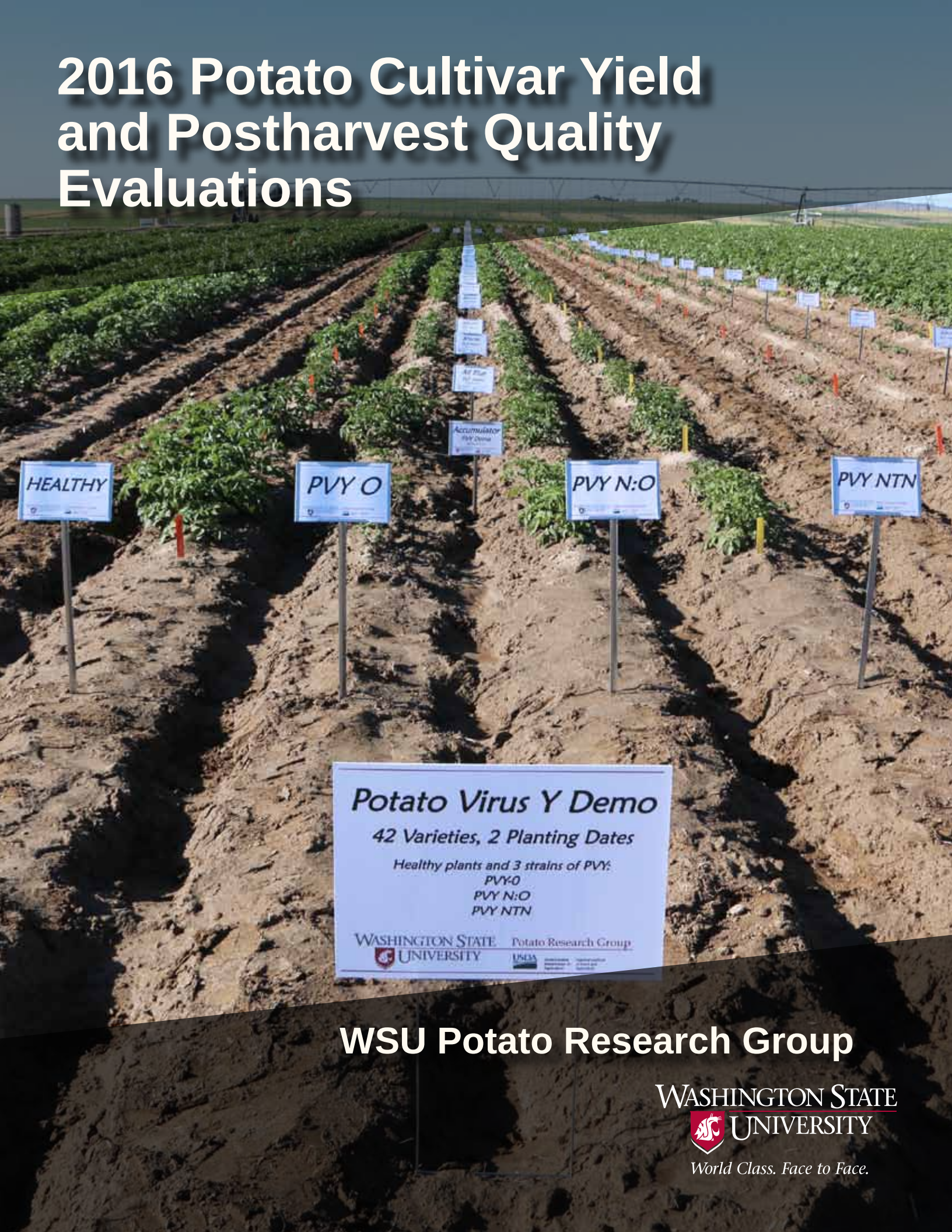
2016 Potato Cultivar Yield and Postharvest Quality Evaluations



WSU Potato Research Group

WASHINGTON STATE UNIVERSITY

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2016 Potato Cultivar Yield and Postharvest Quality Evaluations

Washington State University
Potato Research Group

PO Box 646414

Pullman, WA 99164-6414

http://www.potatoes.wsu.edu/

http://www.pvmi.org

Principal Investigators

N. Richard Knowles

Postharvest Trials and Information

509-335-3451

rknowles@wsu.edu

Additional contact:

Nora Fuller, 509-335-4447

fullern@wsu.edu

Mark J. Pavek

Field Trials and Information

509-335-6861

mjpavek@wsu.edu

Additional contact:

Zach Holden, 509-335-3452

zholden@wsu.edu

Faculty and Staff

Nora Fuller

Raul “Rudy” G. Garza Jr.

Zachary J. Holden

Lisa O. Knowles

Josh Rodriguez

On the cover: WSU Othello Potato Group hosted a Potato Virus Y workshop which included an in-field demo trial. Plants were inoculated with different strains of Potato Virus Y.

Special Thanks

John Steinbock; Mark Weber; Mike Clouse; Martin Moore; Washington State Potato Commission; Growers and Industry; Dennis Johnson; Tom Cummings; Tim Waters; Carrie Wohleb; Chandler Dolezal; Kat Bolding; Paco Gonzalez; Francisco Atilano: Parker Dolezal; Clara Bedlington; Caleb Garza; Lucas Garza

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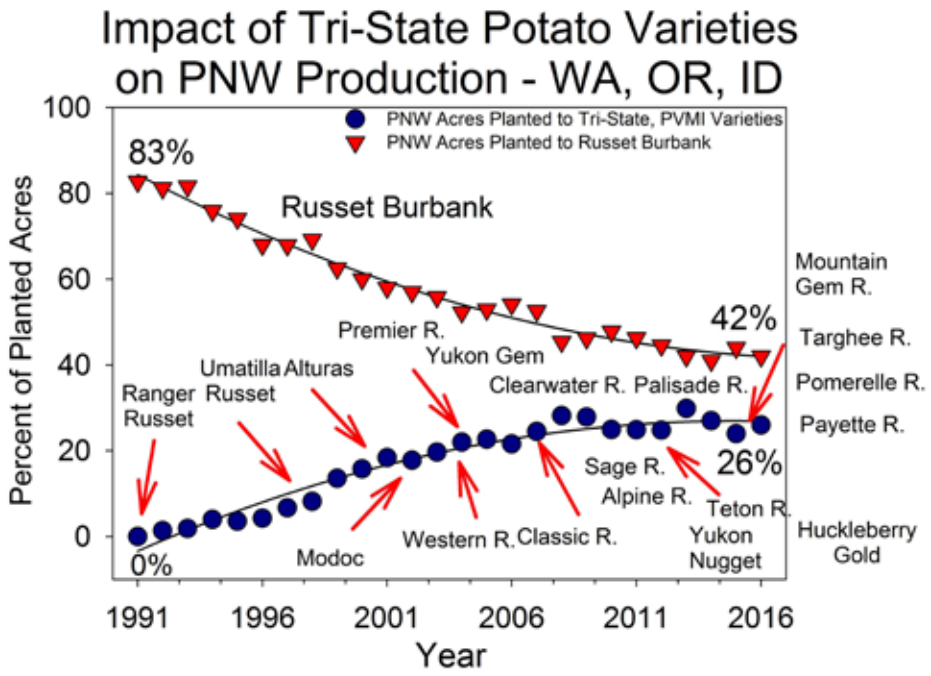
INTRODUCTION

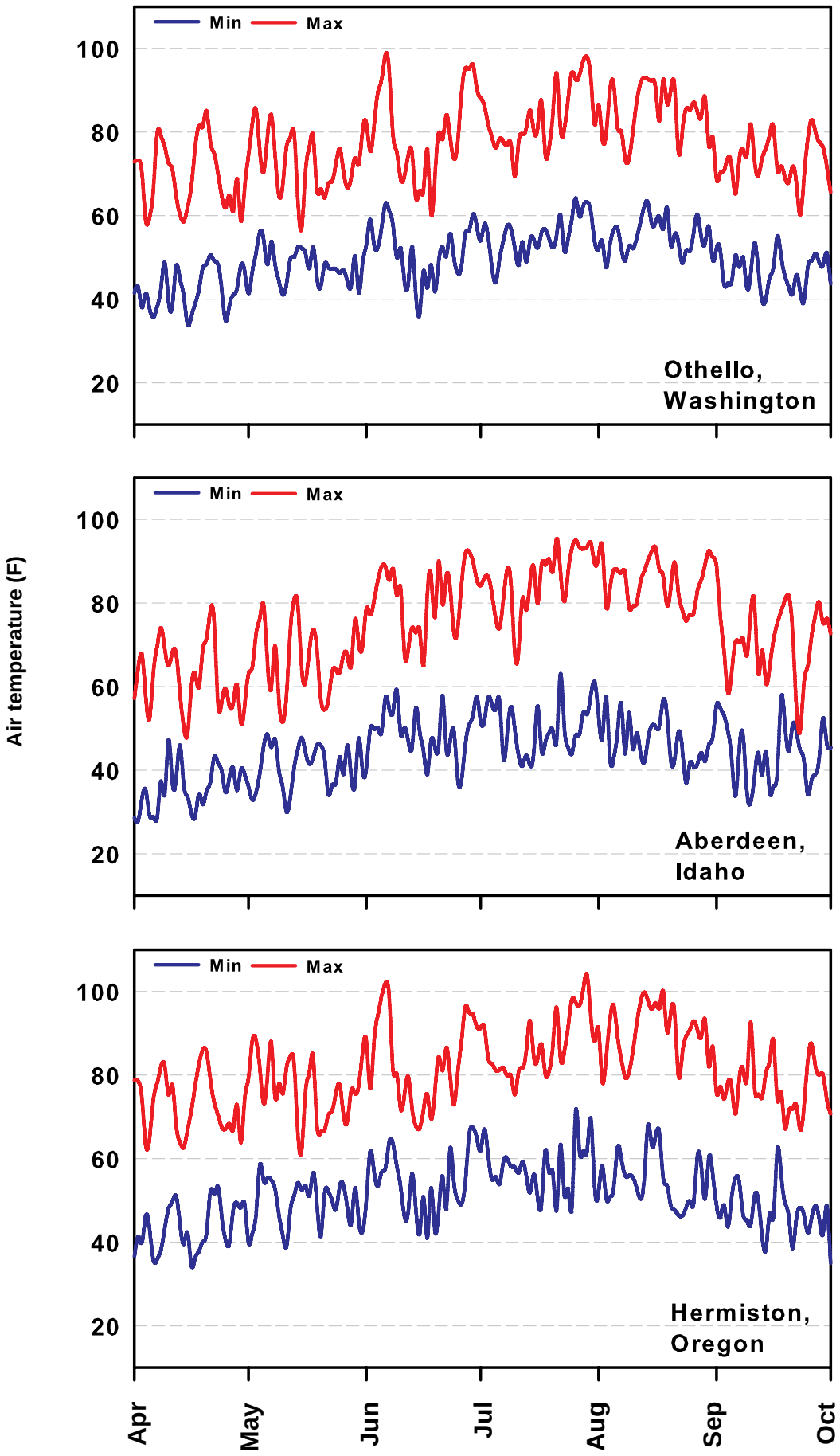
The 2016 Washington State University (WSU) "Potato Cultivar Yield and Postharvest Quality Evaluations" is an annual report providing detailed information about promising new potato clones and cultivars grown in Washington conducted by the **WSU Potato Research Group.** The postharvest sections include information on process quality and storability for samples grown in WA, ID, and OR.

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 and Prosser, WA, Univ. of ID, OR State University, and WA State University. **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, Alturas, Bannock Russet, and Clearwater Russet**, are examples of russet cultivars released from the Tri-State program that have greatly benefited the United States and Northwest potato industry. These cultivars are ranked as the 3rd, 4th, 7th, 9th, and 10th most widely grown cultivars in the United States in 2016, respectively, with Tri-State varieties representing 33.5%, or 309,000 acres, of the fall crop nationally. (NASS, Crop Production, December 2016). **Ranger Russet, Umatilla Russet, and Alturas** were the 3rd, 4th, and 5th most widely grown cultivars in the PNW (ID, OR, WA) in 2016, respectively, and accounted for 27% of the PNW planted acreage. Varieties recently released by the Tri-State program are now produced on more than 143,000 acres in the Pacific Northwest with value to growers estimated at approximately $600 million. In the past 10 years, the US farm-gate value of Tri-State varieties has increased by approximately $190 million.



2016 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.

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	%				
A03921-2	2016	560/816	80	1.098	10.3/6.5	23/74	3% IBS, 3% BC	1.9/1.7	3.1/2.9	3.7
	2015	320/590	71	1.095	8.1/6.3	0/88	3% IBS	0.7/1.1	2.8/2.3	4.6
	2014	520/712	80	1.093	9.9/6.3	33/72	3% IBS, 3% HH	3.4/1.5	4.7/3.3	3.5
	2013	326/864	81	1.094	10.8/6.5	34/61	18% IBS, 3% BC	1.3/3.5	3.7/3.3	4.2
	2012	290/708	74	1.092	7.7/8.1	10/51	3% BC	1.4	-/4.3	4.1
	Due to ugly skin, this clone should be used for processing only. Good tuber length for french fries and post-harvest performance.									
A06021-1T	2016	534/571	75	1.080	9.7/5.8	34/77	none	2.1/2.7	4.3/2.9	2.7
	2015	353/659	78	1.080	8.2/6.8	20/84	none	2.1/3.1	4.2/2.5	4.2
	2014	515/665	83	1.078	9.6/6.1	36/41	none	4.9/3.2	3.2/2.8	2.1
	2013	448/685	87	1.080	9.2/6.0	16/24	3% HH	3.9/3.4	-/3.2	2.6
	This clone has nice shape and could be marketed fresh or process. Yields are similar or less than Russet Norkotah. It has early to medium maturity. Skin issues and low yield could affect fresh performance.									
Ranger R.	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
	2013	479/821	75	1.085	7.9/8.4	29/45	none	NA	2.7/4.4	3.8
	2012	396/852	86	1.085	9.6/7.7	50/50	3% IBS	NA	3.1/4.6	3.1
	2011	468/735	75	1.086	7.5/8.4	49/46	3% IBS	NA	3.1/3.5	4.1
	Long, shape variable at times, yet uniform other times									
R. Burbank	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
	2013	364/738	67	1.075	8.0/7.5	22/47	9% HH, 3% BC	1.2/0.6	1.4/1.7	1.9
	2012	364/710	63	1.076	7.0/8.8	27/57	10%HH, 20% BC	0.5/0.9	1.0/1.6	1.9
	2011	487/641	68	1.076	6.8/8.2	6/24	35%HH, 21% BC	2.3/1.3	3.3/1.5	3.9
	Shape typically variable, often with many growth cracks and knobs									
R. Norkotah	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
	2013	364/598	58	1.067	5.7/8.5	18/33	3% HH, 3% IBS	2.0/1.0	NA	NA
	Shape and skin typically very uniform, size profile typically on the small side									
Shepody	2016	502	82	1.092	11.1/4.9	29/24	none	NA	4.3	-
(Early Harvest)	2015	487	72	1.076	6.7	7/7	none	NA	3.4	-
only	2014	553	84	1.073	9.9/5.8	13/0	none	NA	3.8	-
	2013	354	77	1.062	7.9/4.4	5/10	none	NA	2.6	-
	Early-harvest processing variety. Post-harvest merit not available as this and most varieties typically produce acceptable fries directly from the field.									

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

2016 Tri-State Specialty Potato Clones - Washington State University

2016 Tri-State Specialty Trial

	US #1 Yield 2016				(See also Tri-State Specialty Section near end of book)
	US#1 Yield	0-6 oz	6-10oz	Fresh Market Appearance	
	CWT/A	-----%-----		5 = best	Comments
Red Skin/White Flesh*					
Chieftain	626	44	39	3.5	Nice shape, lots of cracks
Red or Purple Skin/Yellow Flesh					
COA07365-4RY	512	73	24	4.0	Deep red, very typy, smooth and round.
Yellow Flesh					
Yukon Gold	514	28	44	2.8	Good shape, lots of russeting.
A06336-2Y	518	73	25	2.3	Shaped like pears and bowling pins.
A06336-5Y	500	93	7	3.3	Nice shape, round, small with pink eyes.
POR11PG20-2	706	54	34	2.3	Irregular shapes, ok skin, a lot of US # 2's.
POR11PG62-3	429	88	12	1.0	Discard, long with ugly skin, lot's of knobs.

