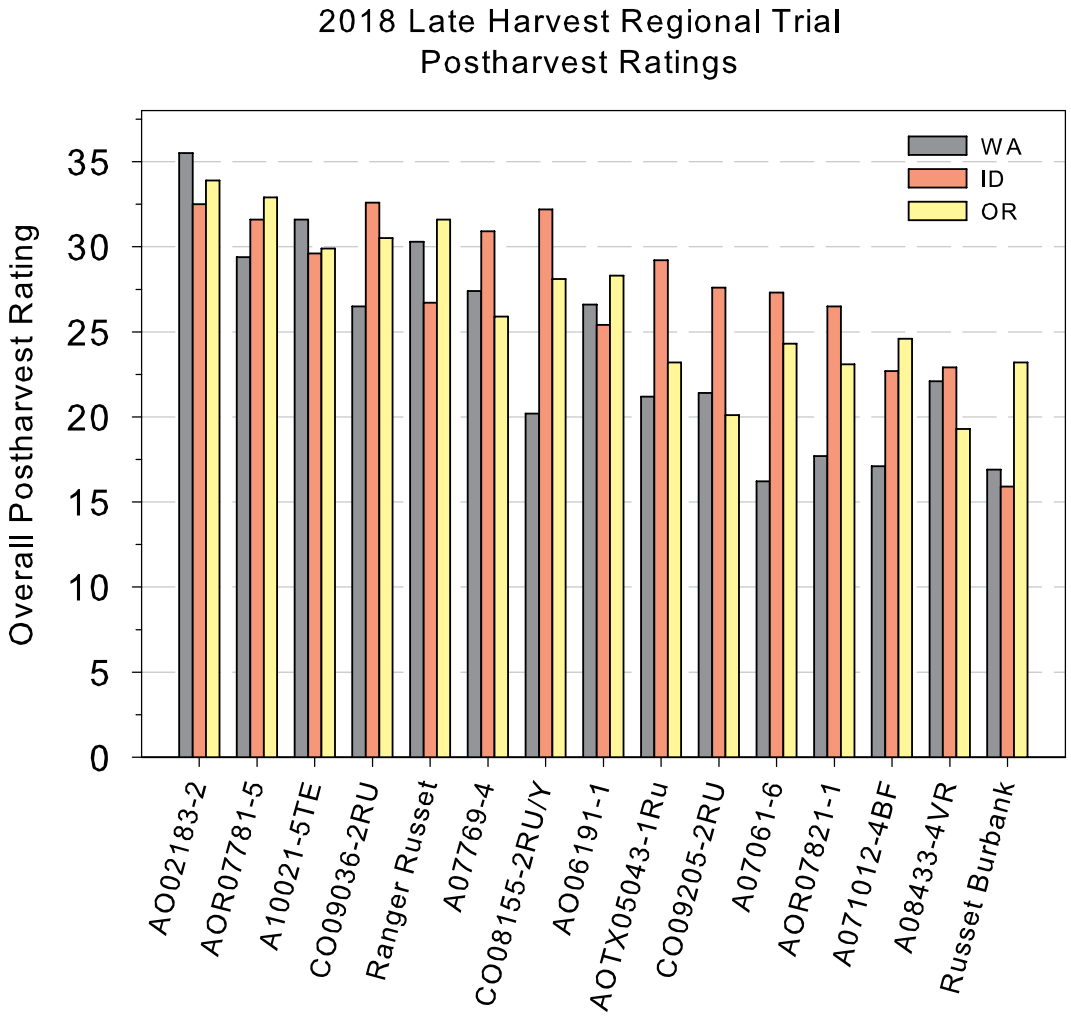
2018 Late Harvest Regional Trial

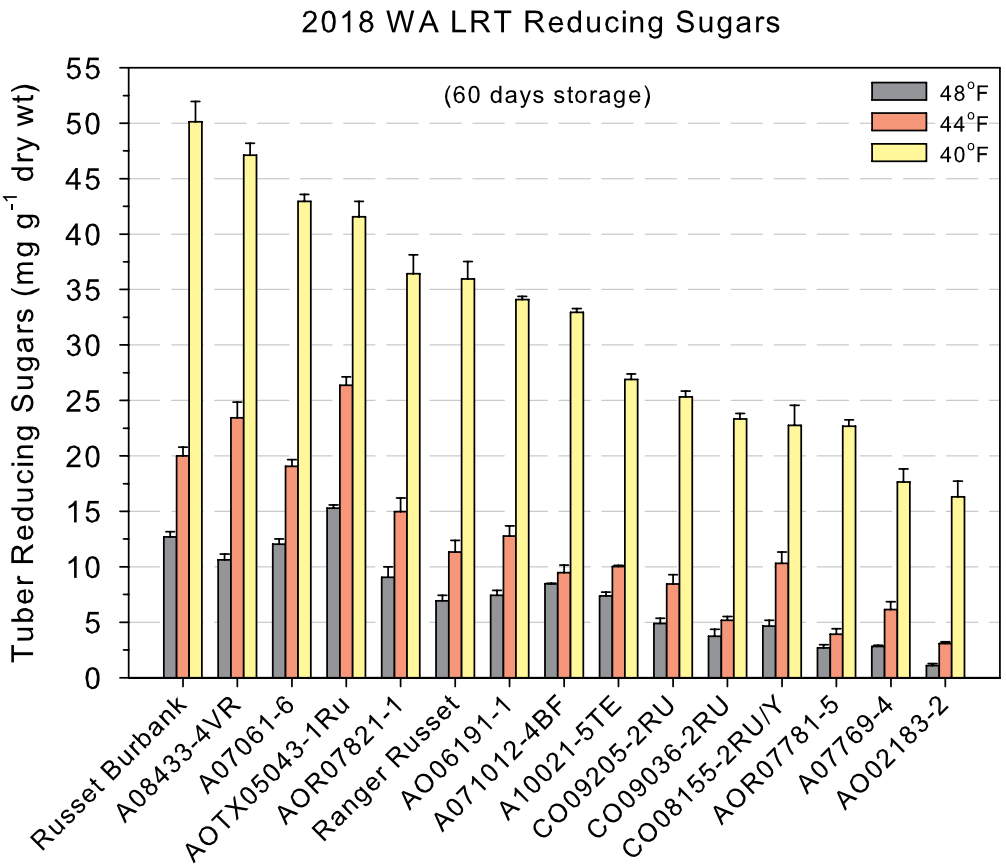
Accumulated Total Postharvest Ratings of Clones

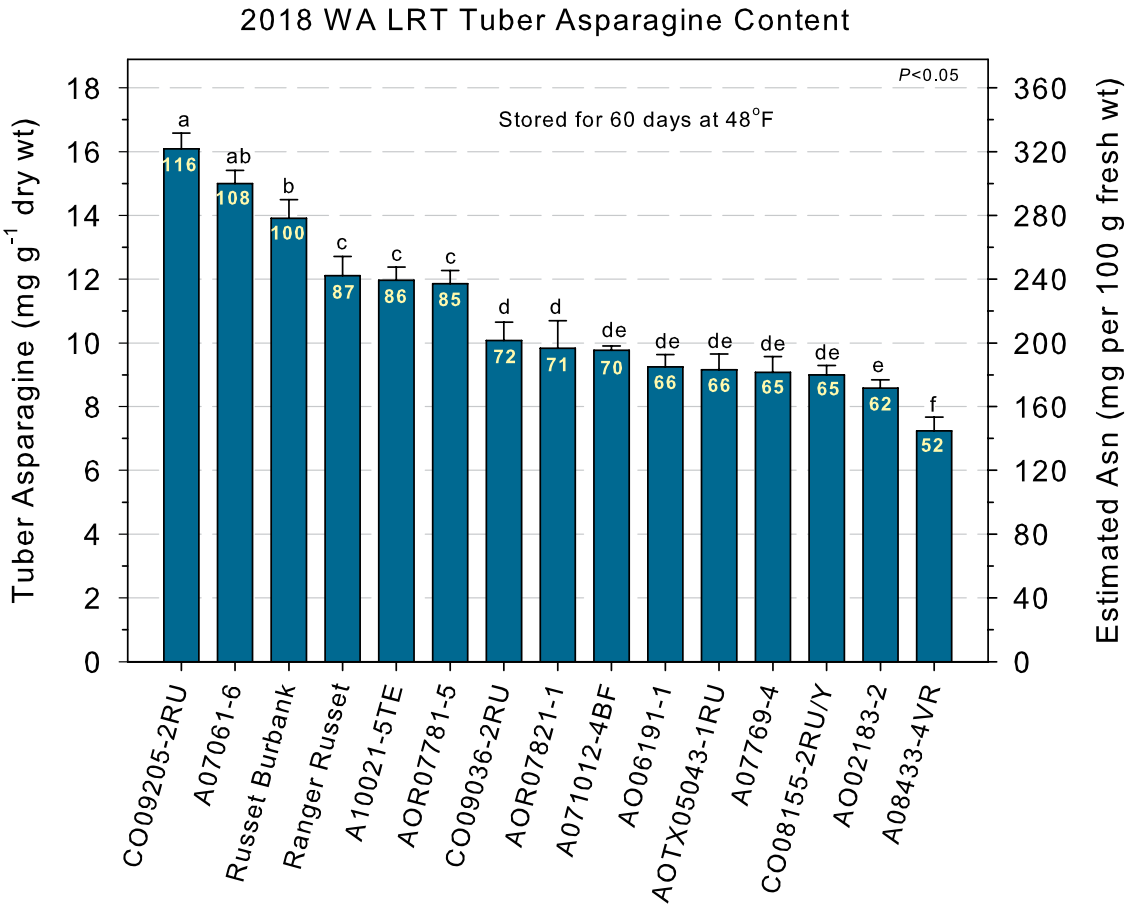
Clone	WA Rating Total §	WA Discard §§	ID Rating Total §	ID Discard §§	OR Rating Total §	OR Discard §§	3 State av. Rating Total
8 AO02183-2	35.5		32.5		33.9		34.0
10 AOR07781-5	29.4		31.6		32.9		31.3
7 A10021-5TE	31.6		29.6		29.9		30.4
14 CO09036-2RU	26.5		32.6		30.5		29.9
1 Ranger Russet	30.3		26.7		31.6		29.5
5 A07769-4	27.4		30.9		25.9	Sp. Gr.	28.1
13 CO08155-2RU/Y	20.2		32.2		28.1		26.8
9 AO06191-1	26.6		25.4		28.3		26.8
12 AOTX05043-1Ru	21.2	40°F	29.2		23.2		24.5
15 CO09205-2RU	21.4	Sp.Gr.	27.6		20.1	Sp. Gr.	23.0
3 A07061-6	16.2		27.3		24.3	Sp. Gr.	22.6
11 AOR07821-1	17.7	40°F	26.5		23.1		22.4
4 A071012-4BF	17.1	40°F	22.7		24.6		21.5
6 A08433-4VR	22.1	40°F	22.9		19.3		21.4
2 Russet Burbank	16.9	40°F	15.9	Sp. Gr.	23.2		18.7
	24.0		27.6		26.6		

§ maximum rating possible = 38

§§ Values for the indicated evaluation are lower than the rejection level.