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

Chieftain

COA07365-4RY

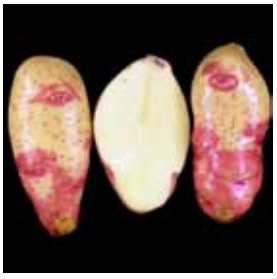
A06336-2Y

Yukon Gold

A06336-5Y

POR11PG20-2

POR11PG62-3



At-Harvest Grading Comments & Fresh Market Appearance

Newest Lines - 2016 Tri-State Trials			
	Fresh Market Appearance 1-5 (5 = Best)		
Clone	2016	2015	Tuber Appearance Comments
Early Harvest Tri-State			
Ranger Russet	2.7	2.7	Mostly typy, some irregular shapes
Russet Burbank	2.0	1.0	Smaller, shapes a bit irregular.
Russet Norkotah	3.7	2.3	Small and typy.
Shepody	2.0	1.0	Irregular shapes, light skin.
A06030-23	2.0	4.0	Small, dark russet, bad rhizoc.
A061070-3CSR	1.0	2.0	Mostly round, growth cracks, DISCARD.
A06403-12	2.7	-	Small, not early, ugly skin.
A07061-6	2.0	-	Light skin, small, round.
A07088-6	2.0	-	Irregular shapes, small, not early.
A071012-4BF	2.0	-	Not Early! Small, some round, bad skin.
A08009-2TE	3.0	4.0	Smaller, short, but some typy.
A08422-2VRsto	3.0	-	Small, short, some round.
A10210-7TE	2.7	-	Not early, bad skin, a bit short.
A10214-2TE	3.0	-	Not early, small, some typy.
AOR06576-1	3.3	-	Not early, small, ugly.
AOR07781-5	3.3	-	Mostly typy, some irregular shapes.
AOR07821-1	2.3	-	Irregular shapes, bad skin!
AOR08032-1	2.7	-	Not early, small, pears.
Late Harvest Tri-State			
Ranger Russet	3.0	3.7	Large, long, mostly typy.
Russet Burbank	2.5	2.8	Non uniform shape, but not bad.
Russet Norkotah	3.5	4.0	Good length, typy.
A06030-23	3.0	4.0	Too round! DISCARD
A061070-3CSR	2.0	1.8	Too round. Softballs and baseballs. DISCARD
A06403-12	2.3	-	Blocky, ugly skin, too many greens. DISCARD
A07061-6	2.0	-	Too short, with ugly skin. DISCARD
A07088-6	2.0	-	Mostly round, small, with bad skin. DISCARD
A071012-4BF	2.0	-	Plump, many short ones, bad skin.
A08009-2TE	3.5	3.0	50% round, 50% long and typy.
A08422-2VRsto	2.8	-	A lot of short and small ones.
A10210-7TE	2.0	-	Ugly skin, non uniform shape, DISCARD.
A10214-2TE	2.3	-	Too round and short.
AOR06576-1	2.0	-	Length ok, some curves and points.
AOR07781-5	3.8	-	Typy, nice russet skin. Could go fresh.
AOR07821-1	2.0	-	Short, round, irregular shapes, DISCARD.
AOR08032-1	3.0	-	A bit flat, mostly typy, short, oval.

*Typy - Visually appealing, uniform tuber shape.

AOR07781-5

A08009-2TE

AOR07781-5

A08009-2TE

At-Harvest Grading Comments & Fresh Market Appearance

Advanced Lines - 2016 Regional Trials				
	Fresh Market Appearance 1-5 (5 = Best)			
Clone	2016	2015	2014	Tuber Appearance Comments*
Early Harvest Regional				
Ranger Russet	4.0	3.0	3.0	Nice size, typy.
Russet Burbank	2.3	2.5	1.7	Irregular shapes, some rot.
Russet Norkotah	3.3	2.5	3.3	Mostly typy.
Shepody	1.7	2.0	1.7	Huge, with irregular shapes.
A03141-6	2.3	2.0	1.3	Irregular shapes, spotty russeting, DISCARD
A03921-2	2.3	2.0	3.0	Light buff russet, irregular shape.
A06021-1T	2.3	3.3	4.0	Bad skin, nice size.
AO03123-2	2.7	3.0	3.2	Small, irregular shapes
AO06191-1	4.0	4.0	4.0	Typy, dark russet, poor skin set.
AOR06070-1KF	2.3	1.7	2.0	Irregular shapes, ok size.
CO04220-7RU	3.3	-	-	Small, baby potatoes, not early.
CO05068-1RU	3.0	3.0	2.7	Flat, irregular shapes like RB.
CO05152-5RU	3.0	-	-	Irregular shape, not an early variety.
CO05175-1RU	3.7	3.7	3.3	Typy, some large, not great skin.
COTX09022-3RuRE/Y	2.0	1.0	-	Looks like a flat river rock! DISCARD
COTX09052-2Ru	4.0	3.3	-	Flat, long, a lot of small ones.
TX08352-5Ru	3.7	4.0	-	Small, typy, not an early variety.
Late Harvest Regional				
Ranger Russet	3.3	2.0	2.7	Typy, long, large.
Russet Burbank	2.7	2.8	1.8	Good length and size, non uniform skin.
Russet Norkotah	3.0	4.0	3.5	Non uniform russeting, bad skin.
A03141-6	1.8	1.8	2.0	Large, plump, non uniform shape.
A03921-2	2.0	2.3	2.5	Very large, ugly skin, plump.
A06021-1T	3.0	4.0	3.8	Nice size and length, ugly skin.
AO03123-2	2.0	3.3	2.5	Non-uniform shape, a bit short, ugly.
AO06191-1	4.0	4.0	4.0	Very nice shape and size, typy, dark russet.
AOR06070-1KF	2.0	2.5	2.5	Large, bad roadmapping. Scab.
CO04220-7RU	2.3	-	-	Too small, pointy, DISCARD.
CO05068-1RU	2.5	2.0	2.8	Poor skin set, irregular shapes.
CO05152-5RU	3.0	-	-	Round, too small.
CO05175-1RU	2.8	4.0	3.0	Non uniform shape and size.
COTX09022-3RuRE/Y	1.5	1.0	-	Round, pink eyes, ugly, DISCARD!!!
COTX09052-2Ru	3.0	4.0	-	Flat uniform shape, mostly typy.
TX08352-5Ru	3.0	4.0	-	Small, uniform shape, short.

*Typy - Visually appealing, uniform tuber shape

AO06191-1

COTX09052-2Ru

AO06191-1

FRESH MARKET MERIT - NEWEST LINES
2014-2016

(5 = best) - Entries ranked by means

EARLY HARVEST - Fresh Market Merit Scores

	Entry	Mean	2016	2015	2014
1	AOR06576-1	**3.1**	3.1	-	-
2	AOR07781-5	**2.3**	2.3	-	-
3	A08009-2TE	**2.1**	2.3	2.0	-
4	A07061-6	**2.1**	2.1	-	-
5	Ranger Russet	**2.1**	2.2	1.4	2.6
6	Russet Norkotah	**2.0**	1.6	1.8	2.5
7	A08422-2VRsto	**1.9**	1.9	-	-
8	A06030-23	**1.8**	0.5	3.1	-
9	AOR07821-1	**1.7**	1.7	-	-
10	A061070-3CSR	**1.6**	1.3	1.9	-
11	A07088-6	**1.5**	1.5	-	-
12	A071012-4BF	**1.5**	1.5	-	-
13	A10214-2TE	**1.3**	1.3	-	-
14	A06403-12	**1.3**	1.3	-	-
15	Russet Burbank	**1.2**	0.9	0.6	2.3
16	AOR08032-1	**1.1**	1.1	-	-
17	A10210-7TE	**0.8**	0.8	-	-

LATE HARVEST - Fresh Market Merit Scores

	Entry	Mean	2016	2015	2014
1	AOR07781-5	**3.0**	3.0	-	-
2	A08009-2TE	**2.7**	3.0	2.5	2.5
3	Russet Norkotah	**2.6**	2.9	2.4	2.5
4	AOR06576-1	**2.4**	2.4	-	-
5	Ranger Russet	**2.3**	2.7	1.7	2.6
6	AOR08032-1	**2.2**	2.2	-	-
7	A06030-23	**2.2**	0.8	2.9	2.9
8	A07061-6	**2.1**	2.1	-	-
9	AOR07821-1	**1.9**	1.9	-	-
10	A071012-4BF	**1.7**	1.7	-	-
11	A061070-3CSR	**1.7**	1.3	1.9	1.9
12	A07088-6	**1.7**	1.7	-	-
13	A08422-2VRsto	**1.3**	1.3	-	-
14	Russet Burbank	**1.2**	1.2	1.3	1.1
15	A06403-12	**1.0**	1.0	-	-
16	A10210-7TE	**0.7**	0.7	-	-
17	A10214-2TE	**0.4**	0.4	-	-

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
2012-2016

(5 = best) - Entries ranked by means

EARLY HARVEST - Fresh Market Merit Scores

	Entry	Mean	2016	2015	2014	2013	2012
1	AO06191-1[a]	**3.6**	3.4	3.4	4.0	-	-
2	A06021-1T	**3.2**	2.1	2.1	4.9	3.9	-
3	CO05175-1RU	**2.6**	2.2	2.9	-	-	-
4	TX08352-5Ru	**2.5**	2.2	2.8	-	-	-
5	A03141-6	**2.4**	2.4	2.3	2.2	2.8	-
6	Ranger Russet	**2.3**	2.8	2.7	2.6	1.7	1.6
7	COTX09052-2Ru	**2.1**	3.1	1.2	-	-	-
8	CO05068-1RU	**2.1**	2.6	2.5	1.1	-	-
9	CO05152-5RU	**2.1**	2.1	-	-	-	-
10	Russet Norkotah	**2.0**	2.5	1.7	2.3	2.0	1.3
12	A03921-2	**1.7**	1.9	0.7	3.4	1.3	1.4
13	CO04220-7RU	**1.5**	1.5	-	-	-	-
14	AOR06070-1KF	**1.5**	1.6	1.6	1.3	1.4	-
15	AO03123-2	**1.3**	0.9	1.2	2.0	1.5	1.0
16	COTX09022-3RuRE/Y	**1.1**	2.0	0.3	-	-	-
17	Russet Burbank	**1.0**	0.9	1.3	0.9	1.2	0.5

[a]Shatter bruise on AO06191-1 may be a concern

LATE HARVEST - Fresh Market Merit Scores

	Entry	Mean	2016	2015	2014	2013	2012
1	CO05175-1RU	**2.7**	2.1	2.3	3.7	-	-
2	A06021-1T	**2.6**	2.7	3.1	3.2	3.4	0.8
3	CO05175-1RU	**2.6**	2.6	-	-	-	-
4	AO06191-1	**2.5**	4.4	1.8	1.5	-	-
5	COTX09052-2Ru	**2.2**	2.8	1.6	-	-	-
6	TX08352-5Ru	**2.2**	2.5	1.9	-	-	-
7	AO03123-2	**2.2**	1.9	2.3	1.1	3.5	2.1
8	Russet Norkotah	**2.1**	2.5	2.5	3.5	1.0	1.2
9	A03921-2	**1.9**	1.7	1.1	1.5	3.5	-
10	CO05068-1RU	**1.9**	2.0	1.7	1.9	-	-
11	A03141-6	**1.7**	1.7	1.5	1.4	2.1	-
12	AOR06070-1KF	**1.7**	2.0	1.9	1.4	1.4	-
13	Ranger Russet	**1.6**	2.2	1.8	1.3	0.9	1.8
14	CO04220-7RU	**1.0**	1.0	-	-	-	-
15	Russet Burbank	**0.9**	1.3	1.4	0.4	0.6	0.9
16	COTX09022-3RuRE/Y	**0.8**	1.4	0.1	-	-	-

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
2014-2016

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

EARLY HARVEST - Process Market Merit Scores

	Entry	Field Performance Mean	Field Performance Only* 2016	2015	2014
1	Shepody	**3.5**	4.3	2.9	3.3
2	A08009-2TE	**3.4**	3.5	3.4	-
3	AOR06576-1	**3.3**	3.3	-	-
4	A07061-6	**3.2**	3.2	-	-
5	Ranger Russet	**3.1**	2.7	4.0	2.8
6	A08422-2VRsto	**3.0**	3.0	-	-
7	A071012-4BF	**3.0**	3.0	-	-
8	AOR07821-1	**2.9**	2.9	-	-
9	AOR07781-5	**2.5**	2.5	-	-
10	Russet Burbank	**2.5**	2.6	1.3	3.5
11	A07088-6	**2.4**	2.4	-	-
12	A06403-12	**2.3**	2.3	-	-
13	A10214-2TE	**2.2**	2.2	-	-
14	Russet Norkotah	**2.2**	2.0	2.6	2.0
15	A061070-3CSR	**2.2**	1.8	2.6	-
16	A06030-23	**2.0**	1.3	2.8	-
17	AOR08032-1	**1.9**	1.9	-	-
18	A10210-7TE	**1.2**	1.2	-	-

*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 (Washington only)		2016		2015		2014	
	Entry	Field Mean	WA Post Harvest Mean	Field	Post Harv	Field	Post Harv	Field	Post Harv
1	AOR07781-5	**4.0**	**4.0**	4.0	4.0	-	-	-	-
2	Ranger Russet	**3.6**	**3.6**	3.8	3.9	4.1	4.4	2.8	2.7
3	AOR06576-1	**3.3**	**2.1**	3.3	2.1	-	-	-	-
4	A071012-4BF	**3.0**	**1.8**	3.0	1.8	-	-	-	-
5	A08422-2VRsto	**2.9**	**2.8**	2.9	2.8	-	-	-	-
6	AOR08032-1	**2.8**	**3.6**	2.8	3.6	-	-	-	-
7	A06403-12	**2.8**	**3.3**	2.8	3.3	-	-	-	-
8	A061070-3CSR	**2.7**	**4.3**	1.3	3.9	4.1	4.7	-	-
9	A06030-23	**2.6**	**4.6**	1.7	4.3	3.4	4.9	-	-
10	Russet Burbank	**2.5**	**2.1**	3.1	2.4	1.3	2.2	3.1	2.0
11	AOR07821-1	**1.8**	**3.3**	1.8	3.3	-	-	-	-
12	A10210-7TE	**1.7**	**3.3**	1.7	3.3	-	-	-	-
13	A07088-6	**1.6**	**2.9**	1.6	2.9	-	-	-	-
14	A07061-6	**1.3**	**2.8**	1.3	2.8	-	-	-	-
15	A10214-2TE	**0.7**	**3.3**	0.7	3.3	-	-	-	-

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 - ADVANCED LINES
2012-2016

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

EARLY HARVEST - Process Market Merit Scores

	Entry	Field Performance Mean	Field Performance Only* 2016	2015	2014	2013	2012
1	AO06191-1	**3.8**	3.9	3.6	-	-	-
2	CO05152-5RU	**3.8**	3.8	3.6	-	-	-
3	A03141-6	**3.7**	3.9	4.3	4.4	2.4	-
4	A06021-1T	**3.6**	4.3	2.9	4.2	3.2	-
5	CO05175-1RU	**3.6**	3.2	3.6	4.1	-	-
6	CO05068-1RU	**3.6**	3.0	4.3	3.5	-	-
7	A03921-2	**3.6**	3.1	2.8	4.7	3.7	-
8	TX08352-5Ru	**3.6**	4.3	2.8	-	-	-
9	Shepody	**3.5**	4.3	3.4	3.8	2.6	-
10	Ranger Russet	**3.5**	2.6	3.6	4.3	2.7	4.0
11	COTX09052-2Ru	**3.3**	3.6	3.1	-	-	-
12	AOR06070-1KF	**3.1**	2.8	4.0	3.1	2.7	-
13	Norkotah	**2.8**	3.1	3.3	2.6	2.0	3.2
14	AO03123-2	**2.5**	1.8	3.6	2.4	2.2	-
15	Burbank	**2.3**	2.0	2.9	1.3	1.4	4.0
16	CO04220-7RU	**1.9**	1.9	-	-	-	-
17	COTX09022-3RuRE/Y	**1.5**	2.3	0.8	-	-	-

*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		(Washington only)									
			WA Post	2016		2015		2014		2013		2012	
	Entry	Field Mean	Harvest Mean	Field	Post Harv	Field	Post Harv	Field	Post Harv	Field	Post Harv	Field	Post Harv
1	A03141-6	**4.2**	**4.2**	3.9	3.5	4.1	4.7	4.5	4.3	-	-	-	-
2	Ranger Russet	**4.0**	**3.6**	4.6	3.2	3.8	4.9	2.5	2.8	4.4	3.8	4.6	3.1
3	AO03123-2	**3.8**	**4.2**	4.2	3.8	3.5	4.7	2.9	3.5	4.7	4.6	3.8	4.3
4	CO05068-1RU	**3.8**	**3.9**	4.4	3.0	2.8	4.7	4.1	3.9	-	-	-	-
5	AOR06070-1KF	**3.3**	**4.0**	3.7	3.7	3.7	4.3	3.1	3.8	2.8	4.0	-	-
6	CO05175-1RU	**3.3**	**3.5**	3.3	-	2.4	4.1	4.2	2.8	-	-	-	-
7	A03921-2	**3.2**	**4.0**	2.9	3.7	2.3	4.6	3.3	3.5	3.3	4.2	4.3	4.1
8	AO06191-1	**3.2**	**3.9**	4.0	3.0	2.4	4.7	3.1	3.9	-	-	-	-
9	A06021-1T	**2.9**	**2.9**	2.9	2.7	2.5	4.2	2.8	2.1	3.2	2.6	-	-
10	CO04220-7RU	**2.6**	**3.9**	2.6	3.9	-	-	-	-	-	-	-	-
11	CO05152-5RU	**2.5**	**-**	2.5	-	-	-	-	-	-	-	-	-
12	COTX09052-2Ru	**2.5**	**-**	3.6	-	1.4	-	-	-	-	-	-	-
13	TX08352-5Ru	**1.8**	**2.3**	2.1	-	1.5	2.3	-	-	-	-	-	-
14	Russet Burbank	**1.8**	**2.1**	3.2	2.2	1.2	2.7	-	2.0	1.7	1.9	1.6	1.9
15	COTX09022-3RuRE/Y	**0.9**	**-**	1.6	-	0.2	-	-	-	-	-	-	-

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.

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 $133/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: $133/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.

2016 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.

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") 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") 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 2015 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.

2016 Early Harvest Tri-State Trial

Location: WSU Research Center – Othello, WA
Planting Date: March 30 Vine Kill Date: July 27
Harvest Date: August 9 Days Grown: 119

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 2016 trial compared 4 local reference varieties to 14 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): **none**
Process Market Standout(s): **none**

Standcounts

- **30 Day**
  Slow emergence: Shepody, A06403-12, and A08422-2VRsto each had (0%).
  Best emergence: A06030-23 (18%), AOR07781-5 (24%).

- **40 Day**
  Slow emergence: AOR07821-1 (49%), A06403-12 (40%), and A06030-23 (31%).
  Best emergence: Ranger Russet (96%) and A07061-6 (93%).

- **50 Day**
  Poor emergence: All varieties were above (84%).

Plant and Tuber Growth & Development

- **Above Ground Stem Number Per Plant**
  Most: A08009-2TE and AOR7781-5 each had (2.6).
  Least: A08422-2VRsto (1.3) and Ranger Russet (1.7).

- **Average Tuber Number Per Plant**
  Most: A08009-2TE (10.0), A10210-7TE (9.9), and A07061-6 (9.8).
  Least: A06030-23 (5.4), Shepody (5.7), and Ranger Russet (5.9).

- **Average Tuber Size (oz)**
  Largest: Shepody (10.0), Ranger Russet (8.5), and A061070-3CSR (8.3).
  Smallest: A10210-7TE (5.3); Russet Norkotah (5.5).

- **Undersized Tubers (< 4 oz)**
  Most: A10210-7TE, A08009-2TE, and AOR08032-1.
  Fewest: Shepody, Ranger Russet, and A08422-2VRsto.

Yield and Economic Data

- **Total Yield and U.S. #1 Yield**
  Highest: A07061-6 had the highest total yield (613 CWT/A) and A07061-6 had the U.S. #1 yield (523 CWT/A). AOR06576-1 had the second highest total yield (579 CWT/A) and Shepody had the second highest U.S. #1 yield (513 CWT/A).

  Lowest: A06030-23 had the lowest total yield (340 CWT/A) and the U.S. #1 yield (282 CWT/A). Norkotah had the second lowest total yield (394 CWT/A); and the second lowest U.S. #1 yield (296 CWT/A).

- **% U.S. #1's (greater than 4 oz)**
  Highest: Shepody (94%) and A08422-2VRsto (92%).
  Lowest: A10210-77TE (72%); Russet Burbank (73%) and AOR08032-1 (73%).

- **Carton Yield (100 to 50 Count (7 to 18 oz U.S. #1 Tubers))**
  Highest: Shepody (17.2 Tons/A) and Ranger Russet (15.9 Tons/A).
  Lowest: A10210-7TE (5.6 Tons/A).

- **Gross Return ($/acre)**
  Fresh Market Highest: Shepody and A07061-6.
  Fresh Market Lowest: Russet Norkotah, A06030-23, and A10214-2TE.
  Process Market Highest: Shepody and A07061-6.

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

- **External Defects**
  Notable Defects: A061070-3CSR had 16% growth cracks and AOR08032-1 had 5% growth cracks. Russet Burbank had 6% knobs. Most entries had little to no external defects.

- **Internal Defects**
  Notable Defects: Russet Burbank had 13% brown center and 7% hollow heart. A06030-23 had 5% hollow heart. Most entries had little to no internal defects.

- **Bruise**
  Highest Blackspot: A06030-23 (55%), Russet Burbank and Ranger Russet (47%).
  Highest Shatter: A061070-3CSR (73%) and AOR08032-1 (50%).

2016 Early Harvest Tri-State Trial

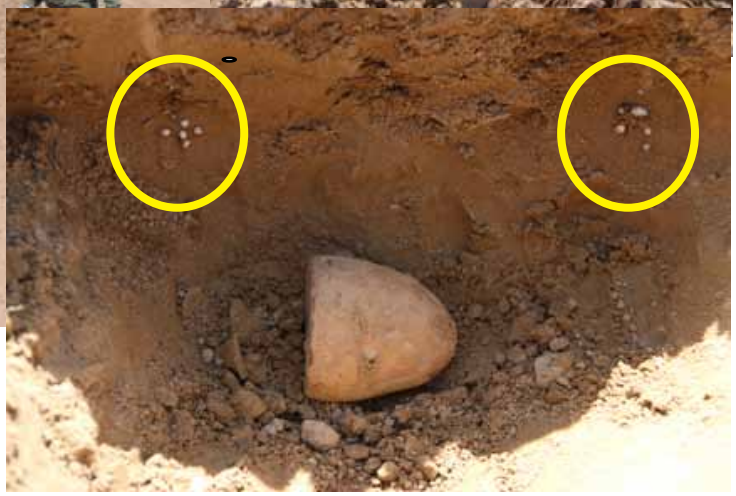
Summaries

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	481	*CDE*	24.1	88	0	12	66	15.9	75	18.1
Russet Burbank	504	*BCD*	25.2	73	1	26	37	9.4	51	12.9
Russet Norkotah	394	*EF*	19.7	74	0	26	30	5.9	38	7.9
Shepody	549	*ABC*	27.5	94	0	6	63	17.2	84	23.0
A06030-23	340	*F*	17.0	83	0	17	45	7.7	61	10.4
A061070-3CSR	524	*ABCD*	26.2	75	0	25	54	14.2	59	15.7
A06403-12	532	*ABCD*	26.6	80	0	20	39	10.4	53	14.2
A07061-6	613	*A*	30.7	85	0	14	44	13.6	62	18.9
A07088-6	544	*ABCD*	27.2	80	0	20	37	10.2	53	14.7
A071012-4BF	534	*ABCD*	26.7	89	0	11	44	11.7	64	17.2
A08009-2TE	543	*ABCD*	27.2	78	0	22	36	9.8	51	14.1
A08422-2VRsto	513	*BCD*	25.6	90	0	10	54	13.8	71	18.2
A10210-7TE	499	*BCD*	25.0	72	0	28	22	5.6	35	8.7
A10214-2TE	405	*EF*	20.3	75	0	25	36	7.3	48	9.9
AOR06576-1	579	*AB*	28.9	83	0	17	45	12.9	57	16.6
AOR07781-5	472	*CDE*	23.6	86	1	13	48	11.3	64	15.2
AOR07821-1	455	*DE*	22.8	79	0	21	54	12.3	65	14.5
AOR08032-1	484	*CDE*	24.2	78	0	22	33	8.0	48	12.3

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	422	*BCDEF*	21.1	23	62	15	1.097	0	0	0
Russet Burbank	369	*EFGHI*	18.4	49	48	3	1.089	7	13	0
Russet Norkotah	296	*HI*	14.8	60	39	1	1.095	0	0	0
Shepody	513	*AB*	25.6	17	53	31	1.095	0	0	3
A06030-23	282	*I*	14.1	43	55	3	1.098	5	0	0
A061070-3CSR	392	*CDEFG*	19.6	28	65	8	1.091	0	0	0
A06403-12	427	*BCDEF*	21.3	51	44	4	1.098	0	0	0
A07061-6	523	*A*	26.1	47	52	1	1.092	0	0	0
A07088-6	436	*ABCDEF*	21.8	47	42	11	1.103	0	0	0
A071012-4BF	474	*ABCD*	23.7	46	46	8	1.106	0	0	0
A08009-2TE	422	*BCDEF*	21.1	51	43	5	1.091	0	0	0
A08422-2VRsto	460	*ABCDE*	23.0	40	57	2	1.105	0	3	0
A10210-7TE	360	*FGHI*	18.0	69	31	0	1.102	0	0	0
A10214-2TE	306	*GHI*	15.3	53	46	1	1.093	0	0	0
AOR06576-1	483	*ABC*	24.2	44	52	4	1.102	0	0	0
AOR07781-5	409	*CDEFG*	20.4	40	53	7	1.104	0	0	0
AOR07821-1	359	*FGHI*	18.0	27	58	15	1.094	0	3	0
AOR08032-1	381	*DEFGH*	19.1	52	34	14	1.098	0	3	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	9	96	96	1.7	8.5	5.9	4	4	47	7
Russet Burbank	2	87	98	1.9	6.5	8.1	3	3	47	10
Russet Norkotah	7	67	91	2.4	5.5	7.3	4	3	13	17
Shepody	0	82	93	1.6	10.0	5.7	4	3	20	20
A06030-23	18	31	84	1.9	6.6	5.4	4	4	55	18
A061070-3CSR	4	69	96	1.9	8.3	6.6	4	2	40	73
A06403-12	0	40	96	2.4	6.5	8.5	3	2	27	53
A07061-6	13	93	100	2.1	6.5	9.8	4	3	20	47
A07088-6	11	80	96	2.5	6.3	9.0	4	3	23	23
A071012-4BF	2	78	98	1.8	7.1	7.8	3	3	27	13
A08009-2TE	2	84	98	2.6	5.7	10.0	4	3	43	20
A08422-2VRsto	0	73	91	1.3	7.4	7.3	4	3	3	20
A10210-7TE	4	84	98	2.4	5.3	9.9	3	3	10	30
A10214-2TE	4	62	96	2.2	5.8	7.2	4	3	6	30
AOR06576-1	2	80	96	1.8	6.6	9.3	4	3	15	15
AOR07781-5	16	76	100	2.6	7.2	6.8	4	3	37	23
AOR07821-1	2	49	93	2.0	8.0	6.0	4	3	20	23
AOR08032-1	4	87	100	2.2	6.2	8.2	4	3	10	50

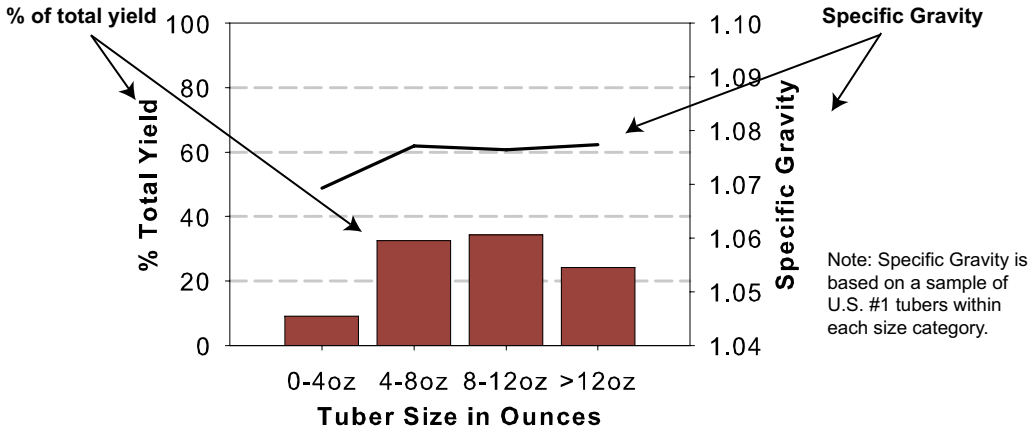


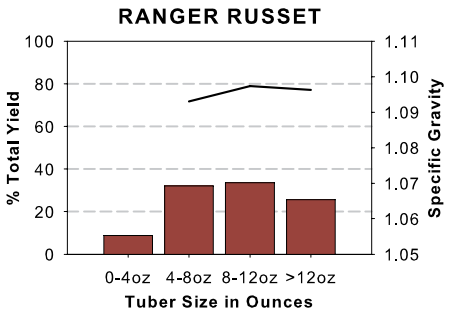
WSU staff, Josh Rodriguez and Francisco Atllano, and PhD candidate Chandler Dolezal apply phosphorus treatments using custum made small plot equipment. The yellow circles indicate the banded fertilizer location.

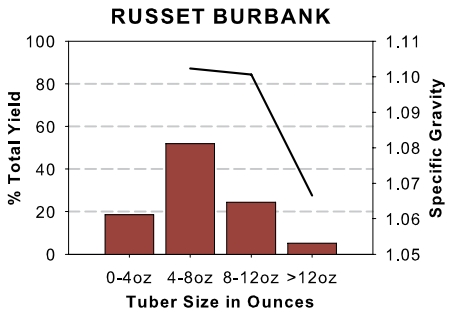
2016 Early Harvest Tri-State Trial

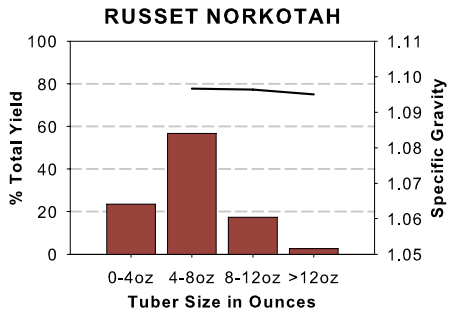
Tuber Yield and Specific Gravity Distributions