2018 WA LRT Reducing Sugars
(60 days storage)
48°F
44°F
40°F
Tuber Reducing Sugars (mg g-1 dry wt)
0
5
10
15
20
25
30
35
40
45
50
55
Russet Burbank
A08433-4VR
A07061-6
AOTX05043-1Ru
AOR07821-1
Ranger Russet
AO06191-1
A071012-4BF
A10021-5TE
CO09205-2RU
CO09036-2RU
CO08155-2RU/Y
AOR07781-5
A07769-4
AO02183-2


2018 WA LRT Tuber Asparagine Content
P<0.05
Stored for 60 days at 48°F
Tuber Asparagine (mg g-1 dry wt)
Estimated Asn (mg per 100 g fresh wt)
0
2
4
6
8
10
12
14
16
18
0
40
80
120
160
200
240
280
320
360
a
116
ab
108
b
100
c
87
c
86
c
85
d
72
d
71
de
70
de
66
de
66
de
65
de
65
e
62
f
52
CO09205-2RU
A07061-6
Russet Burbank
Ranger Russet
A10021-5TE
AOR07781-5
CO09036-2RU
AOR07821-1
A071012-4BF
AO06191-1
AOTX05043-1RU
A07769-4
CO08155-2RU/Y
AO02183-2
A08433-4VR

2018 Late Harvest Regional Trial

Prior to Storage

Clone	PHOTOVOLT READING stem	bud	av	rtg §	DIFF	USDA COLOR	SPECIFIC GRAVITY	rtg
Washington								
1 Ranger Russet	44.8	47.3	46.0	**5+**	7.0	0	1.084	**5**
2 Russet Burbank	36.5	52.5	44.5	**5-**	15.9	0	1.080	**3**
3 A07061-6	32.8	50.7	41.7	**5-**	17.9	0	1.077	**1**
4 A071012-4BF	40.6	49.4	44.3	**5-**	10.5	0	1.096	**1**
5 A07769-4	50.9	52.1	51.5	**5+**	5.6	0	1.082	**4**
6 A08433-4VR	45.0	48.4	46.7	**5+**	7.1	0	1.082	**4**
7 A10021-5TE	47.1	54.4	50.8	**5-**	9.2	0	1.084	**5**
8 AO02183-2	59.8	62.2	61.0	**5+**	5.9	0	1.083	**5**
9 AO06191-1	51.1	57.5	54.3	**5+**	8.2	0	1.089	**4**
10 AOR07781-5	50.3	60.1	55.2	**5-**	11.2	0	1.084	**5**
11 AOR07821-1	29.7	40.5	35.1	**3-**	11.1	1	1.086	**5**
12 AOTX05043-1Ru	40.6	46.9	43.7	**5+**	7.2	0	1.080	**3**
13 CO08155-2RU/Y	39.5	50.5	45.0	**5-**	11.1	0	1.074	**0**
14 CO09036-2RU	58.8	57.8	58.3	**5+**	3.7	0	1.077	**1**
15 CO09205-2RU	37.3	51.5	44.4	**5-**	15.0	0	1.072	**0**
		LSD 0.05	*4.0*		*5.4*		*0.005*	
Average	44.3	52.1	48.2		9.8	0	1.082	
Idaho								
1 Ranger Russet	31.7	52.3	42.0	**5-**	20.7	0	1.088	**5**
2 Russet Burbank	23.2	50.2	36.7	**4-**	27.0	2	1.075	**0**
3 A07061-6	28.2	44.7	36.4	**4-**	16.5	1	1.082	**4**
4 A071012-4BF	22.8	50.7	36.6	**4-**	28.4	2	1.101	**1**
5 A07769-4	36.6	50.6	43.6	**5-**	14.0	0	1.088	**5**
6 A08433-4VR	28.4	37.8	33.1	**3-**	9.4	1	1.082	**4**
7 A10021-5TE	36.1	49.2	42.7	**5-**	13.1	0	1.090	**4**
8 AO02183-2	26.6	45.9	36.3	**4-**	19.3	1	1.088	**5**
9 AO06191-1	27.1	52.3	39.7	**4-**	25.2	1	1.095	**2**
10 AOR07781-5	36.5	54.1	45.3	**5-**	17.6	0	1.091	**4**
11 AOR07821-1	27.2	33.2	30.2	**2+**	6.9	1	1.088	**5**
12 AOTX05043-1Ru	47.9	51.9	49.9	**5+**	6.4	0	1.094	**2**
13 CO08155-2RU/Y	44.3	49.3	46.8	**5+**	5.9	0	1.090	**4**
14 CO09036-2RU	50.9	55.4	53.1	**5+**	4.8	0	1.089	**4**
15 CO09205-2RU	47.5	51.0	49.3	**5+**	5.9	0	1.080	**3**
		LSD 0.05	*3.4*		*5.1*		*0.005*	
Average	34.3	48.6	41.4		14.7	1	1.088	
Oregon								
1 Ranger Russet	48.9	51.5	50.2	**5+**	3.5	0	1.085	**5**
2 Russet Burbank	35.2	55.5	45.3	**5-**	20.3	0	1.080	**3**
3 A07061-6	32.1	51.6	41.9	**5-**	19.5	0	1.074	**0**
4 A071012-4BF	34.1	52.4	42.8	**5-**	18.6	0	1.093	**3**
5 A07769-4	37.5	51.2	44.4	**5-**	14.3	0	1.075	**0**
6 A08433-4VR	40.9	49.5	45.2	**5-**	10.0	0	1.081	**4**
7 A10021-5TE	43.1	54.5	48.8	**5-**	11.7	0	1.078	**2**
8 AO02183-2	33.8	56.6	45.2	**5-**	22.8	0	1.084	**5**
9 AO06191-1	38.2	39.1	38.6	**4-**	11.9	0	1.085	**5**
10 AOR07781-5	40.8	48.0	44.4	**5-**	11.0	0	1.086	**5**
11 AOR07821-1	37.2	46.7	42.0	**5-**	11.8	0	1.076	**1**
12 AOTX05043-1Ru	28.9	43.3	36.1	**4-**	16.0	1	1.085	**5**
13 CO08155-2RU/Y	43.6	52.1	47.9	**5-**	11.5	0	1.077	**1**
14 CO09036-2RU	40.7	54.8	47.7	**5-**	14.2	0	1.078	**2**
15 CO09205-2RU	39.6	52.5	46.1	**5-**	12.9	0	1.062	**0**
		LSD 0.05	*4.1*		*6.4*		*0.005*	
Average	38.3	50.6	44.4		14.0	0	1.080	

Date test performed:

Washington	Sept. 20	Sept. 17
Idaho	Sept. 26	Sept. 19
Oregon	Sept. 28	Sept. 26

§ rtg = rating (1-5, 5 is best); av = average Photovolt reading; Diff = Absolute difference between stem and bud Photovolt reading. Stem to bud differences of nine or greater (-) lose one point and differences of less than nine (+) gain one point in the accumulated total postharvest rating.

2018 Late Harvest Regional Trial

Stored at 48°F after Arrival

Clone	FRENCH FRY TASTE PANEL rating	BRUISE POTENTIAL (percent) stem	bud	[color 5=darkest] stem	bud	SOFT ROT INDEX (percent) stem	bud
Washington							
1 Ranger Russet	**3.3**	100	38	4.6	1.8	22	25
2 Russet Burbank	**2.9**	79	17	3.0	1.3	15	27
3 A07061-6	**3.2**	54	4	2.3	1.1	13	20
4 A071012-4BF	**3.1**	96	13	3.9	1.3	13	17
5 A07769-4	**3.4**	71	0	2.5	1.0	19	31
6 A08433-4VR	**3.1**	42	0	2.1	1.0	12	13
7 A10021-5TE	**3.6**	88	13	3.5	1.3	12	15
8 AO02183-2	**3.5**	54	4	2.3	1.1	11	12
9 AO06191-1	**3.6**	58	4	2.4	1.1	12	16
10 AOR07781-5	**3.4**	25	13	1.7	1.3	18	20
11 AOR07821-1	**2.7**	67	21	2.8	1.4	21	23
12 AOTX05043-1Ru	**3.2**	67	0	2.7	1.0	10	14
13 CO08155-2RU/Y	**3.2**	33	0	1.8	1.0	13	15
14 CO09036-2RU	**3.5**	8	17	1.3	1.4	18	23
15 CO09205-2RU	**3.4**	33	0	1.7	1.0	17	11
LSD 0.05	*0.3*	*29*	*17*			*5*	*9*
Average	3.3	58.3	9.4	2.6	1.2	14.9	19.0
Idaho							
1 Ranger Russet	**3.7**	88	0	3.5	1.0	12	12
2 Russet Burbank	**2.9**	13	0	1.3	1.0	14	16
3 A07061-6	**3.3**	42	0	1.9	1.0	10	9
4 A071012-4BF	**3.7**	96	38	3.5	1.8	8	11
5 A07769-4	**3.9**	33	0	1.8	1.0	26	17
6 A08433-4VR	**2.9**	17	0	1.3	1.0	8	10
7 A10021-5TE	**3.6**	63	0	2.5	1.0	10	13
8 AO02183-2	**3.5**	8	0	1.2	1.0	8	9
9 AO06191-1	**3.4**	54	0	2.3	1.0	10	10
10 AOR07781-5	**3.6**	8	4	1.3	1.1	11	18
11 AOR07821-1	**3.5**	4	4	1.1	1.1	10	9
12 AOTX05043-1Ru	**3.2**	29	4	1.6	1.1	8	9
13 CO08155-2RU/Y	**3.2**	4	0	1.1	1.0	8	9
14 CO09036-2RU	**3.6**	42	8	1.8	1.2	8	9
15 CO09205-2RU	**2.6**	4	13	1.1	1.3	12	14
LSD 0.05	*0.4*	*23*	*12*			*4*	*4*
Average	3.4	33.6	4.7	1.8	1.1	11.0	11.6
Oregon							
1 Ranger Russet	**3.6**	96	13	1.3	1.3	17	16
2 Russet Burbank	**3.2**	75	8	1.3	1.3	16	19
3 A07061-6	**3.3**	46	13	2.0	1.3	11	13
4 A071012-4BF	**3.6**	92	21	3.6	1.4	12	15
5 A07769-4	**3.9**	46	0	2.1	1.0	12	20
6 A08433-4VR	**3.3**	33	0	1.8	1.0	14	15
7 A10021-5TE	**3.9**	33	0	1.7	1.0	10	12
8 AO02183-2	**3.9**	21	0	1.4	1.0	9	10
9 AO06191-1	**3.3**	63	29	2.5	1.6	8	10
10 AOR07781-5	**3.9**	21	4	1.5	1.1	10	13
11 AOR07821-1	**3.1**	63	17	2.7	1.4	14	15
12 AOTX05043-1Ru	**3.2**	75	13	3.0	1.3	10	8
13 CO08155-2RU/Y	**3.1**	0	0	1.0	1.0	9	11
14 CO09036-2RU	**3.5**	29	17	1.7	1.4	11	13
15 CO09205-2RU	**3.1**	0	0	1.0	1.0	10	10
LSD 0.05	*0.4*	*26*	*17*			*3*	*4*
Average	3.5	46.1	8.9	1.9	1.2	11.7	13.2

Date test performed:

Washington	Oct. 16	Oct. 24	Nov. 7
Idaho	Oct. 17	Oct. 26	Nov. 9
Oregon	Oct. 18	Oct. 30	Nov. 15