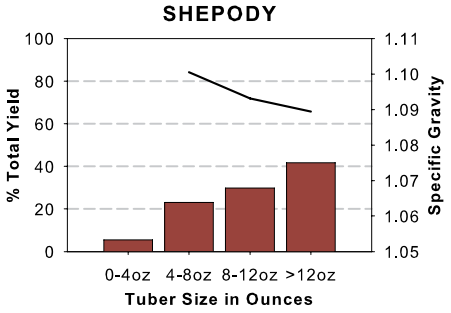
12 inch In-Row Spacing

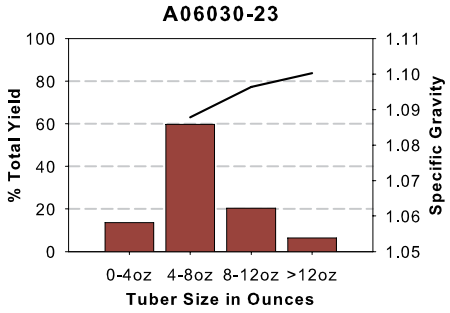


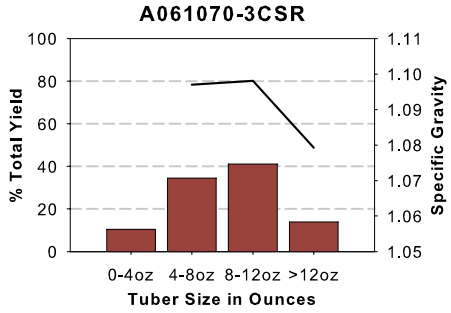


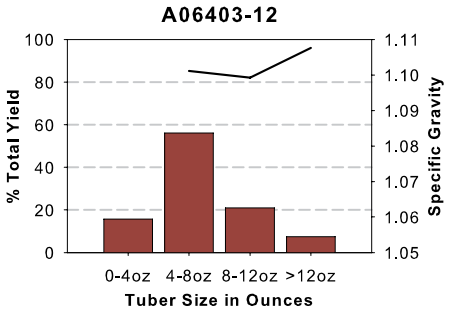


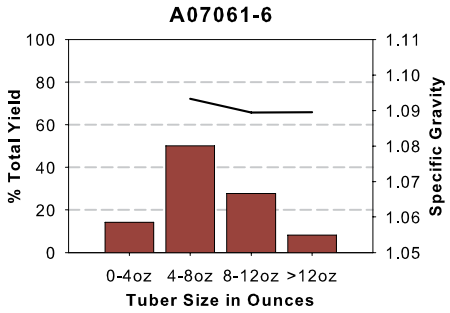


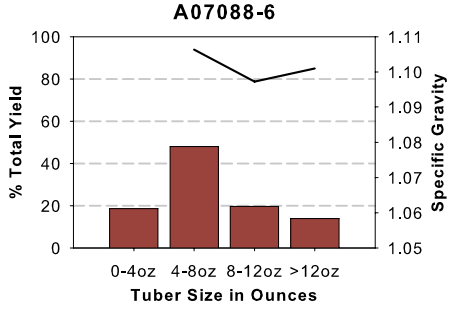


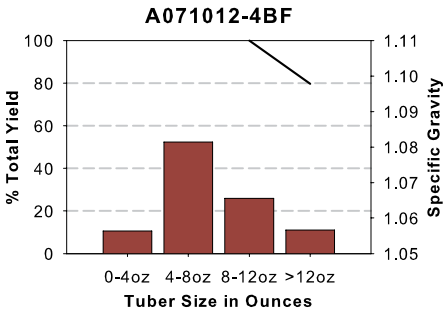


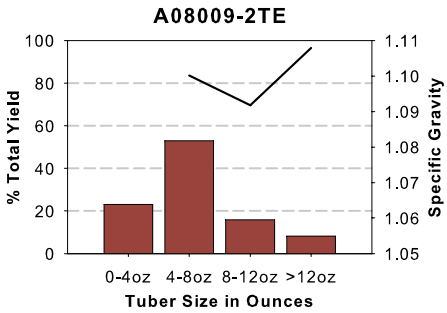


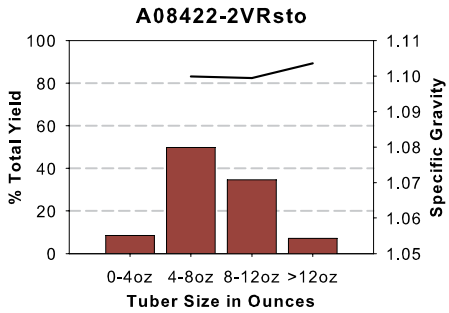


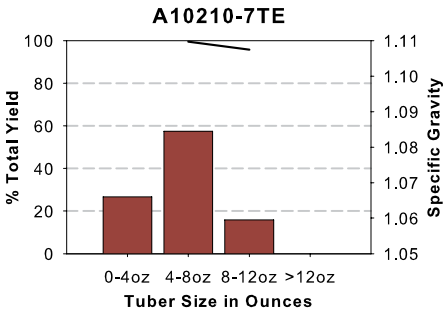


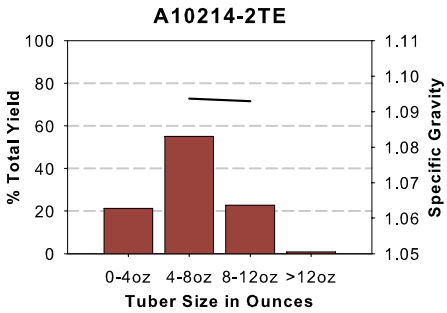



A071012-4BF
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


A08009-2TE
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


A08422-2VRsto
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


A10210-7TE
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


A10214-2TE
% Total Yield
Specific Gravity
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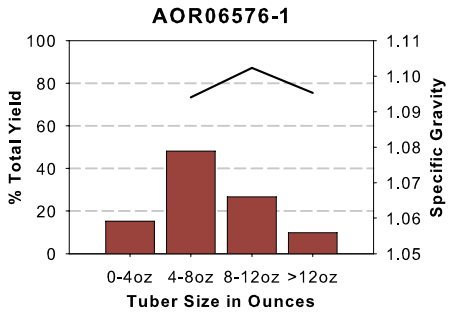
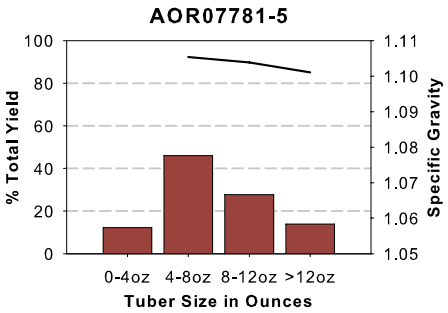
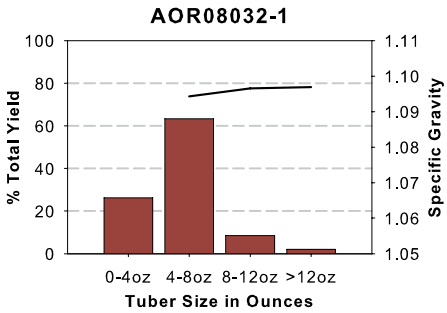
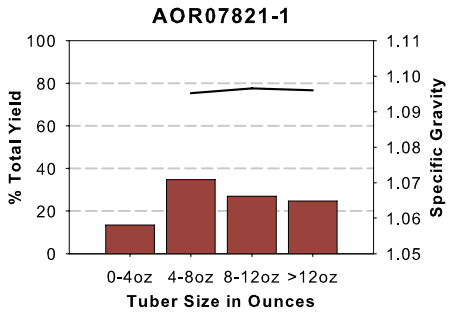
Tuber Size in Ounces


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


AOR08032-1
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


AOR07821-1
% Total Yield
Specific Gravity
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Tuber Size in Ounces

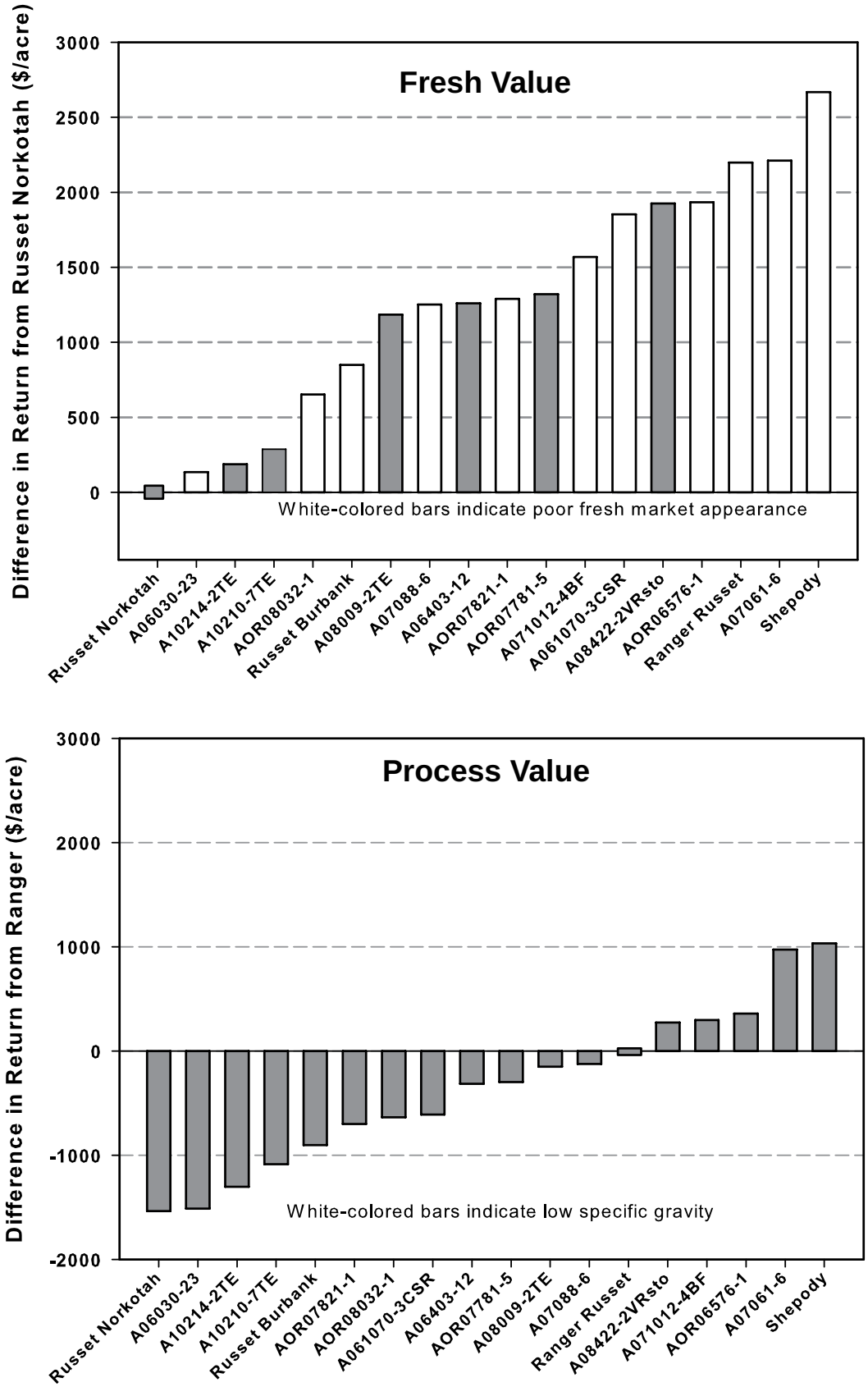

Figure 1 (Top). Difference in gross return per acre (Fresh Market) from Russet Norkotah calculated by subtracting the gross return of Russet Norkotah from the gross return of the particular entry.
Figure 2 (Bottom). Difference in gross return per acre (Process Market) from Ranger Russet calculated by 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.

2016 Early Harvest Tri-State Trial

Tubers

Ranger Russet

A06030-23

A07088-6

A10210-7TE

Russet Burbank

A061070-3CSR

A071012-4BF

A10214-2TE

Russet Norkotah

A06403-12

A08009-2TE

AOR06576-1

Shepody

AOR08032-1

A08422-2VRsto

AOR07781-5

AOR07821-1

2016 Late Harvest Tri-State Trial

Location: WSU Research Center – Othello, WA
Planting Date: April 5 Vine Kill Date: September 2
Harvest Date: September 13 Days Grown: 150

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 postharvest results. See also: grading comments and merit scores near front of book.

Fresh Market Standout(s): AOR07781-5
Process Market Standout(s): AOR07781-5

Standcounts

- **30 Day**
  Slow emergence: A06403-12 (44%).
  Best emergence: A07061-6 (90%).

- **40 Day**
  Slow emergence: A10214-2TE (81%).
  Best emergence: AOR08032-1 (98%).

- **50 Day**
  Full emergence: Ranger Russet, and A10210-7TE were 100%.
  Best emergence: All other entries were at least 91% at 50 DAP.

Plant and Tuber Growth & Development

- **Above Ground Stem Number Per Plant**
  Most: AOR07781-5 (3.5) and A10210-7TE (3.3).
  Least: A08422-2VRsto (1.7).

- **Average Tuber Number Per Plant**
  Most: A07061-6 (11.6) and A10210-7TE (11.4).
  Least: A08422-2VRsto (8.3) and AOR07821-1 (8.4).

- **Average Tuber Size (oz)**
  Largest: AOR07821-1 (9.1), Ranger Russet (8.4).
  Smallest: A10214-2TE (6.1) and A10210-7TE (6.2).

- **Undersized Tubers (< 4 oz)**
  Most: A10210-7TE and A10214-2TE.
  Least: AOR07821-1 and Ranger Russet.

Yield and Economic Data

- **Total and US #1**
  Highest: A07061-6 had the highest total yield (992 CWT/A); AOR07821-1 had the highest US #1 yield (846 CWT/A). A08009-2TE had the second highest total yield (926 CWT/A); A07061-6 had the second highest US #1 yield (832 CWT/A).
  Lowest: A10214-2TE had the lowest total yield (722 CWT/A) and A06030-23 had the lowest US #1 yield (567 CWT/A).

- **% U.S. #1's Greater Than 4 oz.**
  Highest: AOR07821-1 (92%), A08422-2VRsto (88%).
  Lowest: A06403-12 and A10210-7TE both at (75%), A06030-23 (78%).

- **Carton Yield (100 to 50 Count (7 to 18 oz US #1 Tubers))**
  Highest: AOR06576-1 (29.8 Tons/A), A07061-6 (27.9Tons/A).
  Lowest: A10214-2TE (14.2 Tons/A), A06030-23 (16.4 Tons/A).

- **Gross Return ($/acre)**
  Fresh Market Highest: AOR06576-1, A07061-6, and AOR07821-1.
  Fresh Market Lowest: A10214-2TE, A06030-23, and A06403-12.
  Process Market Highest: AOR07821-1, A071012-4BF, and A08009-2TE.
  Process Market Lowest: A10214-1TE, A06030-23 and Russet Norkotah.

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

- **External Defects**
  Notable Defects: A06403-12 had 10% tubers that were green, and AOR06576-1 had 7%. All other entries had little to no external defects.

- **Internal Defects**
  Notable Defects: A08422-2VRsto had 18% internal brown spot and Russet Burbank had 7% internal brown spot. Other defects were present at 6% or less. Most entries were relatively free of internal defects.

- **Bruise**
  Highest Blackspot: Ranger Russet (61%); A06030-23 and A10210-7TE both at (60%).
  Lowest Blackspot: A061070-3CSR (10%) and A07088-6 (11%).
  Highest Shatter: A10214-2TE (100%) and AOR07781-5 (97%).
  Lowest Shatter: Ranger Russet (42%) and Russet Norkotah (52%).

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Postharvest Information

Samples were obtained from the Washington, Idaho and Oregon field adaptation trials for analysis in Pullman. Thirteen numbered entries and two cultivars were tested from ID, WA and OR. Overall postharvest merit scores of the clones 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: AOR07781-5, A06030-23*, RR
  Lowest scoring clones: AOR06576-1, A071012-4BF, A06403-12, RB*

- **Low Temperature Sweetening**
  Most resistant: AOR07781-5, A06030-23*, A061070-3CSR*, A10214-2TE, A07088-6
  Most susceptible: AOR06576-1

- **Taste Panel**
  Highest rated: A061070-3CSR, A07088-6, AOR08032-1, AOR07781-5
  Lowest rated: A071012-4BF, A06403-12

- **Blackspot Bruise Susceptibility**
  Most resistant: A07061-6, AOR08032-1, A10214-2TE
  Most susceptible: RR*, RB, A06030-23

- **Variability in Tuber Shape & Fry Yield (8- to 10-oz tubers)**
  Lowest L/W: A10214-2TE, A061070-3CSR*
  Highest L/W: RR*, AOR06576-1, RB*, A10210-7TE
  Least variable: AOR06576-1, A06403-12, A10210-7TE
  Most variable: A07061-6, AOR08032-1, A07088-6

Details

- Averaged across states, all entries except AOR06576-1, A071012-4BF, and A06403-12 received higher postharvest scores than Russet Burbank.

- AOR07781-5, A06030-23*, and RR were the highest rated entries, scoring 30.9, 29.5, and 28.5 out of 38 points, respectively.

- AOR07781-5, A06030-23*, A061070-3CSR*, A10214-2TE, and A07088-6 were resistant to cold sweetening, with samples from all states producing highly acceptable light colored fries (USDA 0 after 60 d at 44°F; USDA 1 at 40°F; average of stem ends). However, A07088-6 had non-uniform fry color after storage at 44°F (all states) and 40°F (ID). Retention of fry color (60 days at 44°F) for A061070-3CSR and AOR06576-1 was minimally affected by growing location. In contrast, retention of fry color in AOR07821-1, A08422-2VRsto, AOR08032-1, and A071012-4BF was highly variable depending on production site (WA, OR, ID).

- AOR06576-1, A071012-4BF, A06403-12, and RB* received the lowest overall postharvest scores (14.9, 18.5, 20.9 and 21.4, respectively).

- Average (across states) gravities of A10214-2TE, AOR06576-1, and A07061-6 were 1.071, 1.074, and 1.076, respectively; too low for frozen processing contracts. In contrast, average gravities of 8 of 15 entries ranged from 1.082-1.087, which is ideal for most contracts.

- A061070-3CSR, A07088-6, AOR08032-1, and AOR07781-5 were the favorites in the taste panels, scoring 3.8, 3.6, 3.6 and 3.6, respectively, across growing locations (5 is best). A071012-4BF and A06403-12 received the lowest taste panel scores of 2.8.

- 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*, RB, and A06030-23 were the most susceptible, scoring 90, 76, and 72% bruise (stem end), respectively, in the controlled impact study. These clones also had the highest bruise severity, averaging 3.3/5. A07061-6, AOR08032-1, and A10214-2TE were the most resistant, averaging 16% bruise (stem end) and 1.4/5 severity rating.

- The 8- to 10-oz tubers of A10214-2TE and A061070-3CSR* had low length to width ratios (avg. L/W=1.46), resulting in yields of 3-inch or longer fries averaging only 80% by weight. A07061-6, AOR08032-1, and A07088-6 had the greatest variation in L/W ratio; usable fry yields ranged from 75 to 95%, depending on production area and clone. RR*, AOR06576-1, RB*, and A10210-7TE 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 A10210-7TE, A06030-23, and A071012-4BF 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 A07061-6, AOR07821-1, A07088-6, and AOR07781-5 changed little in response to reconditioning. A071012-4BF, A061070-3CSR, RB, and AOR07781-5 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 storage at 48°F, tubers of A07061-6 and A061070-3CSR were showing 93 and 80% sprouting, respectively, with average sprout lengths of 0.7 inches compared with 44% of RR tubers sprouted (avg sprout length = 0.3 inches). In contrast, tubers of A071012-4BF, A06030-23, A10214-2TE, A06403-12, A08422-2VRsto, and RB had no sprouts. The remaining entries sprouted 45% on average, with sprouts averaging 0.3 inches.

Overall Tri-State Postharvest Merit Scores

Clone	Postharvest Merit Scores WA	ID	OR	3 state Average
13 AOR07781-5	4.0	4.3	3.9	4.1
3 A06030-23	4.3	3.8	3.6	3.9
1 Ranger Russet	3.9	4.2	3.2	3.8
4 A061070-3CSR	3.9	4.2	2.7	3.6
15 AOR08032-1	3.6	3.9	3.2	3.6
11 A10214-2TE	3.3	3.8	2.9	3.3
14 AOR07821-1	3.3	3.2	3.3	3.3
6 A07061-6	2.8	3.8	3.0	3.2
7 A07088-6	2.9	3.8	2.7	3.1
10 A10210-7TE	3.3	3.4	2.6	3.1
9 A08422-2VRsto	2.8	3.6	2.4	2.9
2 Russet Burbank	2.4	3.8	2.3	2.8
5 A06403-12	3.3	2.9	2.1	2.7
8 A071012-4BF	1.8	2.9	2.6	2.4
12 AOR06576-1	2.1	2.2	1.5	2.0

2016 Late Harvest Tri-State Trial

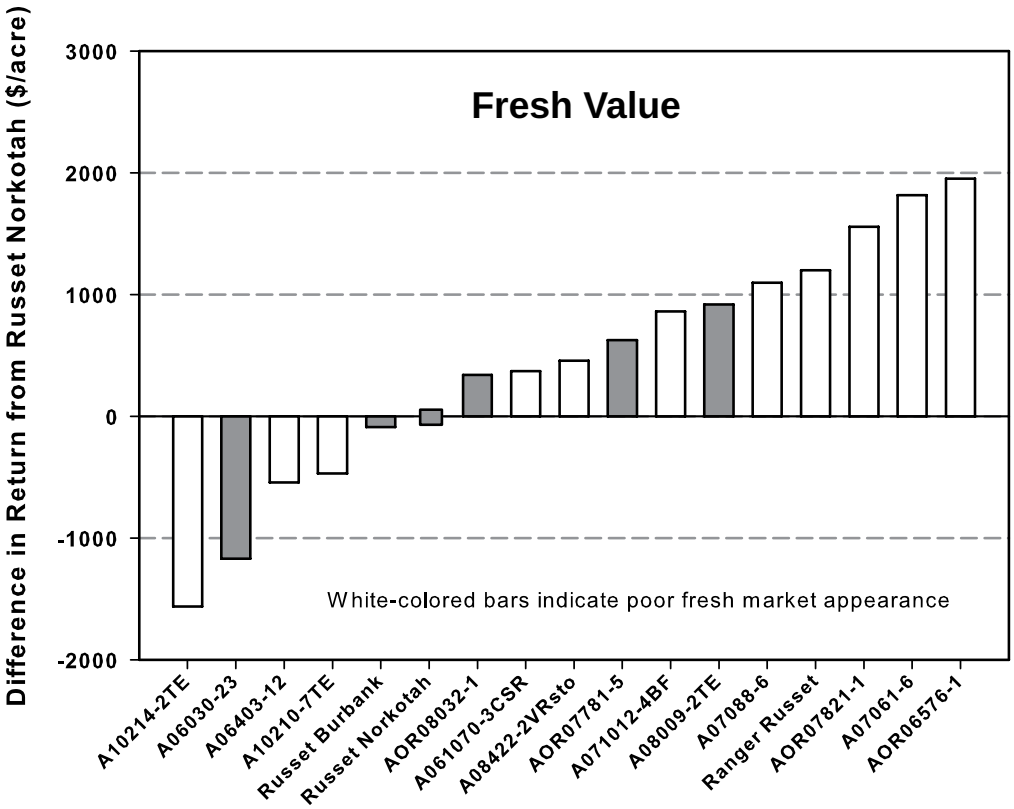
Summaries

ENTRY	TOTAL YIELD CWT/A	STATS**	TOTAL YIELD Tons/A	US # 1's* > 4 oz % of Total Yield	US # 2's* > 4 oz % of Total Yield	Culls* & < 4 oz % of Total Yield	CARTON YIELD 100-50 count (US 1's 7-18 oz) % of Total Yield	CARTON YIELD 100-50 count (US 1's 7-18 oz) Tons/A	PROCESS YIELD US 1's and 2's > 6 oz % of Total Yield	PROCESS YIELD US 1's and 2's > 6 oz Tons/A
Ranger Russet	846	*BC*	42.6	81	7	12	62	26.6	77	32.6
Russet Burbank	817	*C*	40.9	83	1	16	51	20.9	65	26.4
Russet Norkotah	786	*CD*	39.3	85	0	14	54	21.1	67	26.4
A06030-23	724	*D*	36.2	78	0	21	45	16.4	57	21.0
A061070-3CSR	818	*C*	40.9	86	1	14	55	22.5	68	27.8
A06403-12	812	*CD*	40.6	75	1	24	47	19.2	59	23.9
A07061-6	992	*A*	49.6	84	1	16	56	27.9	68	33.9
A07088-6	863	*BC*	43.1	86	1	13	60	25.8	73	31.3
A071012-4BF	915	*AB*	45.7	86	3	11	53	24.2	74	34.1
A08009-2TE	926	*AB*	46.3	83	2	15	53	24.5	71	32.6
A08422-2VRsto	790	*CD*	39.5	88	0	12	59	23.2	74	29.2
A10210-7TE	859	*BC*	43.0	75	0	25	45	19.2	56	24.0
A10214-2TE	722	*D*	36.1	80	0	20	39	14.2	53	19.0
AOR06576-1	980	*A*	49.0	83	1	16	61	29.8	74	36.2
AOR07781-5	851	*BC*	42.5	86	0	14	55	23.5	67	28.7
AOR07821-1	922	*AB*	46.1	92	1	7	60	27.6	80	36.9
AOR08032-1	852	*BC*	42.6	83	0	17	52	22.1	64	27.3

ENTRY	US # 1 YIELD > 4 oz CWT/A	STATS**	US # 1 YIELD > 4 oz Tons/A	4-7 oz* %	7-14 oz* %	> 14 oz* %	> 4 oz SPECIFIC GRAVITY	INTERNAL DEFECTS (%) (8-12 oz tubers) % HH	% BC	% IBS
Ranger Russet	756	*BCDEF*	37.8	25	59	17	1.082	0	0	0
Russet Burbank	682	*FGH*	34.1	35	55	10	1.088	3	0	7
Russet Norkotah	670	*FGH*	33.5	34	54	12	1.073	0	0	0
A06030-23	567	*I*	28.4	42	52	6	1.084	0	0	0
A061070-3CSR	699	*EFG*	35.0	33	54	13	1.084	0	0	0
A06403-12	609	*HI*	30.4	35	53	12	1.093	0	0	0
A07061-6	832	*AB*	41.6	29	57	14	1.077	0	0	0
A07088-6	739	*CDEF*	36.9	25	59	16	1.092	0	0	0
A071012-4BF	787	*ABCD*	39.4	28	53	19	1.093	0	0	0
A08009-2TE	768	*ABCDE*	38.4	28	53	19	1.086	0	0	0
A08422-2VRsto	697	*EFG*	34.8	28	58	15	1.082	0	6	8
A10210-7TE	644	*GHI*	32.2	38	53	8	1.094	0	0	0
A10214-2TE	577	*I*	28.9	49	44	7	1.075	0	0	0
AOR06576-1	815	*ABC*	40.8	21	61	18	1.075	0	0	0
AOR07781-5	731	*CDEF*	36.5	32	55	13	1.090	0	0	0
AOR07821-1	846	*A*	42.3	23	48	29	1.085	0	0	0
AOR08032-1	708	*DEFG*	35.4	36	55	9	1.086	0	0	0

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	88	90	100	2.0	8.4	8.8	4	4	61	42
Russet Burbank	85	95	96	1.9	6.9	9.8	3	3	40	67
Russet Norkotah	85	94	99	2.0	7.3	9.0	4	4	21	52
A06030-23	53	95	96	2.8	6.3	9.5	4	2	60	53
A061070-3CSR	81	96	99	2.3	7.6	8.9	4	2	10	83
A06403-12	44	85	94	2.4	7.3	9.3	4	3	57	93
A07061-6	90	91	91	2.5	7.0	11.6	4	2	28	68
A07088-6	78	95	96	2.2	8.0	8.9	4	2	11	83
A071012-4BF	84	93	98	2.2	8.0	9.5	4	3	50	78
A08009-2TE	75	93	98	2.7	7.3	10.4	4	3	50	77
A08422-2VRsto	65	90	95	1.7	7.9	8.3	4	3	17	72
A10210-7TE	83	95	100	3.3	6.2	11.4	4	3	60	80
A10214-2TE	54	81	95	2.6	6.1	9.7	5	2	17	100
AOR06576-1	83	88	98	2.2	8.1	10.0	4	3	18	56
AOR07781-5	79	91	99	3.5	7.4	9.5	4	3	47	97
AOR07821-1	83	89	98	3.1	9.1	8.4	4	2	29	94
AOR08032-1	79	98	99	2.9	6.7	10.5	4	3	19	78

* Percent values may not total 100% due to rounding



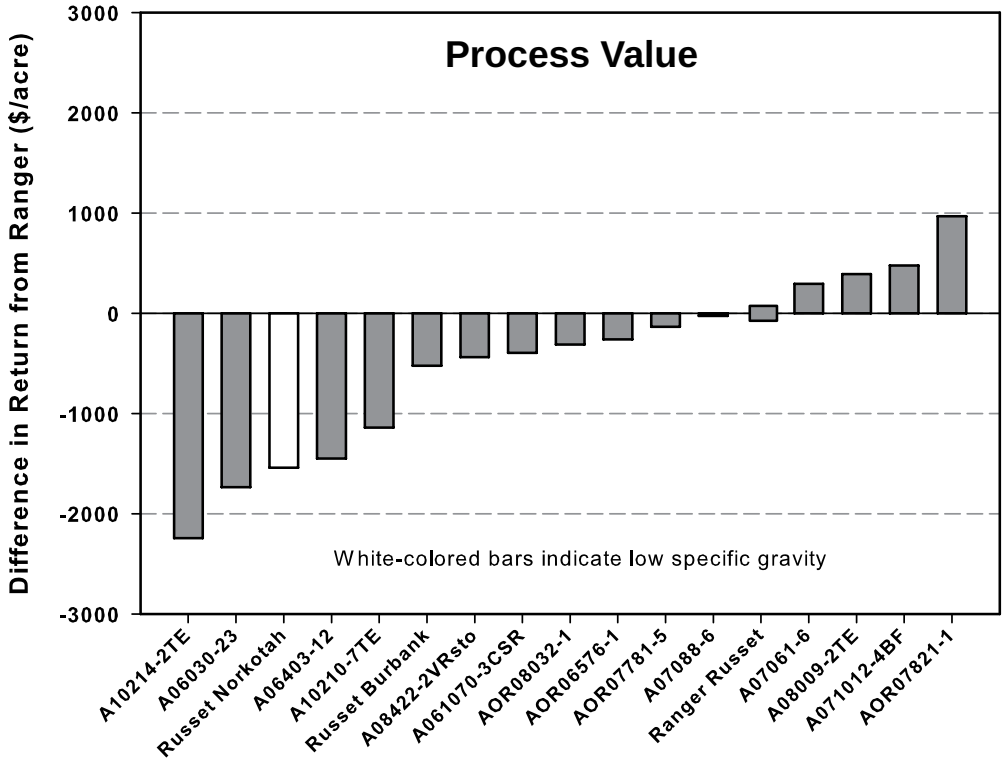


Figure 1 (Top). Difference in gross return per acre (Fresh Market) from Russet Norkotah calculated by subtracting the gross return of Russet Norkotah from the gross return of the particular entry. Entries with the white-colored bars may not appeal to fresh market consumers due to undesirable shape or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

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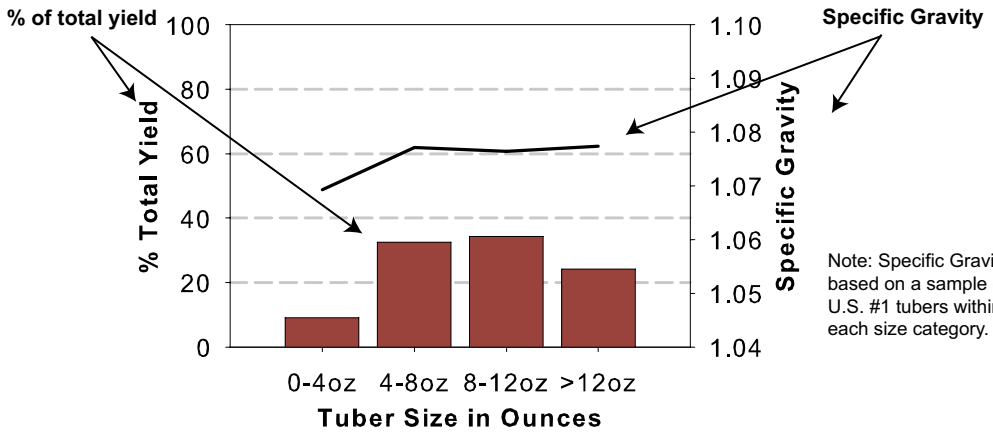
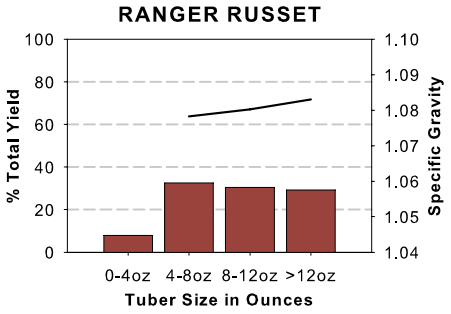
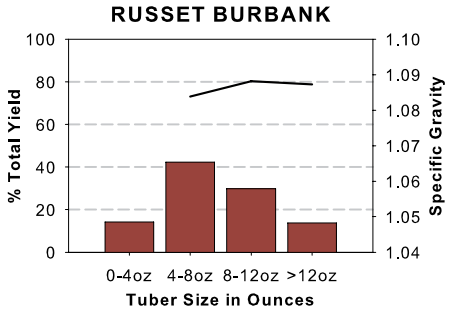
Tuber Yield and Specific Gravity Distributions

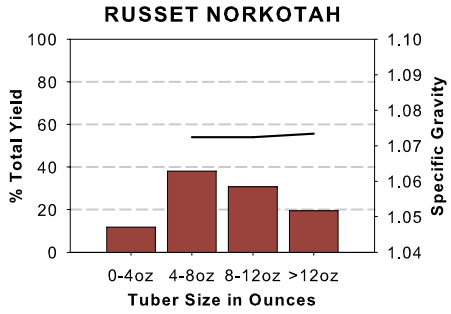
10 inch In-Row Spacing

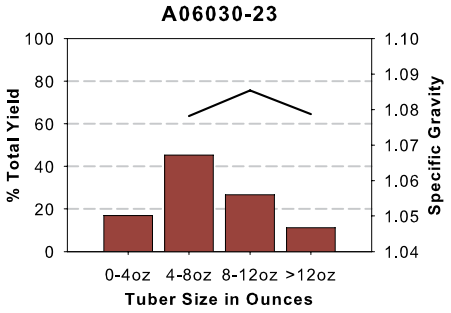


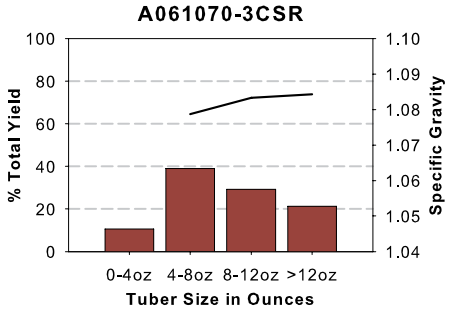
Note: Specific Gravity is based on a sample of U.S. #1 tubers within each size category.