2018 Late Harvest Regional Trial

Stored at 48°F for 60 Days

Clone	PHOTOVOLT READING stem	bud	average	rtg §	DIFF	USDA COLOR	% REDUCING SUGAR stem	bud	SPROUTING (%)	length (in)
Washington										
1 Ranger Russet	37.9	44.8	41.3	**5+**	7.0	0	0.8	0.6	80	1.00
2 Russet Burbank	25.5	42.1	33.8	**3-**	16.6	1	1.9	0.6	0	
3 A07061-6	27.8	48.4	38.1	**4-**	20.6	1	1.6	0.5	100	0.50
4 A071012-4BF	30.6	47.8	38.9	**4-**	16.7	0	1.3	0.5	73	0.13
5 A07769-4	45.0	48.7	46.8	**5+**	7.5	0	0.6	0.5	92	0.25
6 A08433-4VR	36.9	48.2	42.6	**5-**	11.3	0	0.9	0.5	73	0.25
7 A10021-5TE	44.5	51.5	48.0	**5+**	8.7	0	0.6	0.5	80	0.25
8 AO02183-2	55.4	57.0	56.2	**5+**	5.5	0	0.5	0.4	80	0.25
9 AO06191-1	41.3	50.1	45.7	**5-**	10.9	0	0.7	0.5	47	0.13
10 AOR07781-5	47.6	51.3	49.4	**5+**	4.5	0	0.5	0.5	93	0.75
11 AOR07821-1	28.1	44.3	36.2	**4-**	16.1	1	1.6	0.6	0	
12 AOTX05043-1Ru	28.6	44.5	36.5	**4-**	15.9	1	1.5	0.6	20	0.13
13 CO08155-2RU/Y	32.5	46.1	39.3	**4-**	14.8	0	1.2	0.5	100	1.50
14 CO09036-2RU	45.3	51.7	48.5	**5+**	7.3	0	0.6	0.5	100	0.13
15 CO09205-2RU	37.2	47.6	42.4	**5-**	10.4	0	0.9	0.5	100	0.75
		LSD 0.05	*3.1*		*5.0*				*19*	
Average	37.6	48.3	42.9		11.6	0	1.0	0.5	69	
Idaho										
1 Ranger Russet	27.8	48.5	38.1	**4-**	20.6	1	1.6	0.5	67	0.25
2 Russet Burbank	22.1	48.5	35.3	**3-**	26.4	2	2.3	0.5	0	
3 A07061-6	38.2	43.0	40.6	**5+**	7.5	0	0.8	0.6	100	1.00
4 A071012-4BF	35.0	51.6	43.7	**5-**	17.4	0	1.0	0.5	0	
5 A07769-4	46.8	52.7	49.8	**5+**	7.4	0	0.5	0.5	0	
6 A08433-4VR	38.6	43.7	41.1	**5+**	7.1	0	0.8	0.6	0	
7 A10021-5TE	46.9	55.7	51.3	**5-**	9.7	0	0.5	0.5	47	0.13
8 AO02183-2	47.6	47.4	47.5	**5+**	6.7	0	0.5	0.5	20	0.13
9 AO06191-1	37.4	53.7	45.5	**5-**	16.3	0	0.9	0.5	0	
10 AOR07781-5	45.3	53.1	49.2	**5+**	8.7	0	0.6	0.6	93	0.13
11 AOR07821-1	32.6	36.8	34.7	**3+**	8.1	0	1.2	0.9	60	0.50
12 AOTX05043-1Ru	50.9	55.9	53.4	**5+**	7.0	0	0.5	0.5	7	0.25
13 CO08155-2RU/Y	46.3	52.1	49.2	**5+**	6.2	0	0.5	0.5	0	
14 CO09036-2RU	47.1	51.9	49.5	**5+**	7.7	0	0.5	0.5	13	1.00
15 CO09205-2RU	33.9	45.6	39.8	**4-**	13.7	0	1.1	0.6	73	0.25
		LSD 0.05	*4.1*		*6.2*				*19*	
Average	39.8	49.3	44.6		11.4	0	0.9	0.6	32	
Oregon										
1 Ranger Russet	38.8	45.3	42.1	**5+**	6.8	0	0.8	0.6	73	0.25
2 Russet Burbank	29.2	44.2	36.7	**4-**	15.0	1	1.5	0.6	0	
3 A07061-6	39.9	46.3	43.1	**5+**	7.7	0	0.7	0.5	67	1.50
4 A071012-4BF	27.5	48.9	38.1	**4-**	21.4	1	1.6	0.5	67	0.13
5 A07769-4	37.3	44.6	41.0	**5+**	8.6	0	0.9	0.6	79	0.25
6 A08433-4VR	32.0	40.7	36.4	**4-**	14.3	0	1.2	0.7	73	0.25
7 A10021-5TE	54.1	54.2	54.2	**5+**	5.5	0	0.5	0.5	73	0.25
8 AO02183-2	51.5	54.5	53.0	**5+**	4.6	0	0.5	0.5	100	1.00
9 AO06191-1	40.5	48.0	44.3	**5+**	8.8	0	0.7	0.5	0	
10 AOR07781-5	53.3	55.6	54.5	**5+**	2.7	0	0.6	0.5	100	0.50
11 AOR07821-1	35.9	47.1	41.5	**5-**	11.2	0	0.9	0.5	0	
12 AOTX05043-1Ru	36.9	47.5	42.2	**5-**	10.7	0	0.9	0.5	57	0.13
13 CO08155-2RU/Y	46.2	51.6	48.9	**5+**	7.4	0	0.5	0.5	73	1.00
14 CO09036-2RU	51.2	52.7	51.9	**5+**	5.6	0	0.5	0.5	33	0.13
15 CO09205-2RU	33.9	48.1	41.0	**5-**	14.2	0	1.1	0.5	93	0.75
		LSD 0.05	*2.9*		*5.2*				*20*	
Average	40.6	48.6	44.6		9.6	0	0.9	0.6	59	

Date test performed:

Washington	Nov. 29	Nov. 29	Dec. 15
Idaho	Dec. 5	Dec. 5	Dec. 15
Oregon	Dec. 10	Dec. 10	Dec. 15

§ rtg = rating (1-5, 5 is best); av = average Photovolt reading; Diff = Absolute difference between stem and bud Photovolt reading. Stem to bud differences of nine or greater (-) lose one point and differences of less than nine (+) gain one point in the accumulated total postharvest rating.

2018 Late Harvest Regional Trial

Stored at 44°F for 60 Days

Clone	PHOTOVOLT READING stem	bud	average	rtg §	DIFF	USDA COLOR	% REDUCING SUGAR stem	bud
Washington								
1 Ranger Russet	34.1	40.5	37.3	**4+**	8.7	0	1.1	0.7
2 Russet Burbank	22.5	36.6	29.5	**2-**	16.3	2	2.3	0.9
3 A07061-6	24.6	41.1	32.9	**3-**	16.6	1	2.0	0.7
4 A071012-4BF	27.8	47.7	37.7	**4-**	20.2	1	1.6	0.5
5 A07769-4	41.2	37.6	39.4	**4-**	9.4	0	0.7	0.8
6 A08433-4VR	22.4	39.7	31.0	**3-**	17.3	2	2.3	0.7
7 A10021-5TE	46.0	42.8	44.4	**5-**	9.7	0	0.5	0.6
8 AO02183-2	51.9	53.9	52.9	**5+**	4.8	0	0.5	0.5
9 AO06191-1	31.8	42.3	37.1	**4-**	10.5	0	1.2	0.6
10 AOR07781-5	40.0	50.5	45.2	**5-**	13.5	0	0.7	0.5
11 AOR07821-1	21.2	39.9	30.5	**3-**	18.6	2	2.5	0.7
12 AOTX05043-1Ru	25.8	36.5	31.1	**3-**	12.0	1	1.9	0.9
13 CO08155-2RU/Y	29.2	43.5	36.3	**4-**	14.3	1	1.5	0.6
14 CO09036-2RU	37.3	49.5	43.4	**5-**	12.6	0	0.9	0.5
15 CO09205-2RU	32.5	42.8	37.7	**4-**	10.2	0	1.2	0.6
		LSD 0.05	3.6		5.3			
Average	32.5	43.0	37.8		13.0	1	1.4	0.7
Idaho								
1 Ranger Russet	39.9	49.3	44.6	**5-**	9.9	0	0.7	0.5
2 Russet Burbank	29.2	37.8	33.5	**3-**	12.6	1	1.5	0.8
3 A07061-6	38.0	35.6	36.8	**4+**	5.4	0	0.8	1.0
4 A071012-4BF	31.7	39.0	35.9	**4+**	8.3	0	1.2	0.8
5 A07769-4	46.8	50.4	48.6	**5+**	5.2	0	0.5	0.5
6 A08433-4VR	32.0	34.1	33.0	**3+**	4.6	0	1.2	1.1
7 A10021-5TE	50.1	46.9	48.5	**5+**	3.6	0	0.5	0.5
8 AO02183-2	52.0	45.2	48.6	**5+**	8.1	0	0.5	0.6
9 AO06191-1	44.6	52.0	48.3	**5+**	8.0	0	0.6	0.5
10 AOR07781-5	44.0	48.9	46.4	**5+**	7.3	0	0.6	0.5
11 AOR07821-1	32.9	33.8	33.3	**3+**	3.5	0	1.1	1.1
12 AOTX05043-1Ru	32.7	39.5	36.1	**4+**	7.3	0	1.2	0.8
13 CO08155-2RU/Y	42.7	47.4	45.0	**5+**	5.7	0	0.6	0.5
14 CO09036-2RU	53.2	54.5	53.9	**5+**	5.0	0	0.6	0.5
15 CO09205-2RU	42.2	41.3	41.8	**5+**	6.5	0	0.6	0.7
		LSD 0.05	*3.8*		*4.1*			
Average	40.8	43.7	42.3		6.7	0	0.8	0.7
Oregon								
1 Ranger Russet	38.3	48.5	43.4	**5-**	10.2	0	0.8	0.5
2 Russet Burbank	30.8	49.4	40.1	**4-**	18.7	0	1.3	0.5
3 A07061-6	37.4	48.4	42.9	**5-**	11.0	0	0.9	0.5
4 A071012-4BF	35.0	51.7	43.5	**5-**	17.8	0	1.0	0.5
5 A07769-4	43.4	52.3	47.8	**5-**	9.5	0	0.6	0.5
6 A08433-4VR	27.4	32.2	29.8	**2-**	11.0	1	1.7	1.2
7 A10021-5TE	54.3	54.0	54.2	**5+**	4.3	0	0.5	0.5
8 AO02183-2	53.1	55.1	54.1	**5+**	3.5	0	0.6	0.5
9 AO06191-1	37.4	43.1	40.2	**4+**	5.9	0	0.9	0.6
10 AOR07781-5	48.4	52.0	50.2	**5+**	5.9	0	0.5	0.5
11 AOR07821-1	34.2	38.2	36.2	**4+**	7.8	0	1.1	0.8
12 AOTX05043-1Ru	30.0	38.3	34.2	**3+**	8.6	1	1.4	0.8
13 CO08155-2RU/Y	39.8	44.7	42.2	**5+**	5.7	0	0.7	0.6
14 CO09036-2RU	48.6	51.4	50.0	**5+**	5.5	0	0.5	0.5
15 CO09205-2RU	25.6	40.1	32.8	**3-**	14.5	1	1.9	0.7
		LSD 0.05	*3.4*		*4.4*			
Average	38.9	46.6	42.8		9.3	0	1.0	0.6

Date test performed:

Washington	Nov. 30	Nov. 30
Idaho	Dec. 6	Dec. 6
Oregon	Dec. 12	Dec. 12

§ rtg = rating (1-5, 5 is best); av = average Photovolt reading; Diff = Absolute difference between stem and bud Photovolt reading. Stem to bud differences of nine or greater (-) lose one point and differences of less than nine (+) gain one point in the accumulated total postharvest rating.