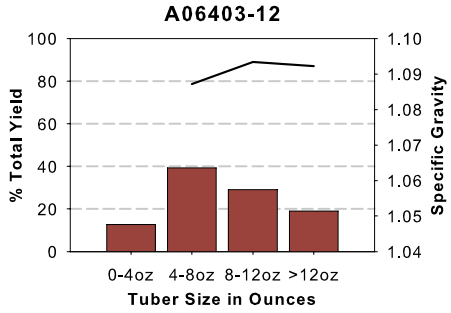


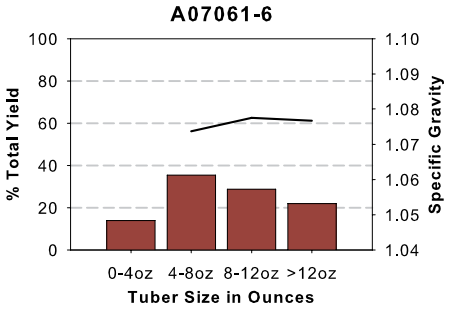


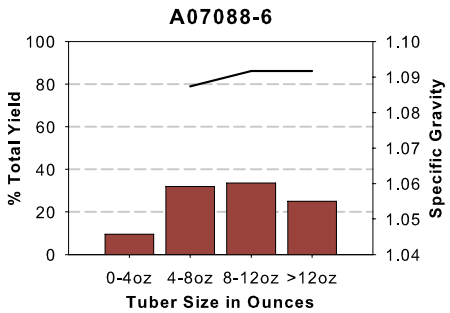


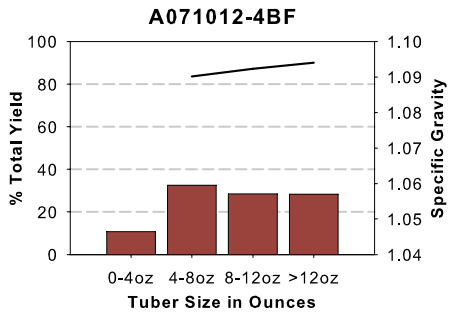


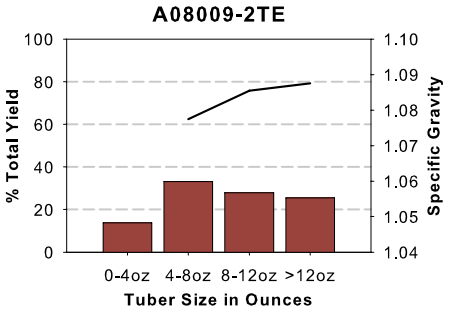


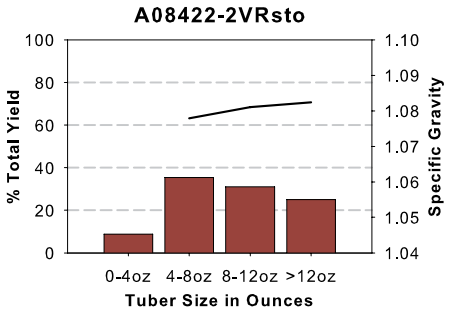


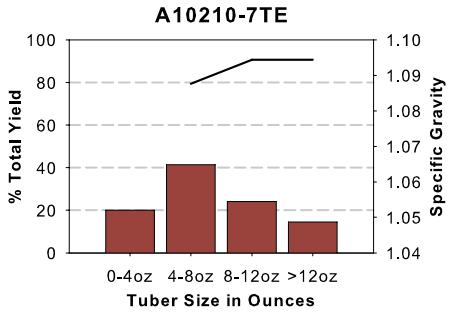


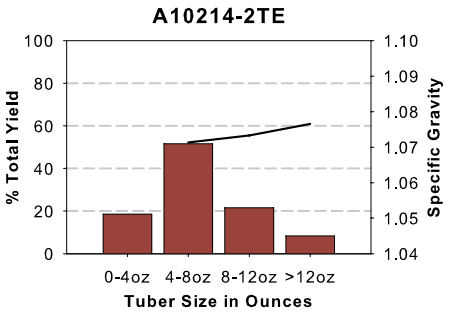





A08009-2TE
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


A08422-2VRsto
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


A10210-7TE
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


A10214-2TE
% Total Yield
Specific Gravity
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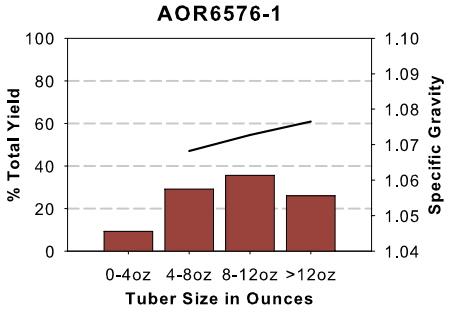
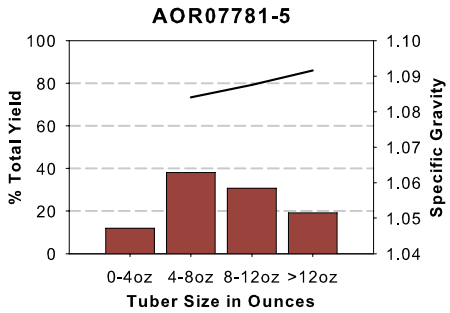
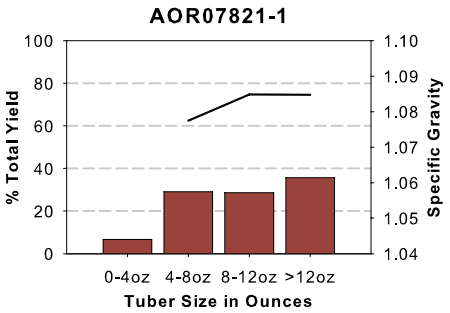
Tuber Size in Ounces


AOR6576-1
% 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
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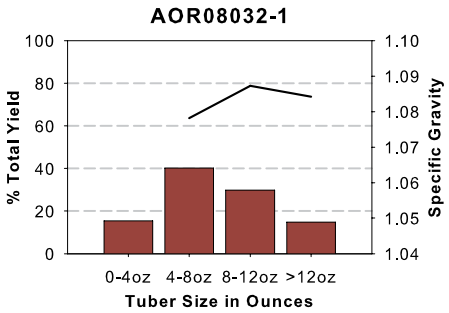
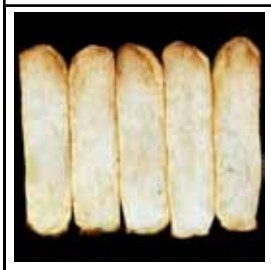
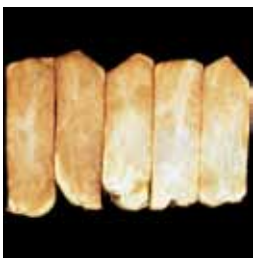
Tuber Size in Ounces


AOR08032-1
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

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, uniform; 44°F = light, uniform; 40°F = relatively dark, uniform; Reconditioned = light, non-uniform.
Russet Burbank	
	**Tubers:** Oblong tubers. Fair skin set; moderate eye depth. **Fry color:** At harvest= light, non-uniform; 48°F = light, non-uniform; 44°F = light, non-uniform; 40°F = unacceptably dark, uniform; Reconditioned = relatively dark, non-uniform.
A06030-23	
	**Tubers:** Round to oblong tubers. Good skin set; moderate eye depth. **Fry color:** At harvest= light, uniform; 48°F = light, uniform; 44°F = light, uniform; 40°F = light, uniform; Reconditioned = light, uniform.
A061070-3CSR	
	**Tubers:** Round to oblong 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, uniform; Reconditioned = light, uniform.
A06403-12	
	Tubers: Oblong tubers. Good skin set; shallow eyes. Fry color: At harvest= light, uniform; 48°F = light, uniform; 44°F = light, uniform; 40°F = unacceptably dark, uniform; Reconditioned = relatively dark, uniform.

Initial Fries	48º F Storage	44º F Storage	40º F Storage	40º F Recon.
Ranger Russet				
				
Russet Burbank				
				
A06030-23				
				
A061070-3CSR				
				
A06403-12				
				

Tubers	WA Late Harvest Tri-State Trial Comments
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, uniform; 40°F = relatively dark, uniform; Reconditioned = relatively dark, uniform.
A07088-6	
	**Tubers:** Round to 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, uniform; Reconditioned = light, 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 = unacceptably dark, uniform; Reconditioned = light, non-uniform.
A08422-2VRsto	
	**Tubers:** Oblong 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 = unacceptably dark, uniform; Reconditioned = light, non-uniform.
A10210-7TE	
	**Tubers:** Oblong tubers. Good skin set; moderate eye depth. **Fry color:** At harvest= light, uniform; 48°F = light, uniform; 44°F = light, uniform; 40°F = unacceptably dark, uniform; Reconditioned = light, uniform.

Initial Fries	48º F Storage	44º F Storage	40º F Storage	40º F Recon.
A07061-6				
				
A07088-6				
				
A071012-4BF				
				
A08422-2VRsto				
				
A10210-7TE				
				

Tubers	WA Late Harvest Tri-State Trial Comments
A10214-2TE	
	**Tubers:** Round to oblong tubers. Very good skin set; moderate eye depth. **Fry color:** At harvest= light, uniform; 48°F = light, uniform; 44°F = light, uniform; 40°F = relatively dark, uniform; Reconditioned = light, uniform.
AOR06576-1	
	**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= light, non-uniform; 48°F = light, non-uniform; 44°F = relatively dark, non-uniform; 40°F = unacceptably dark, uniform; Reconditioned = relatively dark, uniform.
AOR07781-5	
	**Tubers:** Oblong 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, uniform; Reconditioned = light, non-uniform.
AOR07821-1	
	**Tubers:** Round to oblong 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, uniform; Reconditioned = relatively dark, uniform.
AOR08032-1	
	**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.
A10214-2TE				
				
AOR06576-1				
				
AOR07781-5				
				
AOR07821-1				
				
AOR08032-1				
				

2016 Late Harvest Tri-State Trial

Accumulated Total Postharvest Rating of Clones

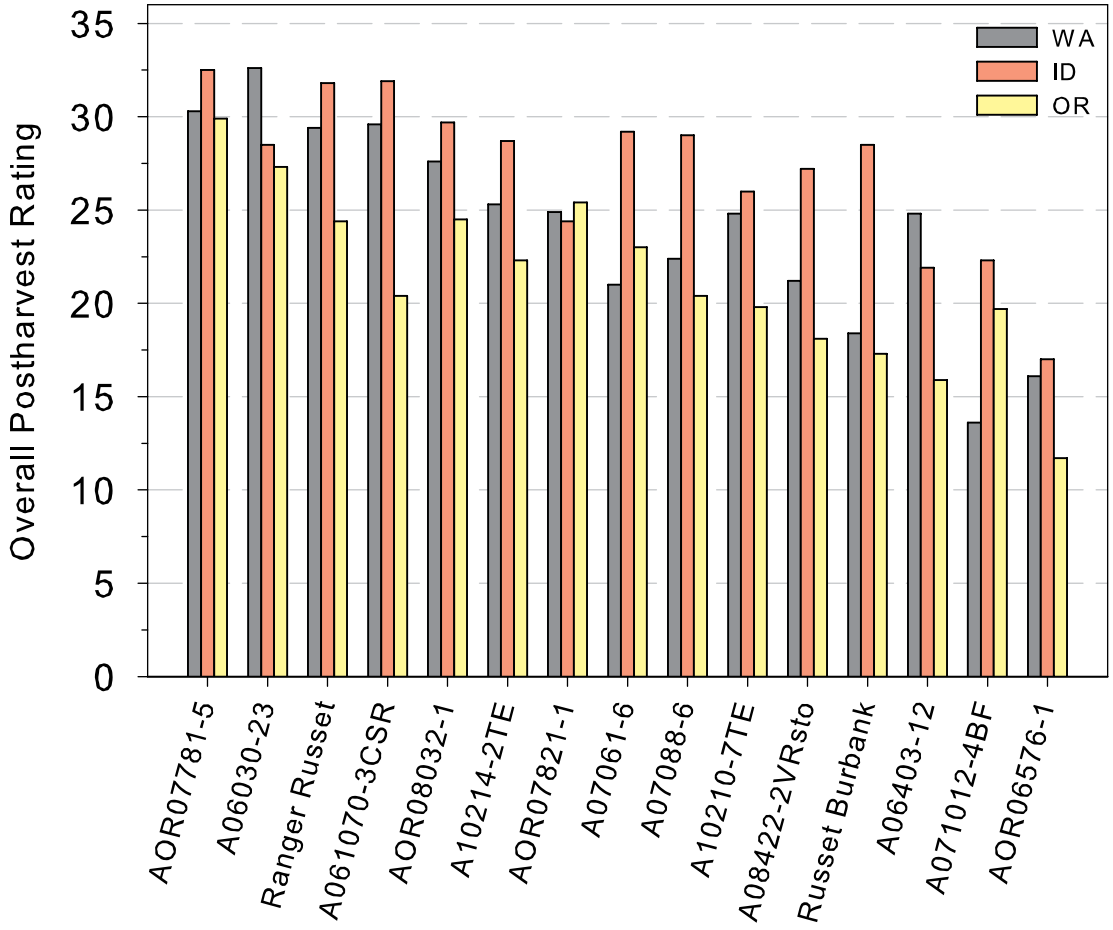
Clone	WA Rating Total §	WA Discard §§	ID Rating Total §	ID Discard §§	OR Rating Total §	OR Discard §§	3 State av. Rating Total
13 AOR07781-5	30.3		32.5		29.9		30.9
3 A06030-23	32.6		28.5		27.3	SG	29.5
1 Ranger Russet	29.4		31.8		24.4	SG, 40°F	28.5
4 A061070-3CSR	29.6		31.9		20.4	SG	27.3
15 AOR08032-1	27.6		29.7		24.5	SG	27.3
11 A10214-2TE	25.3	SG	28.7		22.3	SG	25.4
14 AOR07821-1	24.9		24.4		25.4	SG	24.9
6 A07061-6	21.0		29.2		23.0	SG	24.4
7 A07088-6	22.4		29.0		20.4	SG	23.9
10 A10210-7TE	24.8	40°F	26.0		19.8	SG	23.5
9 A08422-2VRsto	21.2		27.2		18.1	SG, 40°F	22.2
2 Russet Burbank	18.4	40°F	28.5	40°F	17.3	SG, 40°F	21.4
5 A06403-12	24.8	40°F	21.9		15.9	SG, 40°F	20.9
8 A071012-4BF	13.6	40°F	22.3		19.7	SG, 40°F	18.5
12 AOR06576-1	16.1	40°F	17.0	40°F	11.7	SG,44,40°F	14.9
	24.1		27.2		21.3		24.2

§ maximum rating possible = 38

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

2016 Late Harvest Tri-State Trial

Late Harvest Tri-State Postharvest Ratings



2016 Late Harvest Tri-State Trial

Entries Retained from the 2015 Trials Currently in the Tri-State Trial

Harvested fall of 2015
Held at 48° F until December 21, 2015
Stored at 44° F until analysis

Two clones were retained from the 2015 Tri-State Trial into the 2016 Trial (A06030-23 and A061070-3CSR). When averaged across states, A061070-3CSR and A06030-23 produced the lightest fries (48.9 and 48.5 ref units, respectively), which was ten units higher than controls. The uniformity of fry color was unacceptable for at least one of the controls in each state. A061070-3CSR produced non-uniform fry color (stem to bud end) when grown in OR. All entries (including Ranger and Russet Burbank) produced sprouts that ranged from 4.3 to 5.2 inches in length when averaged across states.