2018 Late Harvest Regional Trial

Stored at 40°F for 60 Days and Reconditioned

		PHOTOVOLT(60 Days at 40°F)						PHOTOVOLT AFTER RECONDITIONING (21 days at 60°F)				
Clone	SPROUTING (%)	stem	bud	average	rtg §	DIFF	USDA COLOR	stem	bud	average	DIFF	USDA COLOR
Washington												
1 Ranger Russet	0	16.2	25.6	20.9	**1**	9.4	3	21.1	39.1	30.1	18.0	2
2 Russet Burbank	0	13.0	19.6	16.3	**0**	6.6	4	15.9	31.6	23.8	16.0	3
3 A07061-6	7	14.4	24.7	19.6	**1**	10.3	4	17.2	30.7	23.9	13.4	3
4 A071012-4BF	0	13.3	18.1	16.0	**0**	4.9	4	19.4	36.7	28.1	17.3	3
5 A07769-4	0	27.2	29.1	28.1	**2**	4.7	1	35.6	40.4	38.0	10.4	0
6 A08433-4VR	0	16.7	21.7	19.2	**0**	5.7	3	24.0	31.4	27.7	7.7	2
7 A10021-5TE	0	30.4	41.1	35.7	**4**	10.9	1	30.4	36.3	33.4	6.0	1
8 AO02183-2	0	36.0	44.0	40.0	**4**	10.5	0	45.8	62.7	54.3	16.9	0
9 AO06191-1	0	20.0	28.9	24.5	**2**	8.9	2	26.7	34.4	30.5	8.1	1
10 AOR07781-5	0	24.2	41.0	32.6	**3**	16.9	2	31.1	54.3	42.7	23.3	0
11 AOR07821-1	0	10.9	17.8	14.4	**0**	7.0	4	18.5	28.4	23.5	10.3	3
12 AOTX05043-1Ru	0	13.8	18.2	16.0	**0**	5.0	4	24.6	35.8	30.2	11.2	1
13 CO08155-2RU/Y	0	25.1	30.5	27.8	**2**	5.9	1	28.1	34.4	31.2	8.2	1
14 CO09036-2RU	0	25.4	31.5	28.4	**2**	6.3	1	36.6	45.8	41.2	11.2	0
15 CO09205-2RU	0	26.8	30.6	28.7	**2**	5.9	1	23.3	37.9	30.6	14.7	2
LSD 0.05	*4.8*			*2.7*		*3.3*				*3.5*	*5.8*	
Average	0	20.5	28.2	24.5		7.9	2	26.5	38.7	32.6	12.8	1
Idaho												
1 Ranger Russet	0	25.5	35.1	30.3	**2**	9.6	1	36.0	47.9	42.0	13.7	0
2 Russet Burbank	0	16.7	22.0	19.4	**1**	5.7	3	23.3	32.5	27.9	10.4	2
3 A07061-6	0	21.9	25.4	23.6	**1**	4.0	2	36.8	35.8	36.3	4.8	0
4 A071012-4BF	0	20.7	28.6	24.7	**2**	8.7	2	36.3	49.1	42.7	13.8	0
5 A07769-4	0	31.1	37.9	34.5	**3**	9.7	0	43.6	47.9	45.7	7.3	0
6 A08433-4VR	0	23.2	25.3	24.3	**1**	3.8	2	35.6	34.4	35.0	2.8	0
7 A10021-5TE	0	30.2	33.6	31.9	**3**	6.0	1	43.7	46.7	45.2	7.5	0
8 AO02183-2	0	34.7	36.3	35.5	**4**	5.5	0	53.0	56.4	54.7	4.4	0
9 AO06191-1	0	20.2	28.8	24.5	**2**	8.6	2	36.8	52.7	44.7	16.0	0
10 AOR07781-5	0	27.6	39.1	33.3	**3**	11.6	1	46.2	57.8	52.0	12.3	0
11 AOR07821-1	0	25.0	26.3	25.7	**2**	5.7	1	32.9	36.8	34.9	6.0	0
12 AOTX05043-1Ru	0	27.2	32.5	29.9	**2**	8.3	1	29.2	37.3	33.2	8.2	1
13 CO08155-2RU/Y	0	27.8	32.0	29.9	**2**	4.7	1	28.7	35.4	32.1	6.7	1
14 CO09036-2RU	0	31.6	35.0	33.3	**3**	4.7	0	34.1	44.5	39.3	10.6	0
15 CO09205-2RU	0	25.7	29.8	27.7	**2**	5.2	1	29.2	37.5	33.4	9.0	1
LSD 0.05	*ns*			*3.9*		*3.8*				*4.0*	*5.0*	
Average	0	25.9	31.2	28.6		6.8	1	36.4	43.5	40.4	8.9	0
Oregon												
1 Ranger Russet	0	17.6	32.2	24.9	**2**	15.6	3	26.1	44.1	35.1	18.4	1
2 Russet Burbank	0	17.9	31.0	24.5	**2**	13.1	3	21.4	40.5	30.9	19.1	2
3 A07061-6	13	30.4	42.8	36.6	**4**	12.4	1	23.7	43.3	33.5	19.6	2
4 A071012-4BF	0	24.2	38.4	31.2	**3**	12.8	2	18.7	46.2	32.5	27.6	3
5 A07769-4	0	34.1	39.4	36.7	**4**	7.7	0	28.2	38.0	33.1	10.5	1
6 A08433-4VR	0	18.9	22.8	20.8	**1**	6.4	3	23.7	38.4	31.0	15.0	2
7 A10021-5TE	0	39.3	40.6	40.0	**4**	3.8	0	30.6	37.0	33.8	6.4	0
8 AO02183-2	0	52.4	54.4	53.4	**5**	4.7	0	53.5	58.6	56.0	6.2	0
9 AO06191-1	0	27.2	35.5	31.3	**3**	8.3	1	22.6	37.8	30.2	15.2	2
10 AOR07781-5	0	38.5	46.7	42.6	**5**	8.8	0	43.2	51.4	47.3	8.7	0
11 AOR07821-1	0	29.3	38.0	33.6	**3**	8.9	1	27.7	37.9	32.8	10.2	1
12 AOTX05043-1Ru	0	20.8	26.5	23.7	**1**	7.0	2	26.2	38.3	32.3	12.7	1
13 CO08155-2RU/Y	0	33.6	36.3	35.0	**3**	3.7	0	29.0	34.4	31.7	6.2	1
14 CO09036-2RU	0	38.8	40.3	39.5	**4**	6.8	0	30.8	45.6	38.2	15.0	0
15 CO09205-2RU	0	21.5	30.9	26.2	**2**	9.5	2	21.0	38.7	29.9	17.7	2
LSD 0.05	*7*			*3.8*		*4.5*				*3.7*	*6.0*	
Average	1	29.6	37.1	33.3		8.6	1	28.4	42.2	35.2	13.9	1

Date test performed:

Washington	Dec. 10	Dec. 1	Dec. 13
Idaho	Dec. 10	Dec. 7	Dec. 14
Oregon	Dec. 10	Dec. 13	Dec. 14

DIFF = Absolute difference between bud and stem Photovolt reading.

Entries Retained from the 2017 Trials Currently in the Regional Trial

Harvested fall of 2017 Held at 48°F until December 14 Stored at 44°F until analysis

A071012-4BF, A07769-4, A10021-5TE, and AOR07821-1 were advanced from the 2017 Tri-State Trial into the 2018 Regional Trial. Five clones were retained in the Regional Trial. When averaged across states, A10021-5TE (43.8 ref units) and AOR07781-5 (43.5 ref units) produced the lightest fries. A071012-4BF, A07769-4, and A08433-4VR fried unacceptably dark when grown in OR. Uniformity of fry color was unacceptable for all WA entries, as well as many of the OR entries. RB and A08433-4VR were the only entries producing non-uniform fry color from ID. AO06191-1 from both the WA and OR growing locations was still dormant after 7 months in storage. It was not grown in ID. Sprout lengths ranged from 0 to 2 inches, depending on clone and growing location. On average, Russet Burbank produced the shortest sprouts (0.33 in) and A07061-6 and A071012-4BF the longest sprouts (1.25 in), reflecting differences in length of dormancy.

	PHOTOVOLT READING				USDA	% REDUCING SUGAR			Sprouting	
Clone	stem	bud	avg	DIFF	COLOR	stem	bud	avg	percent	length (in.)
Washington										
1 Ranger Russet	30.7	43.0	36.9	12.5	0	1.3	0.6	1.0	100	0.50
2 Russet Burbank	24.7	41.6	33.2	16.9	1	2.0	0.7	1.3	100	0.50
3 A07061-6	28.2	41.6	34.9	13.4	1	1.6	0.7	1.1	100	1.50
4 A071012-4BF §	31.4	40.3	36.0	9.2	0	1.3	0.7	1.0	100	1.50
5 A07769-4 §	28.4	39.5	34.0	12.4	1	1.5	0.8	1.1	100	0.75
6 A08433-4VR	20.8	31.1	25.9	11.3	2	2.5	1.3	1.9	100	1.25
7 A10021-5TE §	39.9	49.4	44.6	9.7	0	0.7	0.5	0.6	100	1.00
8 AO06191-1	36.0	46.1	41.1	10.1	0	0.9	0.5	0.7	0	
9 AOR07781-5	41.9	52.2	47.1	10.7	0	0.7	0.5	0.6	100	0.75
10 AOR07821-1 §	25.2	37.0	31.1	11.8	1	1.9	0.9	1.4	100	0.50
11 CO08155-2Ru/Y	25.1	36.0	30.6	11.5	1	1.9	0.9	1.4	100	1.25
		LSD 0.05	*4.1*	*5.1*						
Average	30.2	41.6	35.9	11.8	1	1.5	0.7	1.1	91	
Idaho										
1 Ranger Russet			No Sample				No Sample			No Sample
2 Russet Burbank	26.7	41.3	34.0	14.7	1	1.7	0.7	1.2	100	0.25
3 A07061-6	45.3	45.0	45.1	3.5	0	0.6	0.6	0.6	100	0.25
4 A071012-4BF §	48.4	44.8	46.6	6.1	0	0.5	0.6	0.5	100	1.00
5 A07769-4 §	36.8	34.4	35.6	3.8	0	0.9	1.0	1.0	100	1.00
6 A08433-4VR	30.0	36.8	33.4	9.0	1	1.4	0.9	1.1	100	1.00
7 A10021-5TE §	46.2	44.3	45.3	5.8	0	0.5	0.6	0.6	100	1.00
8 AO06191-1			No Sample				No Sample			No Sample
9 AOR07781-5			No Sample				No Sample			No Sample
10 AOR07821-1 §	50.9	51.7	51.3	2.6	0	0.5	0.5	0.5	100	0.25
11 CO08155-2Ru/Y	40.7	43.5	42.1	5.0	0	0.7	0.6	0.7	100	0.13
		LSD 0.05	*3.9*	*4.3*						
Average	40.6	42.7	41.7	6.3	0	0.9	0.7	0.8	100	
Oregon										
1 Ranger Russet	33.2	38.9	36.1	6.9	0	1.1	0.8	0.9	100	1.25
2 Russet Burbank	28.1	38.7	33.4	11.6	1	1.6	0.8	1.2	100	0.25
3 A07061-6	33.0	42.3	37.7	9.6	0	1.1	0.6	0.9	100	2.00
4 A071012-4BF §	16.2	29.8	22.8	13.8	3	3.4	1.4	2.4	100	1.25
5 A07769-4 §	9.9	22.1	16.0	12.7	4	5.5	2.4	3.9	100	0.75
6 A08433-4VR	15.0	12.2	13.6	6.0	4	3.6	4.4	4.0	100	0.50
7 A10021-5TE §	39.5	43.5	41.5	6.7	0	0.8	0.6	0.7	100	1.00
8 AO06191-1	30.3	45.4	37.8	15.1	1	1.4	0.6	1.0	0	
9 AOR07781-5	37.8	42.2	40.0	7.9	0	0.8	0.6	0.7	100	1.50
10 AOR07821-1 §	29.6	37.5	33.6	9.0	1	1.4	0.9	1.1	100	1.25
11 CO08155-2Ru/Y	23.0	25.9	24.4	5.5	2	2.2	1.8	2.0	100	0.25
		LSD 0.05	*5.1*	*5.0*						
Average	26.9	34.4	30.6	9.5	1	2.1	1.4	1.7	91	

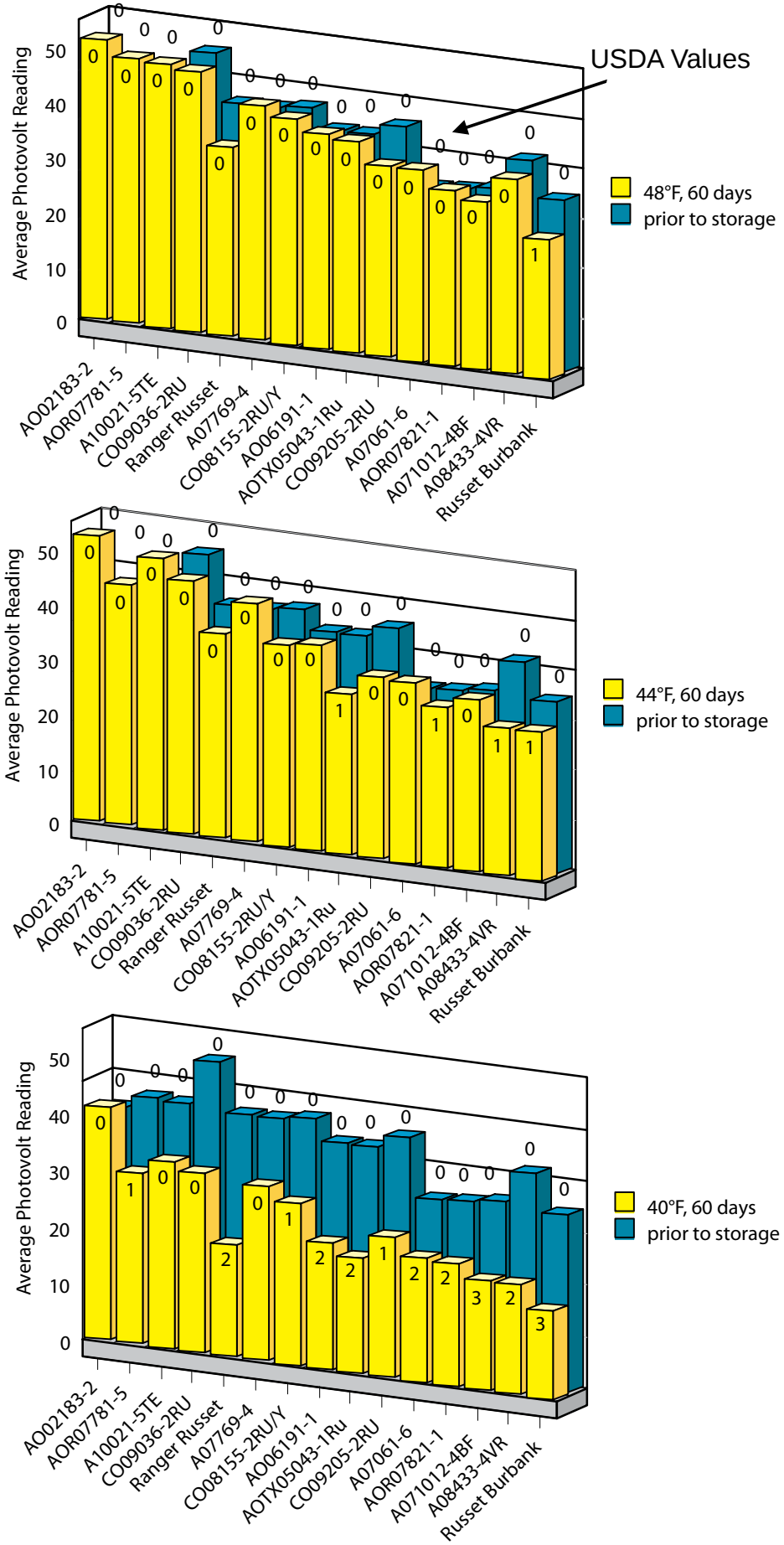
Date test performed:

Washington	April 21
Idaho	April 21
Oregon	April 21

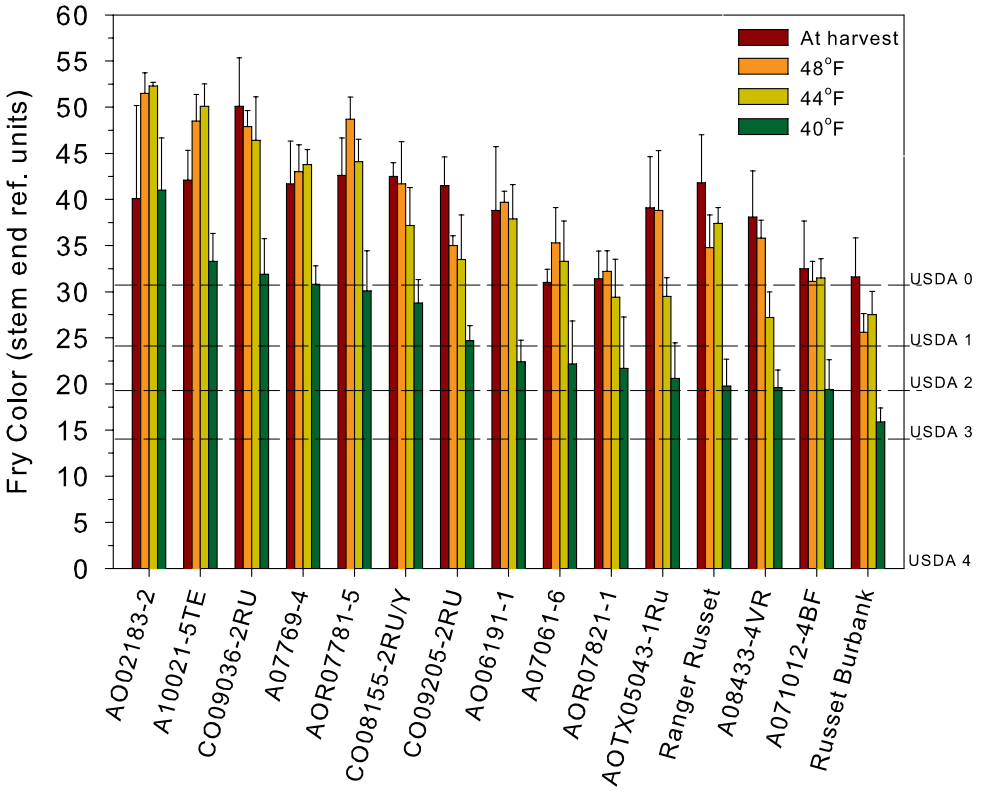
§ Advanced from 2017 Tri-State Trial.

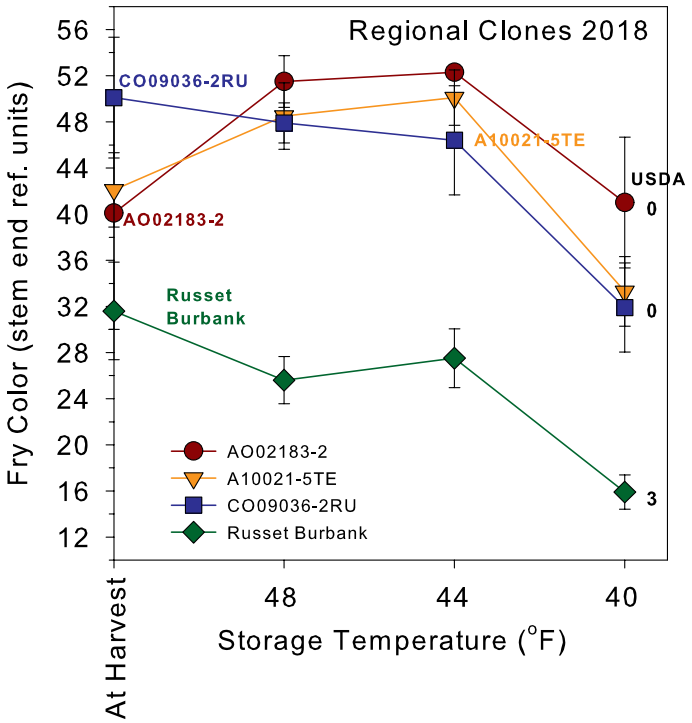
2018 Late Harvest Regional Trial

Regional Trial - 3 State Average of Stem End



2018 Late Harvest Regional Trial

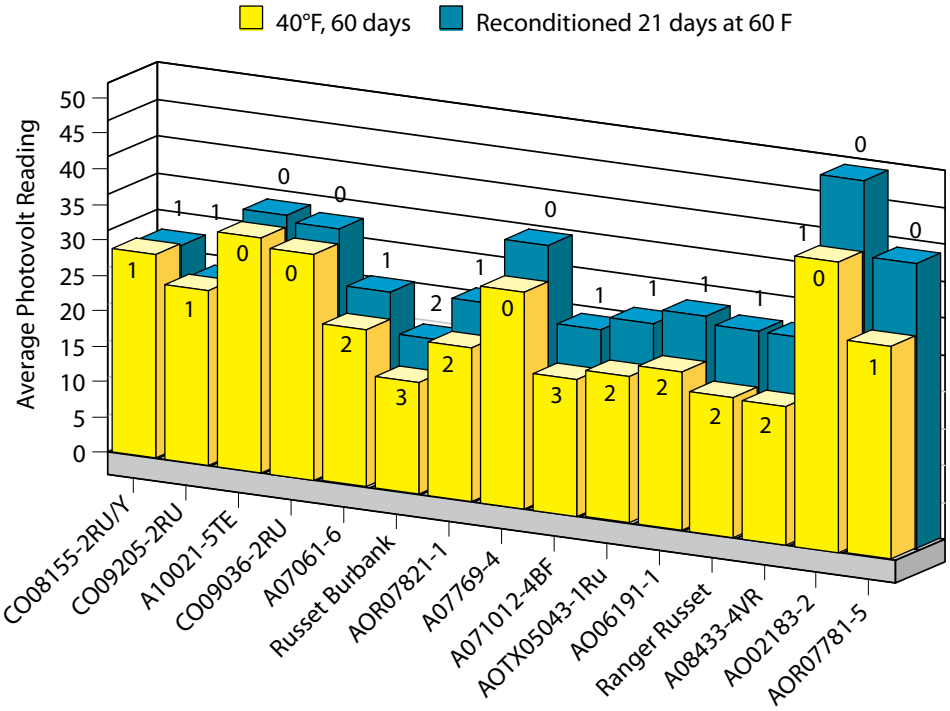


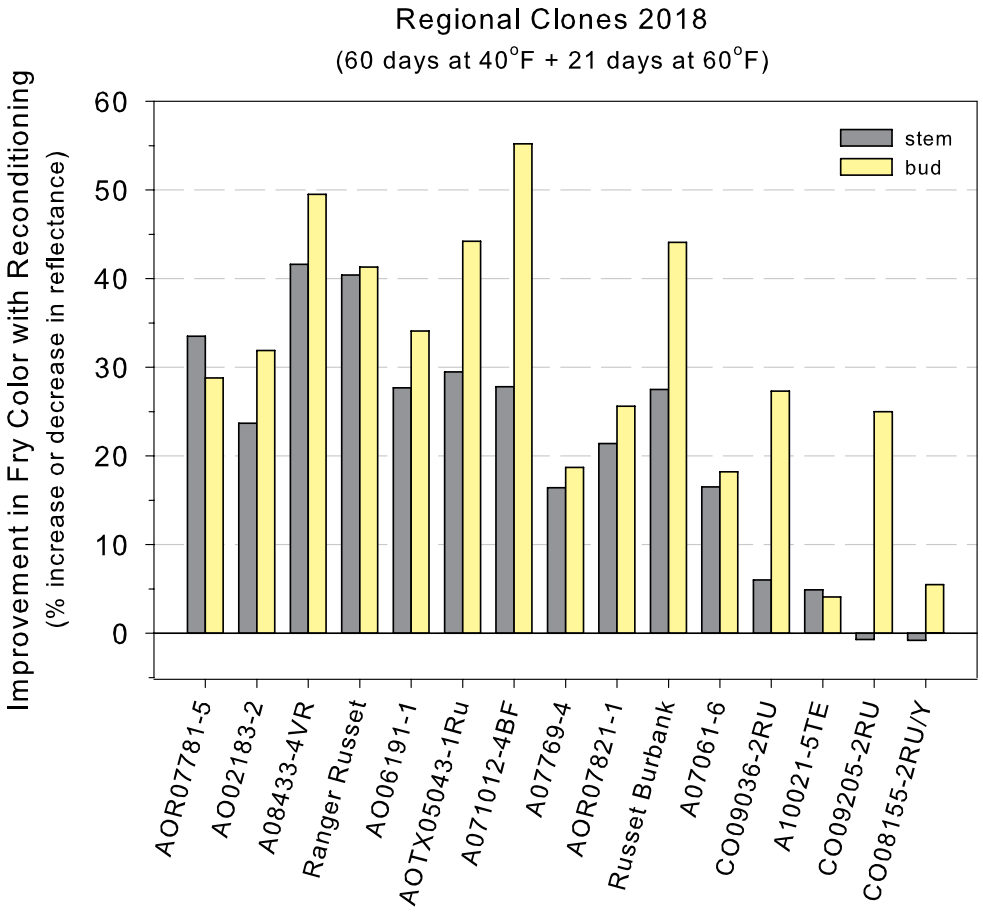


Top: At-harvest and after-storage French fry colors (stem end) of clones in the Regional Trial. Tubers were stored for 60 days at 48, 44 and 40°F. The clones are ranked from best to worst based on fry color of the 40°F-stored tubers. High reflectance values indicate light colored fries.

Bottom: Line graph depicting the effects of storage temperature on change in French fry processing quality (stem end fry color) of the most cold sweetening resistant (AO02183-2, A10021-5TE, and CO09036-2RU) and susceptible (Russet Burbank) clones in the Regional Trial. *Indicates similar performance of the clones last year.