	PHOTOVOLT READING				USDA	% REDUCING SUGAR			Sprouting	
Clone	stem	bud	avg	DIFF	COLOR	stem	bud	avg	percent	length (in.)
Washington										
1 Ranger Russet	35.1	44.0	39.5	10.1	0	1.0	0.6	0.8	100	3.5
2 Russet Burbank	32.2	43.6	37.9	13.0	0	1.2	0.6	0.9	100	3.0
3 A06030-23	52.3	50.4	51.3	2.7	0	0.5	0.5	0.5	100	2.0
4 A061070-3CSR	52.8	51.3	52.0	4.1	0	0.5	0.5	0.5	100	4.5
		LSD 0.05	*3.2*	*3.9*						
Average	43.1	47.3	45.2	7.5	0.0	0.8	0.6	0.7	100	
Idaho										
1 Ranger Russet	38.7	41.3	40.0	5.6	0	0.8	0.7	0.7	100	7.0
2 Russet Burbank	33.6	47.1	40.3	15.0	0	1.1	0.5	0.8	100	3.0
3 A06030-23	45.9	52.3	49.1	6.4	0	0.5	0.5	0.5	100	7.0
4 A061070-3CSR	54.6	50.5	52.5	4.4	0	0.5	0.5	0.5	100	5.0
		LSD 0.05	*3.4*	*3.3*						
Average	43.2	47.8	45.5	7.8	0.0	0.7	0.6	0.7	100	
Oregon										
1 Ranger Russet	31.2	41.8	36.5	10.6	0	1.3	0.7	1.0	0	3.0
2 Russet Burbank	35.2	41.4	38.3	8.0	0	1.0	0.7	0.8	0	7.0
3 A06030-23	45.1	45.2	45.1	6.7	0	0.6	0.6	0.6	0	5.0
4 A061070-3CSR	41.3	42.9	42.1	10.9	0	0.7	0.6	0.7	0	6.0
		LSD 0.05	*4.8*	*ns*						
Average	38.2	42.8	40.5	9.1	0.0	0.9	0.6	0.8	0	

Date test performed:

Washington	May 4
Idaho	May 4
Oregon	May 4

2016 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	39.2	44.6	41.9	**5+**	5.6	0	1.081	**4**
2 Russet Burbank	30.5	43.9	37.2	**4-**	13.4	0	1.089	**4**
3 A06030-23	46.1	43.1	44.6	**5+**	4.6	0	1.083	**5**
4 A061070-3CSR	45.7	43.4	44.5	**5+**	3.1	0	1.086	**5**
5 A06403-12	33.4	42.0	37.7	**4+**	8.6	0	1.089	**4**
6 A07061-6	33.0	45.4	39.2	**4-**	12.4	0	1.082	**4**
7 A07088-6	42.5	49.0	45.7	**5+**	8.1	0	1.093	**3**
8 A071012-4BF	34.0	45.8	39.9	**4-**	11.8	0	1.098	**1**
9 A08422-2VRsto	39.2	44.4	41.8	**5+**	6.1	0	1.088	**5**
10 A10210-7TE	32.4	39.8	36.1	**4+**	7.8	0	1.091	**4**
11 A10214-2TE	50.8	47.4	49.1	**5+**	3.7	0	1.073	**0**
12 AOR06576-1	22.7	43.1	32.9	**3-**	20.3	2	1.080	**3**
13 AOR07781-5	44.0	49.0	46.5	**5+**	6.1	0	1.093	**3**
14 AOR07821-1	33.2	37.4	35.3	**3+**	5.0	0	1.087	**5**
15 AOR08032-1	43.8	49.8	46.8	**5+**	7.0	0	1.085	**5**
		LSD 0.05	*2.5*		*4.3*		*0.007*	
Average	38.0	44.5	41.3		8.2	0	1.086	
Idaho								
1 Ranger Russet	43.9	41.4	42.7	**5+**	4.2	0	1.091	**4**
2 Russet Burbank	37.0	44.2	40.6	**5+**	7.2	0	1.087	**5**
3 A06030-23	37.1	38.4	37.8	**4+**	4.7	0	1.094	**2**
4 A061070-3CSR	47.2	43.7	45.5	**5+**	5.5	0	1.083	**5**
5 A06403-12	29.6	33.1	31.3	**3+**	5.4	1	1.093	**3**
6 A07061-6	37.3	39.2	38.2	**4+**	4.5	0	1.081	**4**
7 A07088-6	41.0	47.9	44.5	**5+**	7.5	0	1.098	**1**
8 A071012-4BF	33.0	37.7	35.4	**3+**	6.4	0	1.102	**1**
9 A08422-2VRsto	31.3	38.2	34.7	**3+**	6.9	0	1.086	**5**
10 A10210-7TE	34.1	38.4	36.3	**4+**	4.8	0	1.095	**2**
11 A10214-2TE	51.8	46.8	49.3	**5+**	5.0	0	1.076	**1**
12 AOR06576-1	23.5	42.4	33.0	**3-**	18.9	2	1.082	**4**
13 AOR07781-5	40.7	46.1	43.4	**5+**	6.7	0	1.092	**3**
14 AOR07821-1	37.4	39.8	38.6	**4+**	4.7	0	1.093	**3**
15 AOR08032-1	40.8	51.6	46.2	**5-**	10.8	0	1.087	**5**
		LSD 0.05	*3.6*		*3.8*		*0.006*	
Average	37.7	41.9	39.8		6.9	0	1.089	
Oregon								
1 Ranger Russet	43.0	42.9	42.9	**5+**	2.7	0	1.072	**0**
2 Russet Burbank	26.4	33.7	30.0	**2-**	9.1	1	1.071	**0**
3 A06030-23	50.9	46.4	48.6	**5+**	4.7	0	1.070	**0**
4 A061070-3CSR	36.7	40.2	38.4	**4+**	6.7	0	1.072	**0**
5 A06403-12	30.2	37.5	33.8	**3+**	7.5	1	1.072	**0**
6 A07061-6	37.8	40.1	39.0	**4+**	4.1	0	1.063	**0**
7 A07088-6	36.0	48.7	42.3	**5-**	12.7	0	1.067	**0**
8 A071012-4BF	37.5	39.5	38.5	**4+**	5.2	0	1.073	**0**
9 A08422-2VRsto	35.4	39.7	37.6	**4+**	5.0	0	1.071	**0**
10 A10210-7TE	30.1	33.0	31.5	**3+**	5.8	1	1.070	**0**
11 A10214-2TE	46.3	47.4	46.8	**5+**	2.1	0	1.066	**0**
12 AOR06576-1	17.3	23.0	20.2	**1-**	9.6	3	1.060	**0**
13 AOR07781-5	38.6	44.9	41.7	**5+**	6.9	0	1.076	**1**
14 AOR07821-1	40.6	43.3	41.9	**5+**	3.7	0	1.075	**0**
15 AOR08032-1	38.7	43.7	41.2	**5+**	5.8	0	1.068	**0**
		LSD 0.05	*4.0*		*4.1*		*0.005*	
Average	36.4	40.3	38.3		6.1	0	1.070	

Date test performed:

Washington	Sept. 29	Sept. 20
Idaho	Oct. 3	Sept. 23
Oregon	Oct. 5	Oct. 3

§ 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.

2016 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	**3.4**	83	17	3.7	1.3	16	18
2 Russet Burbank	**3.4**	96	17	3.8	1.3	18	23
3 A06030-23	**3.6**	75	13	3.0	1.3	12	12
4 A061070-3CSR	**3.6**	33	33	1.7	1.8	11	12
5 A06403-12	**2.8**	92	42	3.5	2.0	9	12
6 A07061-6	**3.0**	21	0	1.4	1.0	14	11
7 A07088-6	**3.4**	46	17	2.0	1.3	9	11
8 A071012-4BF	**2.6**	92	54	3.6	2.3	15	17
9 A08422-2VRsto	**3.2**	79	4	2.9	1.1	8	8
10 A10210-7TE	**2.8**	46	13	2.1	1.3	10	13
11 A10214-2TE	**3.3**	17	13	1.5	1.3	22	17
12 AOR06576-1	**3.1**	50	0	2.6	1.0	13	12
13 AOR07781-5	**3.3**	50	17	2.3	1.4	16	17
14 AOR07821-1	**2.9**	88	29	3.4	1.8	18	18
15 AOR08032-1	**3.6**	38	8	2.0	1.2	12	14
LSD 0.05	*0.6*	*28*	*23*			*6*	*5*
Average	3.2	60.3	18.3	2.6	1.4	13.4	14.3
Idaho							
1 Ranger Russet	**3.8**	96	0	4.0	1.0	11	16
2 Russet Burbank	**3.5**	58	0	2.3	1.0	16	20
3 A06030-23	**3.5**	79	4	3.1	1.1	11	12
4 A061070-3CSR	**3.9**	42	4	1.9	1.1	14	15
5 A06403-12	**2.9**	50	13	2.2	1.3	11	13
6 A07061-6	**3.2**	8	4	1.2	1.1	10	12
7 A07088-6	**4.0**	67	17	2.4	1.3	8	12
8 A071012-4BF	**3.3**	67	13	2.7	1.3	12	14
9 A08422-2VRsto	**3.2**	92	8	2.9	1.2	13	14
10 A10210-7TE	**3.0**	29	0	1.6	1.0	12	11
11 A10214-2TE	**3.7**	54	13	2.2	1.3	16	15
12 AOR06576-1	**3.0**	38	8	1.9	1.2	12	13
13 AOR07781-5	**3.5**	33	4	1.8	1.1	14	14
14 AOR07821-1	**3.4**	50	6	2.3	1.1	14	14
15 AOR08032-1	**3.7**	4	0	1.1	1.0	10	10
LSD 0.05	*0.4*	*28*	*15*			*4*	*5*
Average	3.4	51.1	6.3	2.2	1.1	12.3	13.6
Oregon							
1 Ranger Russet	**3.4**	92	29	3.9	1.6	10	9
2 Russet Burbank	**3.3**	75	0	3.0	1.0	14	16
3 A06030-23	**3.3**	63	8	2.5	1.2	12	12
4 A061070-3CSR	**3.4**	21	8	1.5	1.2	11	10
5 A06403-12	**2.9**	46	0	2.1	1.0	9	10
6 A07061-6	**3.0**	0	0	1.0	1.0	8	10
7 A07088-6	**3.4**	0	0	1.0	1.0	8	9
8 A071012-4BF	**2.7**	38	4	1.9	1.1	14	10
9 A08422-2VRsto	**3.1**	38	4	1.9	1.1	9	11
10 A10210-7TE	**2.8**	8	0	1.2	1.0	8	11
11 A10214-2TE	**3.3**	0	0	1.0	1.0	11	11
12 AOR06576-1	**2.7**	21	0	1.6	1.0	10	8
13 AOR07781-5	**3.9**	9	0	1.3	1.0	12	9
14 AOR07821-1	**3.4**	38	8	1.8	1.2	12	13
15 AOR08032-1	**3.5**	4	0	1.1	1.0	5	9
LSD 0.05	*0.4*	*23*	*12*			*4*	*3*
Average	3.2	30.1	4.2	1.8	1.1	10.2	10.5

Date test performed:

Washington	Oct. 11	Oct. 21	Nov. 8
Idaho	Oct. 12	Oct. 26	Nov. 10
Oregon	Oct. 13	Oct. 28	Nov. 17

2016 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	39.6	45.6	42.6	**5+**	6.8	0	0.7	0.6	80	0.50
2 Russet Burbank	28.8	40.5	34.7	**3-**	11.8	1	1.5	0.7	0	
3 A06030-23	46.8	42.0	44.4	**5+**	4.8	0	0.5	0.7	0	
4 A061070-3CSR	47.7	45.2	46.5	**5+**	2.8	0	0.5	0.6	100	1.00
5 A06403-12	38.5	42.1	40.3	**4+**	4.7	0	0.8	0.7	0	
6 A07061-6	34.8	45.4	40.1	**4-**	10.9	0	1.0	0.6	100	0.50
7 A07088-6	34.1	47.0	40.5	**5-**	12.9	0	1.1	0.5	40	0.25
8 A071012-4BF	27.3	41.6	34.4	**3-**	15.1	1	1.7	0.7	0	
9 A08422-2VRsto	30.9	39.8	35.4	**3-**	9.2	0	1.3	0.7	0	
10 A10210-7TE	33.5	40.3	36.9	**4+**	6.8	0	1.1	0.7	100	0.75
11 A10214-2TE	44.8	43.7	44.3	**5+**	2.7	0	0.6	0.6	0	
12 AOR06576-1	23.8	41.0	32.4	**3-**	17.2	2	2.1	0.7	0	
13 AOR07781-5	44.1	47.5	45.8	**5+**	6.7	0	0.6	0.5	100	0.50
14 AOR07821-1	33.4	41.5	37.4	**4+**	8.3	0	1.1	0.7	0	
15 AOR08032-1	42.1	47.6	44.8	**5+**	5.5	0	0.6	0.5	100	0.75
		LSD 0.05	*2.8*		*4.0*				*12*	
Average	36.7	43.4	40.0		8.4	0	1.0	0.6	41	
Idaho										
1 Ranger Russet	39.9	43.1	41.5	**5+**	4.1	0	0.7	0.6	0	
2 Russet Burbank	35.6	40.4	38.0	**4+**	7.9	0	1.0	0.7	0	
3 A06030-23	46.4	40.5	43.5	**5+**	6.0	0	0.5	0.7	0	
4 A061070-3CSR	52.1	49.0	50.5	**5+**	3.3	0	0.5	0.5	53	0.13
5 A06403-12	31.8	36.5	34.2	**3+**	6.1	0	1.2	0.9	0	
6 A07061-6	42.3	42.8	42.6	**5+**	3.3	0	0.6	0.6	80	0.75
7 A07088-6	43.9	47.8	45.8	**5+**	4.3	0	0.6	0.5	7	0.13
8 A071012-4BF	38.0	41.7	39.8	**4+**	5.5	0	0.8	0.7	0	
9 A08422-2VRsto	35.1	36.4	35.8	**4+**	5.4	0	1.0	0.9	0	
10 A10210-7TE	40.4	44.2	42.3	**5+**	5.3	0	0.7	0.6	0	
11 A10214-2TE	52.0	48.0	50.0	**5+**	3.9	0	0.5	0.5	0	
12 AOR06576-1	22.8	44.5	33.7	**3-**	21.7	2	2.2	0.6	0	
13 AOR07781-5	41.9	48.5	45.2	**5+**	6.6	0	0.7	0.5	0	
14 AOR07821-1	33.2	36.6	34.9	**3+**	6.6	0	1.1	0.9	0	
15 AOR08032-1	44.6	50.3	47.4	**5+**	6.1	0	0.6	0.5	0	
		LSD 0.05	*3.2*		*3.3*				*13*	
Average	40.0	43.4	41.7		6.4	0	0.9	0.7	9	
Oregon										
1 Ranger Russet	39.9	41.6	40.8	**5+**	3.6	0	0.7	0.7	53	0.25
2 Russet Burbank	36.2	35.0	35.6	**4+**	4.7	0	0.9	1.0	0	
3 A06030-23	46.8	44.5	45.7	**5+**	4.2	0	0.5	0.6	0	
4 A061070-3CSR	36.5	43.3	39.9	**4+**	8.0	0	0.9	0.6	87	0.75
5 A06403-12	30.1	39.1	34.6	**3-**	9.5	1	1.4	0.8	0	
6 A07061-6	39.2	39.3	39.3	**4+**	2.8	0	0.8	0.8	100	1.25
7 A07088-6	40.8	51.2	46.0	**5-**	10.4	0	0.7	0.5	0	
8 A071012-4BF	30.4	38.3	34.4	**3+**	8.9	1	1.4	0.8	0	
9 A08422-2VRsto	30.5	36.1	33.3	**3+**	8.2	0	1.3	0.9	0	
10 A10210-7TE	33.7	30.1	31.9	**3+**	4.2	0	1.1	1.4	100	0.75
11 A10214-2TE	43.5	44.3	43.9	**5+**	4.5	0	0.6	0.6	0	
12 AOR06576-1	29.8	36.4	33.1	**3+**	8.9	1	1.4	1.4	93	0.25
13 AOR07781-5	39.2	45.1	42.1	**5+**	6.8	0	0.8	0.6	100	0.50
14 AOR07821-1	40.5	43.9	42.2	**5+**	5.5	0	0.7	0.6	73	0.50
15 AOR08032-1	37.6	42.0	39.8	**4+**	4.6	0	0.8	0.7	100	0.25
		LSD 0.05	*4.3*		*4.0*				*14*	
Average	37.0	40.7	38.8		6.3	0	0.9	0.8	47	

Date test performed:

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

§ 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.