2018 Late Harvest Regional Trial



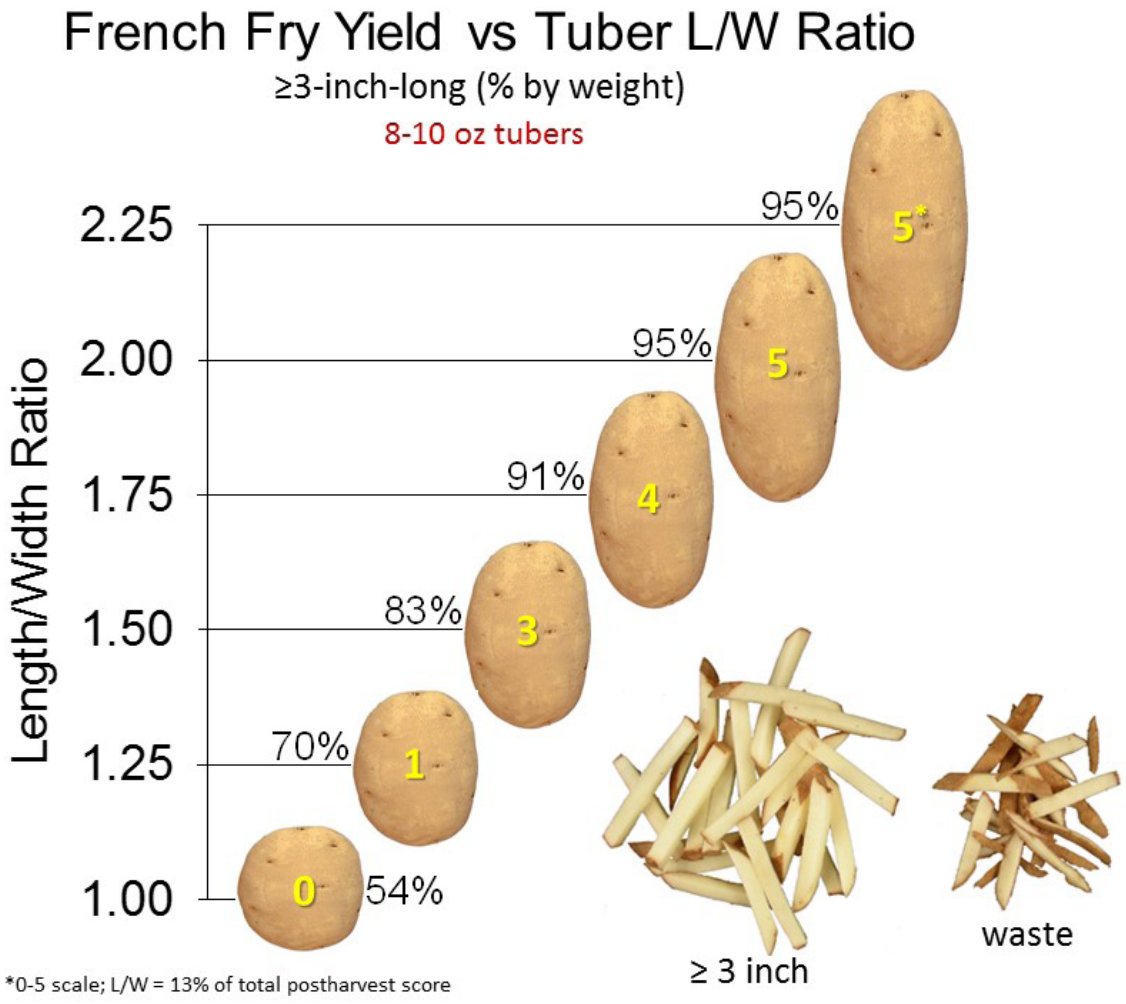


Reconditioning abilities of clones in the 2017 Regional Trial (3-state averages). Clones were stored at 40°F for 60 days after harvest and then reconditioned at 60°F for 21 days. **Top:** Stem end fry color before and after reconditioning. Numbers in bars indicate the USDA color rating of the stem end. **Bottom:** Percent improvement of stem and bud end fry color with reconditioning.

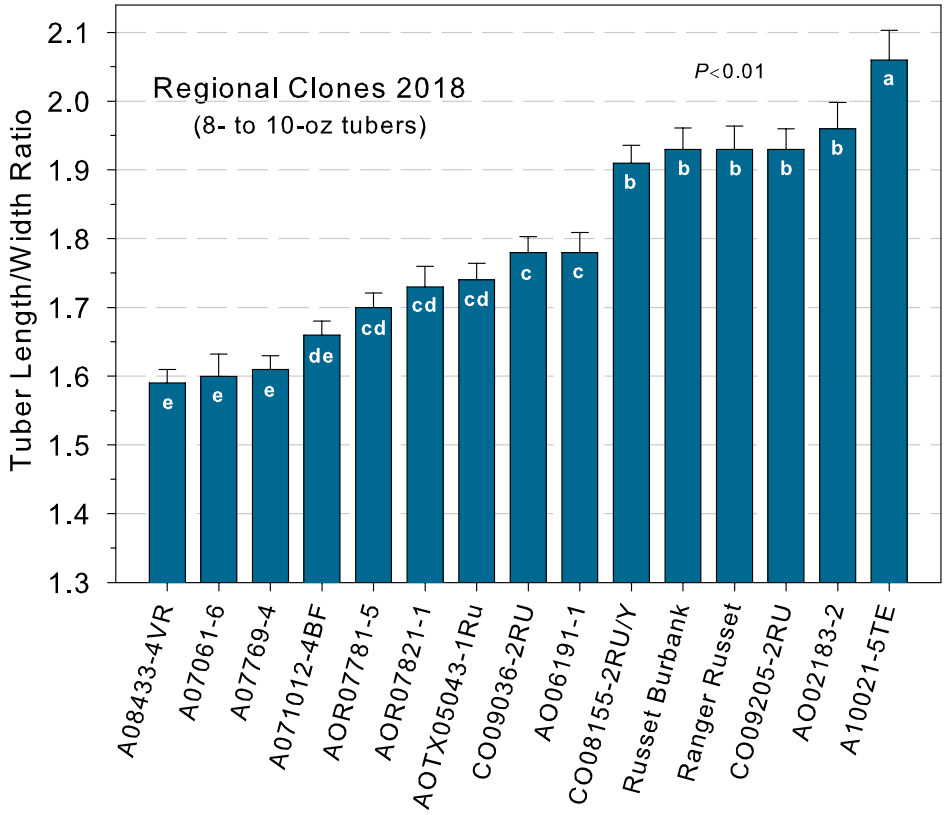
2018 Late Harvest Regional Trial

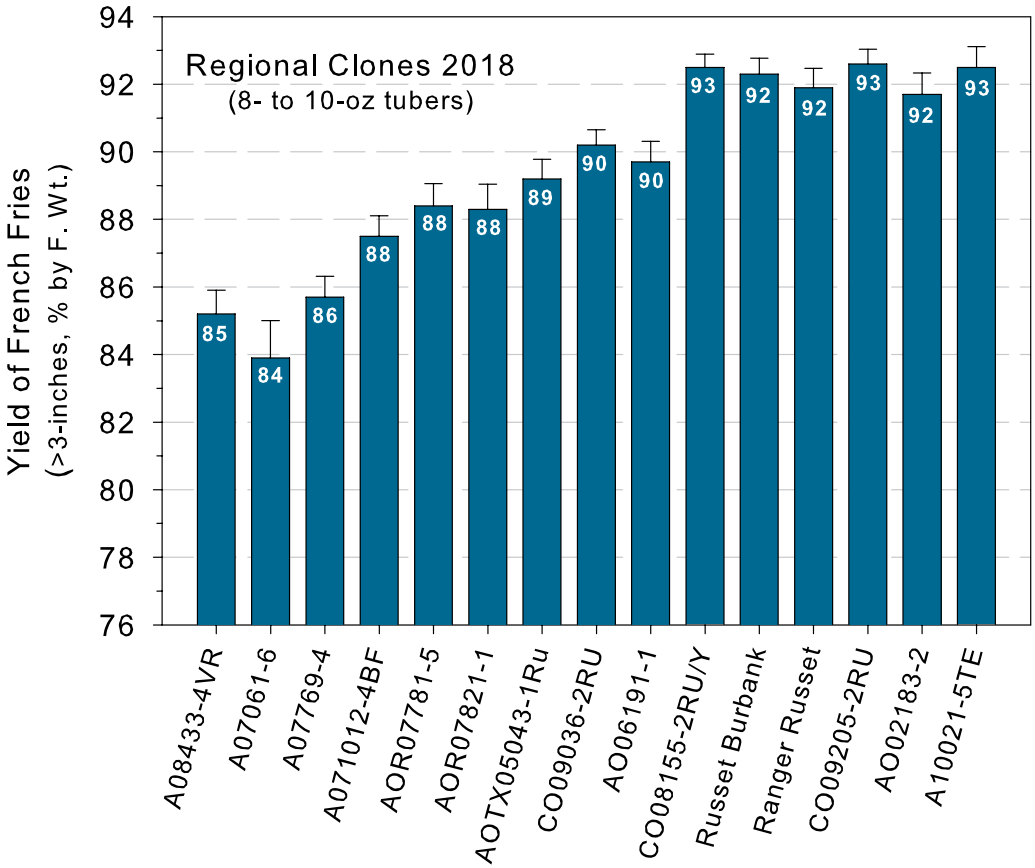
Length to Width Ratios of 8-10 oz Tubers

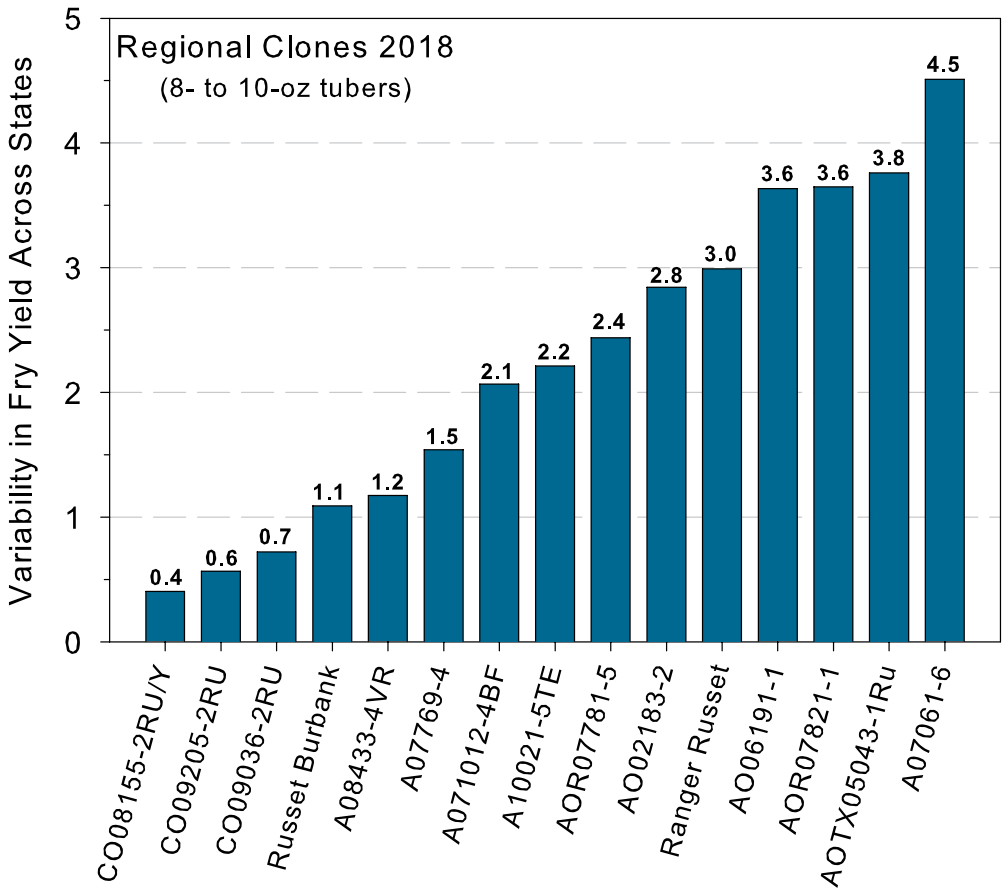
Clone	Length to width ratio WA	rtg §	ID	rtg §	OR	rtg §	3 State Avg.
1 Ranger Russet	1.70	**4**	2.16	**5**	1.93	**5**	1.93
2 Russet Burbank	1.78	**4**	2.05	**5**	1.95	**5**	1.93
3 A07061-6	1.45	**2**	1.81	**5**	1.53	**3**	1.59
4 A071012-4BF	1.56	**3**	1.72	**4**	1.71	**4**	1.66
5 A07769-4	1.54	**3**	1.61	**3**	1.67	**4**	1.61
6 A08433-4VR	1.56	**3**	1.63	**3**	1.60	**3**	1.59
7 A10021-5TE	1.96	**5**	2.43	**5**	1.77	**4**	2.06
8 AO02183-2	1.84	**5**	2.30	**5**	1.73	**4**	1.96
9 AO06191-1	1.76	**4**	2.00	**5**	1.58	**3**	1.78
10 AOR07781-5	1.69	**4**	1.81	**5**	1.60	**3**	1.70
11 AOR07821-1	1.61	**3**	1.97	**5**	1.62	**3**	1.73
12 AOTX05043-1Ru	1.70	**4**	1.96	**5**	1.56	**3**	1.74
13 CO08155-2RU/Y	1.87	**5**	1.95	**5**	1.91	**5**	1.91
14 CO09036-2RU	1.73	**4**	1.79	**4**	1.81	**5**	1.78
15 CO09205-2RU	1.85	**5**	1.94	**5**	2.00	**5**	1.93
Average	1.71		1.94		1.73		1.79



2018 Late Harvest Regional Trial







Relative ranking of clones in the Late Season Tri-State Trial for variability in yield of French fries prepared from 8- to 10-oz tubers. Variability is expressed as the standard deviation (calculated across ID, WA and OR production sites) for the yield of fries ≥3 inches in length (% by fresh weight) from 8- to 10-oz tubers. High values reflect more variation in tuber shape and thus fry yield from state to state. For example, A07061-6 had a length to width ratio of 1.59, resulting in 84% of the tuber producing usable French fries ≥3 inches in length (page 92). However, tuber shape of this entry also varied the most across production sites (see above), resulting in fry yields ranging from 79 to 89% (84±4.5%).

Pages 91-92: Tuber length to width ratios and the associated percentage yield of fries. Bars with same letter are not significantly different (P≤0.01).

2018 Tri-State Specialty Trial

Location: WSU Research Center – Othello, WA
Planting Date: April 5 Vine Kill Date: July 20
Harvest Date: July 31 Days Grown: 106
In-Row Spacing: 8 Inch

The Tri-State Specialty trial is a part of the overall Tri-State Trial effort. This trial consists of clones with unique color and attributes which are primarily evaluated for fresh market suitability. This year's trial compared 3 local reference varieties to 5 new clones. The following is a summary of the Washington field and postharvest results.

Visual Standouts **(nice color, skin, size distribution, & shape)**:

(See also: grading comments and US #1 yield ranking near front of book)

Red-Purple/White flesh: A08112-7R
Yellow flesh: POR14PG22-3
Suggested Discards: None

Standcounts

- **50 Day**
  Full emergence: All entries were greater than 97% emerged.

Plant and Tuber Growth & Development

- **50 Day Stems per plant**
  Most: ATTX05175S-1R/Y (3.5) and LaRatte (3.2).
  Fewest: Yukon Gold (1.4).

- **Average Tuber Number Per Plant**
  Most: POR14PG22-3 (14.0) and ATTX05175S-1R/Y (12.9).
  Fewest: Yukon Gold (4.5) and LaRatte (7.7).

- **Average Tuber Size (oz)**
  Largest: Yukon Gold (9.1), Chieftain (7.5), and ATTX05175S-1R/Y (3.2).
  Smallest: LaRatte (2.0) and POR11PG62-3 (2.7).

Yield Data

- **Total Yield and U.S. #1 Yield**
  Highest: Chieftain had the highest total (857 CWT/A) and the highest U.S. #1 yield (831 CWT/A).
  Lowest: LaRatte had the lowest total (222 CWT/A) and U.S. #1 yield (199 CWT/A).

- **% U.S. #1's**
  Highest: POR14PG22-3 (99%) and ATTX05175S-1R/Y (98%).

2018 Tri-State Specialty Trial

Summaries

ENTRY	TOTAL YIELD		US # 1's* > 0 oz	US # 2's* > 0 oz	Culls* > 0 oz	EXTERNAL DEFECTS 1 = Severe 5 =None		
						Growth		
	CWT/A	Tons/A	% of Total Yield			Knobs	Cracks	Green
Red Skin/White Flesh								
Chieftain	857	42.9	96	2	2	5.0	5.0	5.0
A08112-7R	434	21.7	95	2	3	5.0	5.0	4.0
Red-Purple/Yellow Flesh								
ATTX05175S-1R/Y	598	29.9	98	1	1	5.0	5.0	5.0
COTX04193S-2R/Y	681	34.0	89	2	9	5.0	5.0	5.0
Yellow Flesh								
Yukon Gold	579	28.9	95	3	2	5.0	5.0	4.7
POR14PG22-3	594	29.7	99	0	1	5.0	5.0	4.7
Fingerling								
LaRatte	222	11.1	90	7	3	5.0	5.0	3.0
POR11PG62-3	308	15.4	96	4	0	5.0	5.0	4.7

ENTRY	US # 1 YIELD							Specific Gravity
			0-2 oz*	2-4 oz*	4-6 oz*	6-10 oz*	> 10 oz*	
	CWT/A	Tons/A	%-					
Red Skin/White Flesh								
Chieftain	831	41.5	1	7	14	49	29	1.063
A08112-7R	414	20.7	19	54	24	3	0	1.064
Red-Purple/Yellow Flesh								
ATTX05175S-1R/Y	591	29.5	13	44	31	11	1	1.068
COTX04193S-2R/Y	608	30.4	4	14	24	40	19	1.060
Yellow Flesh								
Yukon Gold	549	27.5	2	6	8	24	60	1.076
POR14PG22-3	588	29.4	19	47	27	7	1	1.060
Fingerling								
LaRatte	199	10.0	50	47	2	2	0	1.064
POR11PG62-3	296	14.8	22	57	19	2	0	1.064

ENTRY	SKIN SET 1 = Poor 5 = Good	TUBER SHAPE 1 = Round 5 = Long	50 DAY STAND % Emerged	STEMS PER PLANT Above Ground	AVERAGE TUBER WEIGHT Ounces	AVERAGE TUBER NUMBER Tubers/Plant	SIZE UNIFORMITY 1 = Poor 5 = Good	SHAPE UNIFORMITY 1 = Poor 5 = Good
Red Skin/White Flesh								
Chieftain	3.0	1.0	98	2.4	7.5	8.0	3.0	3.3
A08112-7R	3.7	1.0	98	2.9	2.8	10.6	4.0	4.0
Red-Purple/Yellow Flesh								
ATTX05175S-1R/Y	3.7	1.0	98	3.5	3.2	12.9	4.0	3.7
COTX04193S-2R/Y	4.0	1.0	97	2.1	5.8	8.2	3.0	3.0
Yellow Flesh								
Yukon Gold	3.7	1.0	98	1.4	9.1	4.5	2.7	3.0
POR14PG22-3	3.0	1.0	97	3.0	3.0	14.0	2.7	2.7
Fingerling								
LaRatte	4.0	5.0	98	3.2	2.0	7.7	4.0	1.0
POR11PG62-3	4.0	4.0	98	2.7	2.7	7.9	4.0	3.0

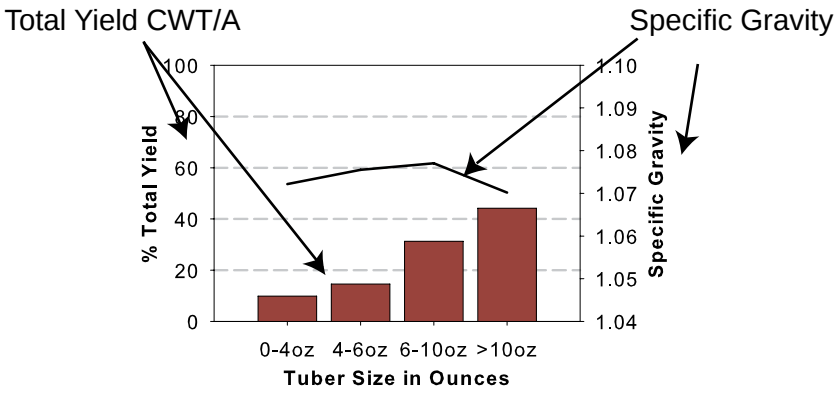
* Percent values may not total 100% due to rounding

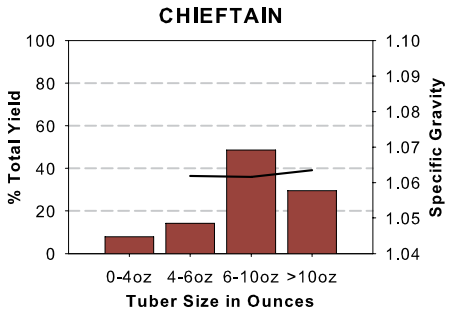
2018 Tri-State Specialty Trial

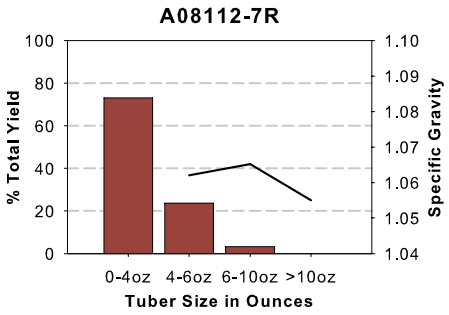
Tuber Yield and Specific Gravity Distributions

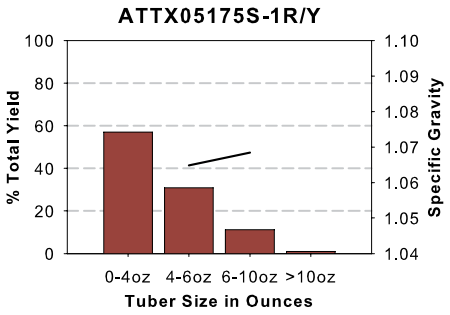
Note: Specific Gravity is based on a sample of U.S. #1 tubers within each size category

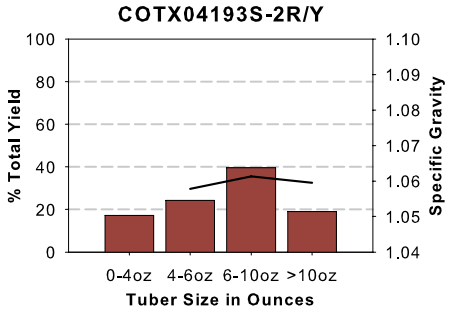
8 inch In-Row Spacing

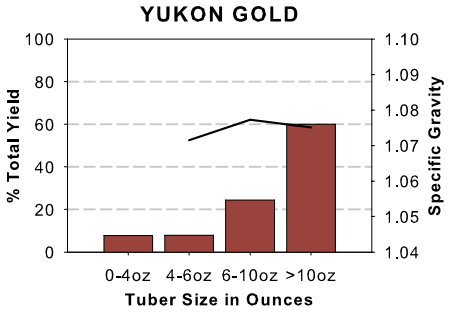


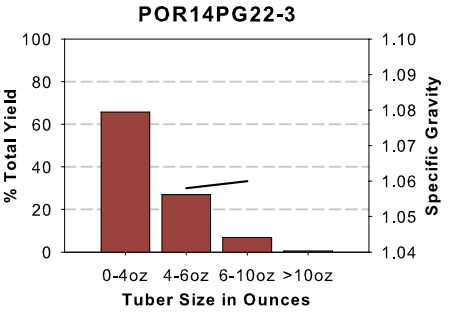


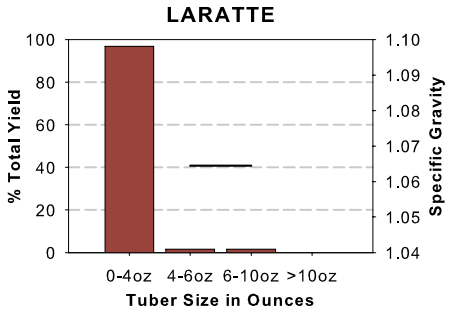


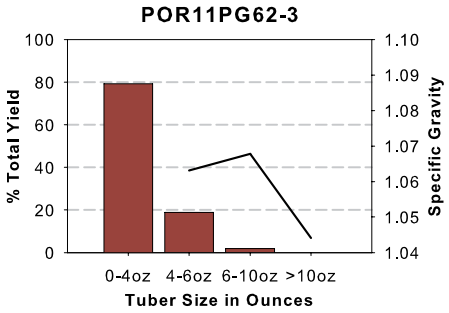












Postharvest Analysis

- Entrees in the Tri-State Red and Specialty Trials are evaluated for their suitability as fresh market potatoes. The specialty entries include varieties and clones with various combinations of skin and flesh colors. The 2018 trial consisted of three cultivars and five numbered clones. The trial was grown at Othello and harvested in late July. Cooking and culinary evaluations were completed August 10-17.

- There were four red skinned and four yellow fleshed clones in this year's trial. POR11PG62-3 has yellow skin with pink splashes. Tubers from Yukon Gold, LaRatte and POR14PG22-3 have yellow skin.

Overall Culinary Evaluation Scores

	Clone	Boiled (25 max)	Baked (25 max)	Microwaved (25 max)	Total (75 max)
4	COTX04193S-2R/Y	18.7	20.4	18.5	57.6
5	Yukon Gold	18.4	19.5	18.9	56.8
7	LaRatte	19.5	18.6	18.7	56.7
6	POR14PG22-3	19.5	20.1	17.1	56.7
2	A08112-7R	15.8	19.3	20.4	55.5
1	Chieftain	18.3	18.3	18.5	55.1
8	POR11PG62-3	17.0	18.8	18.9	54.6
3	ATTX05175S-1R/Y	17.1	19.3	17.2	53.6

Chipped:	Aug. 10
Boiled:	Aug. 14
Microwaved:	Aug. 15
Baked:	Aug. 16
Cooking Time:	Aug. 17

- As in previous years, culinary scores were high with all entries receiving 71 to 77% of the total points possible in the 2018 culinary evaluations.

- The top scoring clones were COTX04193S-2R/Y, Yukon Gold, LaRatte, and POR14PG22-3, which averaged 57/75 points.

- All entries had slight after cooking darkening when baked (see tables pp 98 & 99). The texture of all baked samples was rated favorably as "creamy" or "fluffy. Flavor of the baked samples was acceptably rated as "good" or "bland. Skins of the 3 controls (Chieftain, Yukon Gold, and LaRatte) were rated as "steamy" after baking. All numbered lines were rated as "fully cooked".

- LaRatte showed no sloughing when boiled. By contrast, the other entries showed slight to moderate sloughing when boiled. ATTX05175S-1R/Y was rated with moderate after cooking darkening; all other boiled entries had "slight" after cooking darkening. The texture of A08112-7R was rated as pasty, while POR14PG22-3 and LaRatte were rated as "fluffy". Boiled samples of the remaining entries were rated favorably as "creamy". The tuber centers of all entries were rated as "mushy".

- Microwaving produced “moderate” after cooking darkening in ATTX05175S-1R/Y and POR-11PG62-3, none in Chieftain, and “slight” in all other entries. The texture of microwaved samples was favorably rated as “fluffy” or “creamy” for all entries. The flavor ratings of microwaved samples ranged from “bland” for LaRatte to “good” for all entries. Tuber center ratings of all entries were rated “mushy”. Skins were rated favorably as either “steamy” or “fully cooked” (A08112-7R and POR11PG62-3) following microwaving.

- Chieftain produced the darkest chips with a SFA color rating of 4.6. All other entries produced chips, ranging from 2.3 to 4.1 on the SFA 1-5 scale, with the average being 3.4.

2018 Washington Tri-State Specialty Trial

Red Clone Culinary Evaluation

Boiled

	Clone	Flavor	After Cooking Darkening	Texture	Tuber Center	Sloughing	Total Rating
1	Chieftain	3.7	4.1	2.9	4.2	3.4	18.3
2	A08112-7R	2.9	3.7	2.4	3.8	2.9	15.8
3	ATTX05175S-1R/Y	3.4	3.3	2.9	3.9	3.6	17.1
4	COTX04193S-2R/Y	4.1	3.6	3.2	4.3	3.5	18.7
	LSD 0.05	*0.8*	*0.6*	*ns*	*ns*	*0.6*	*1.8*
	Average	3.5	3.7	2.8	4.1	3.4	17.5

Oven Baked

	Clone	Flavor	After cooking Darkening	Texture	Tuber Center	Skin Rating	Total Rating
1	Chieftain	3.3	4.2	2.6	4.0	4.3	18.3
2	A08112-7R	3.1	4.2	3.5	4.0	4.6	19.3
3	ATTX05175S-1R/Y	3.2	3.8	3.3	4.3	4.8	19.3
4	COTX04193S-2R/Y	4.2	3.8	2.9	4.6	4.9	20.4
	LSD 0.05	*0.9*	*ns*	*ns*	*ns*	*ns*	*ns*
	Average	3.4	4.0	3.1	4.2	4.6	19.3

Microwaved

	Clone	Flavor	After cooking Darkening	Texture	Tuber Center	Skin Rating	Total Rating
1	Chieftain	3.5	4.5	3.2	3.0	4.3	18.5
2	A08112-7R	3.8	4.1	3.3	4.3	4.9	20.4
3	ATTX05175S-1R/Y	3.0	3.3	3.1	3.8	4.0	17.2
4	COTX04193S-2R/Y	3.6	4.0	3.1	3.5	4.3	18.5
	LSD 0.05	*ns*	*0.6*	*ns*	*1.2*	*ns*	*2.4*
	Average	3.5	4.0	3.2	3.7	4.4	18.6

*Differences between clones equal to or greater than the LSD 0.05 are significant.

2018 Washington Tri-State Specialty Trial

Specialty Clone Culinary Evaluation

Boiled

Clone	Flavor	After Cooking Darkening	Texture	Tuber Center	Sloughing	Total Rating
5 Yukon Gold	3.6	4.0	3.3	4.1	3.5	18.4
6 POR14PG22-3	4.0	4.1	3.9	4.2	3.3	19.5
7 LaRatte	3.8	4.3	3.5	3.4	4.5	19.5
8 POR11PG62-3	2.9	3.8	2.6	3.9	3.9	17.0
LSD 0.05	1.0	*ns*	*0.9*	*0.8*	*0.6*	*ns*
Average	3.6	4.1	3.3	3.9	3.8	18.6

Oven Baked

Clone	Flavor	After cooking Darkening	Texture	Tuber Center	Skin Rating	Total Rating
5 Yukon Gold	3.8	4.1	3.3	4.4	3.9	19.5
6 POR14PG22-3	3.9	4.4	2.7	4.4	4.7	20.1
7 LaRatte	3.3	4.1	3.7	3.7	3.8	18.6
8 POR11PG62-3	2.6	3.8	3.8	4.0	4.6	18.8
	0.8	*0.5*	*0.8*	*ns*	*ns*	*ns*
Average	*3.4*	*4.1*	*3.4*	*4.1*	*4.3*	*19.2*

Microwaved

Clone	Flavor	After cooking Darkening	Texture	Tuber Center	Skin Rating	Total Rating
5 Yukon Gold	3.6	4.3	3.7	3.0	4.3	18.9
6 POR14PG22-3	3.6	3.5	3.0	3.1	3.9	17.1
7 LaRatte	3.4	3.6	4.1	3.4	4.2	18.7
8 POR11PG62-3	3.8	3.4	3.2	3.9	4.6	18.9
	ns	*0.5*	*ns*	*ns*	*ns*	*ns*
Average	3.6	3.7	3.5	3.4	4.3	18.4

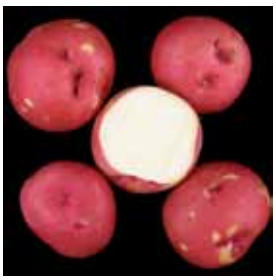
*Differences between clones equal to or greater than the LSD 0.05 are significant.

- Cooking time for boiled samples was assessed again this year. Cores of tuber tissue (1.3 cm diameter x 1.3 cm long) from the stem and bud ends of all entries were immersed in boiling water and the time to penetration by a 90-g probe was recorded. Stem end cores averaged 4.2 min to fully cook compared with 3.6 min for bud end cores. Cooking times (stem end) ranged from 3.3 min (ATTX05175S-1R/Y) to 4.9 min (LaRatte). Average cooking times ranged from 3.0 minutes for ATTX05175S-1R/Y and COTX04193S-2R/Y to 5.0 minutes for LaRatte.

Chipping and Boiling Evaluations

		(Chips)	(BOILED Cooking Time)		
		Av of 6 raters	Time to Breakdown (min)		
Clone		SFA	Stem	Bud	Average
1	Chieftain	4.6	4.2	3.6	3.9
2	A08112-7R	3.9	4.6	3.4	4.0
3	ATTX05175S-1R/Y	3.2	3.3	2.6	3.0
4	COTX04193S-2R/Y	2.8	3.4	2.7	3.0
5	Yukon Gold	4.1	4.8	4.2	4.5
6	POR14PG22-3	2.3	4.1	3.5	3.8
7	LaRatte	2.7	4.9	5.0	5.0
8	POR11PG62-3	3.9	4.4	3.9	4.2
*LSD 0.05 *			*0.8*	*0.7*	
Average		3.4	4.2	3.6	3.9

*Differences between clones equal to or greater than the LSD 0.05 are significant.
SFA 1 (lightest) to 5 (darkest).

Tubers	WA Tri-State Specialty Trial Comments
Chieftain	
	**Tubers:** Round tubers. Fair skin set; moderate eye depth. **Baked:** slight after cooking darkening, creamy texture, bland flavor, mushy tuber center, steamy skin. **Boiled:** good sloughing, slight after cooking darkening, creamy texture, mushy flavor, moderate tuber center. **Microwaved:** no after cooking darkening, creamy texture, good flavor, mushy tuber center, steamy skin.
A08112-7R	
	**Tubers:** Round tubers. Good skin set; shallow eyes. **Baked:** slight after cooking darkening, fluffy texture, bland flavor, mushy tuber center, fully cooked skin. **Boiled:** bland sloughing, slight after cooking darkening, pasty texture, mushy flavor, moderate tuber center. **Microwaved:** slight after cooking darkening, creamy texture, good flavor, mushy tuber center, fully cooked skin.
ATTX05175S-1R/Y	
	**Tubers:** Round tubers. Good skin set; moderate eye depth. **Baked:** slight after cooking darkening, creamy texture, bland flavor, mushy tuber center, fully cooked skin. **Boiled:** bland sloughing, moderate after cooking darkening, creamy texture, mushy flavor, slight tuber center. **Microwaved:** moderate after cooking darkening, creamy texture, bland flavor, mushy tuber center, steamy skin.
COTX04193S-2R/Y	
	**Tubers:** Round tubers. Good skin set; moderate eye depth. **Baked:** slight after cooking darkening, creamy texture, good flavor, mushy tuber center, fully cooked skin. **Boiled:** good sloughing, slight after cooking darkening, creamy texture, mushy flavor, slight tuber center. **Microwaved:** slight after cooking darkening, creamy texture, good flavor, mushy tuber center, steamy skin.
Yukon Gold	
	**Tubers:** Round tubers. Good skin set; moderate eye depth. **Baked:** slight after cooking darkening, creamy texture, good flavor, mushy tuber center, steamy skin. **Boiled:** good sloughing, slight after cooking darkening, creamy texture, mushy flavor, slight tuber center. **Microwaved:** slight after cooking darkening, fluffy texture, good flavor, mushy tuber center, steamy skin.

Chips	Baked	Boiled	Microwaved
Chieftain			
			
A08112-7R			
			
ATTX05175S-1R/Y			
			
COTX04193S-2R/Y			
			
Yukon Gold			
			

Tubers	WA Tri-State Specialty Trial Comments
POR14PG22-3	
	**Tubers:** Round tubers. Fair skin set; moderate eye depth. **Baked:** slight after cooking darkening, creamy texture, good flavor, mushy tuber center, fully cooked skin. **Boiled:** good sloughing, slight after cooking darkening, fluffy texture, mushy flavor, moderate tuber center. **Microwaved:** slight after cooking darkening, creamy texture, good flavor, mushy tuber center, steamy skin.
LaRatte	
	**Tubers:** Long tubers Good skin set; shallow eyes. **Baked:** slight after cooking darkening, fluffy texture, bland flavor, mushy tuber center, steamy skin. **Boiled:** good sloughing, slight after cooking darkening, fluffy texture, mushy flavor, none tuber center. **Microwaved:** slight after cooking darkening, fluffy texture, bland flavor, mushy tuber center, steamy skin.
POR11PG62-3	
	**Tubers:** Oblong to long tubers. Good skin set; shallow eyes. **Baked:** slight after cooking darkening, fluffy texture, bland flavor, mushy tuber center, fully cooked skin. **Boiled:** bland sloughing, slight after cooking darkening, creamy texture, mushy flavor, slight tuber center. **Microwaved:** moderate after cooking darkening, creamy texture, good flavor, mushy tuber center, fully cooked skin.

Chips	Baked	Boiled	Microwaved
POR14PG22-3			
			
LaRatte			
			
POR11PG62-3			
			

Index of Clones and Cultivars