2016 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	34.3	41.0	37.6	**4+**	6.8	0	1.0	0.7
2 Russet Burbank	29.6	38.9	34.3	**3-**	9.4	1	1.4	0.8
3 A06030-23	46.6	44.2	45.4	**5+**	3.7	0	0.5	0.6
4 A061070-3CSR	44.9	45.1	45.0	**5+**	3.5	0	0.6	0.6
5 A06403-12	33.2	39.1	36.1	**4+**	6.1	0	1.1	0.8
6 A07061-6	32.5	40.0	36.3	**4+**	7.6	0	1.2	0.7
7 A07088-6	33.4	42.7	38.1	**4-**	9.3	0	1.1	0.6
8 A071012-4BF	25.9	36.6	31.3	**3-**	10.8	1	1.8	0.9
9 A08422-2VRsto	26.0	35.0	30.5	**3-**	9.0	1	1.8	1.0
10 A10210-7TE	30.3	37.2	33.8	**3+**	7.4	1	1.4	0.9
11 A10214-2TE	44.0	43.7	43.9	**5+**	2.2	0	0.6	0.6
12 AOR06576-1	20.4	28.9	24.7	**2-**	9.0	2	2.6	1.5
13 AOR07781-5	43.8	48.3	46.0	**5+**	5.3	0	0.6	0.5
14 AOR07821-1	36.9	41.4	39.1	**4+**	5.4	0	0.9	0.7
15 AOR08032-1	31.4	41.0	36.2	**4-**	9.7	0	1.3	0.7
		LSD 0.05	*2.8*		*3.3*			
Average	34.2	40.2	37.2		7.0	0	1.2	0.8
Idaho								
1 Ranger Russet	36.4	37.5	37.0	**4+**	3.6	0	0.9	0.8
2 Russet Burbank	32.8	37.0	34.9	**3+**	6.7	0	1.1	0.9
3 A06030-23	36.9	37.0	37.0	**4+**	4.4	0	0.9	0.9
4 A061070-3CSR	45.3	43.2	44.3	**5+**	2.9	0	0.6	0.6
5 A06403-12	27.6	29.9	28.8	**2+**	3.9	1	1.6	1.4
6 A07061-6	33.5	33.1	33.3	**3+**	3.6	0	1.1	1.1
7 A07088-6	39.0	49.9	44.4	**5-**	10.8	0	0.8	0.5
8 A071012-4BF	29.1	37.2	33.2	**3+**	8.4	1	1.5	0.9
9 A08422-2VRsto	28.4	36.3	32.4	**3+**	7.9	1	1.5	0.9
10 A10210-7TE	32.8	34.4	33.6	**3+**	3.9	0	1.2	1.0
11 A10214-2TE	44.2	41.8	43.0	**5+**	4.3	0	0.6	0.7
12 AOR06576-1	21.9	36.0	28.9	**2-**	14.1	2	2.4	0.9
13 AOR07781-5	44.4	49.0	46.7	**5+**	5.8	0	0.6	0.5
14 AOR07821-1	31.3	32.2	31.7	**3+**	4.2	0	1.3	1.2
15 AOR08032-1	38.6	47.8	43.2	**5-**	9.5	0	0.8	0.5
		LSD 0.05	*3.3*		*3.1*			
Average	34.8	38.8	36.8		6.3	0	1.1	0.9
Oregon								
1 Ranger Russet	31.7	31.4	31.6	**3+**	4.2	0	1.2	1.3
2 Russet Burbank	28.5	31.8	30.2	**2+**	5.2	1	1.5	1.2
3 A06030-23	42.9	40.1	41.5	**5+**	4.3	0	0.6	0.7
4 A061070-3CSR	35.4	34.6	35.0	**3+**	6.6	0	1.0	1.0
5 A06403-12	28.0	31.3	29.7	**2+**	4.8	1	1.6	1.3
6 A07061-6	35.3	36.6	36.0	**4+**	2.9	0	1.0	0.9
7 A07088-6	33.2	40.8	37.0	**4-**	10.9	0	1.1	0.7
8 A071012-4BF	24.7	30.1	27.4	**2+**	6.8	1	2.0	1.4
9 A08422-2VRsto	26.3	25.6	25.9	**2+**	4.1	1	1.8	1.9
10 A10210-7TE	26.4	23.8	25.1	**2+**	4.8	2	1.8	2.1
11 A10214-2TE	33.1	37.6	35.3	**3+**	4.6	0	1.1	0.8
12 AOR06576-1	16.2	22.0	19.1	**0+**	6.0	3	3.4	2.4
13 AOR07781-5	40.1	42.2	41.2	**5+**	4.1	0	0.7	0.6
14 AOR07821-1	32.8	39.2	36.0	**4+**	7.6	0	1.1	0.8
15 AOR08032-1	32.0	35.5	33.7	**3+**	4.6	0	1.2	1.0
		LSD 0.05	4.3		3.5			
Average	31.1	33.5	32.3		5.4	1	1.4	1.2

Date test performed:		
Washington	Dec. 2	Dec. 2
Idaho	Dec. 8	Dec. 8
Oregon	Dec. 14	Dec. 14

§ 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.

2016 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	18.0	25.7	21.8	**1**	8.3	3	27.1	42.0	34.5	14.9	1
2 Russet Burbank	0	14.3	19.1	16.7	**0**	5.1	4	21.4	35.2	28.3	13.9	2
3 A06030-23	0	32.2	30.2	31.2	**3**	3.7	0	40.6	42.0	41.3	4.0	0
4 A061070-3CSR	0	24.8	23.5	24.1	**1**	3.0	1	34.9	36.2	35.6	6.0	0
5 A06403-12	0	12.5	16.0	14.3	**0**	3.9	4	22.9	25.1	24.0	3.0	2
6 A07061-6	0	17.9	24.6	21.2	**1**	7.2	3	26.8	34.1	30.4	8.0	1
7 A07088-6	0	20.4	28.1	24.3	**1**	7.7	2	22.6	38.4	30.5	15.8	2
8 A071012-4BF	0	14.9	20.3	17.6	**0**	5.8	3	25.0	38.9	32.0	14.1	1
9 A08422-2VRsto	0	15.5	21.7	18.6	**0**	6.4	3	17.6	29.0	23.3	11.4	3
10 A10210-7TE	0	17.7	20.8	19.3	**0**	3.2	3	33.6	38.6	36.1	5.7	0
11 A10214-2TE	0	25.8	27.5	26.6	**2**	3.4	1	29.7	38.6	34.1	8.9	1
12 AOR06576-1	0	11.7	15.6	13.6	**0**	5.0	4	14.1	20.6	17.3	7.0	4
13 AOR07781-5	0	29.1	30.2	29.7	**2**	5.1	1	30.0	42.8	36.4	12.9	1
14 AOR07821-1	0	20.8	24.6	22.7	**1**	4.1	2	24.4	32.7	28.5	8.2	2
15 AOR08032-1	0	24.2	33.0	28.6	**2**	8.8	2	29.0	42.7	35.9	13.7	1
LSD 0.05	*ns*			*2.5*		*3.0*				*3.8*	*4.4*	
Average	0	20.0	24.1	22.0		5.4	2	26.6	35.8	31.2	9.8	1
Idaho												
1 Ranger Russet	0	26.1	30.2	28.1	**2**	6.6	1	27.9	37.3	32.6	12.7	1
2 Russet Burbank	0	16.7	19.3	18.0	**0**	3.3	3	21.0	35.4	28.2	15.7	2
3 A06030-23	0	29.9	29.1	29.5	**2**	3.4	1	38.3	41.4	39.9	5.0	0
4 A061070-3CSR	0	37.2	30.6	33.9	**3**	7.2	0	37.0	38.0	37.5	5.3	0
5 A06403-12	0	19.9	23.5	21.7	**1**	3.7	2	21.0	25.0	23.0	4.7	2
6 A07061-6	0	25.8	26.9	26.3	**2**	2.6	1	24.5	25.0	24.7	4.5	1
7 A07088-6	0	32.4	44.3	38.3	**4**	12.5	0	32.7	47.2	39.9	14.5	0
8 A071012-4BF	0	19.5	24.0	21.7	**1**	6.0	2	28.2	37.2	32.7	9.0	1
9 A08422-2VRsto	0	18.0	25.4	21.7	**1**	7.4	3	22.0	31.4	26.7	9.3	2
10 A10210-7TE	0	19.3	21.9	20.6	**1**	3.2	3	28.3	32.0	30.1	5.4	1
11 A10214-2TE	0	29.6	33.6	31.6	**3**	4.7	1	32.8	38.6	35.7	6.0	0
12 AOR06576-1	0	10.3	22.4	16.3	**0**	12.0	4	19.4	24.4	21.9	5.1	3
13 AOR07781-5	0	32.6	35.6	34.1	**3**	6.5	0	36.9	47.3	42.1	10.4	0
14 AOR07821-1	0	20.4	25.4	22.9	**1**	5.8	2	18.9	25.9	22.4	8.5	3
15 AOR08032-1	0	24.2	28.4	26.3	**2**	6.4	2	31.8	36.2	34.0	5.0	0
LSD 0.05	ns			*2.7*		*3.3*				*3.9*	*4.4*	
Average	0	24.1	28.0	26.1		6.1	2	28.0	34.8	31.4	8.1	1
Oregon												
1 Ranger Russet	0	18.2	17.1	17.6	**0**	3.1	3	17.7	17.4	17.5	3.3	3
2 Russet Burbank	0	19.4	18.5	19.0	**0**	2.4	3	18.6	20.3	19.5	2.8	3
3 A06030-23	0	26.5	27.3	26.9	**2**	4.3	1	36.6	36.5	36.5	4.9	0
4 A061070-3CSR	0	21.9	22.4	22.2	**1**	2.6	2	31.1	41.1	36.1	10.0	0
5 A06403-12	0	18.0	17.0	17.5	**0**	3.6	3	20.0	22.7	21.4	5.2	2
6 A07061-6	0	24.6	26.2	25.4	**2**	3.4	1	21.3	23.8	22.6	3.0	2
7 A07088-6	0	26.3	33.6	30.0	**2**	7.3	1	29.5	43.2	36.4	15.0	1
8 A071012-4BF	0	18.5	19.1	18.8	**0**	4.1	3	19.5	26.2	22.9	7.4	2
9 A08422-2VRsto	0	16.6	18.7	17.6	**0**	3.1	3	18.7	20.7	19.7	3.5	3
10 A10210-7TE	0	21.4	18.3	19.9	**1**	4.2	2	27.7	27.6	27.6	3.6	1
11 A10214-2TE	0	22.9	25.9	24.4	**1**	4.7	2	30.2	39.6	34.9	9.5	1
12 AOR06576-1	0	12.6	14.0	13.3	**0**	2.6	4	14.3	17.4	15.9	3.7	4
13 AOR07781-5	0	26.5	29.8	28.2	**2**	5.2	1	28.9	37.4	33.2	9.9	1
14 AOR07821-1	0	19.9	23.5	21.7	**1**	4.2	2	23.0	26.5	24.8	4.2	2
15 AOR08032-1	0	24.6	25.4	25.0	**2**	2.0	1	23.5	26.5	25.0	3.3	2
LSD 0.05	*ns*			*2.9*		*2.4*				*3.9*	*3.8*	
Average	0	21.2	22.4	21.8		3.8	2	24.0	28.5	26.2	6.0	2

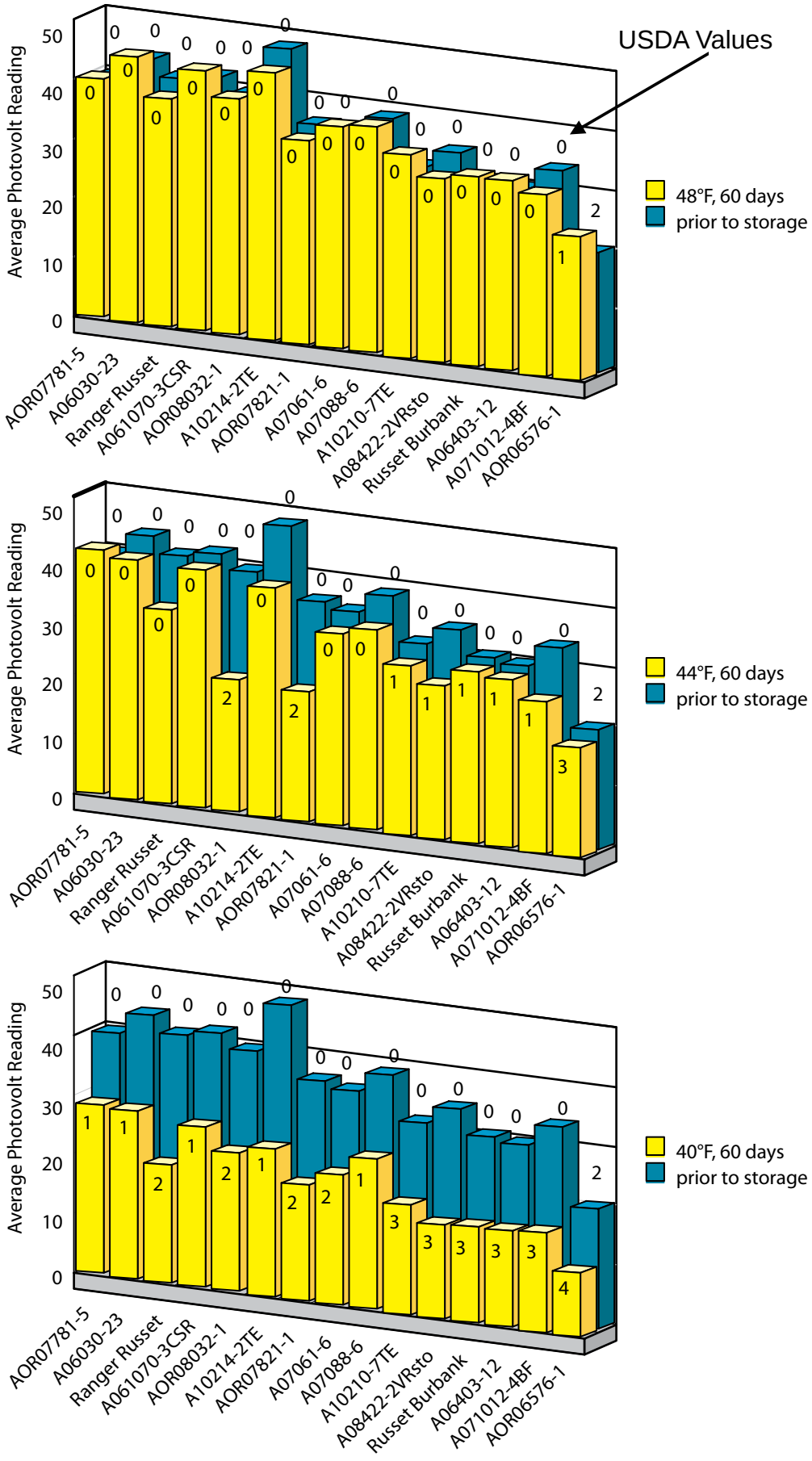
Date test performed:

Washington	Dec. 13	Dec. 3	Dec. 16
Idaho	Dec. 13	Dec. 9	Dec. 16
Oregon	Dec. 13	Dec. 15	Dec. 16

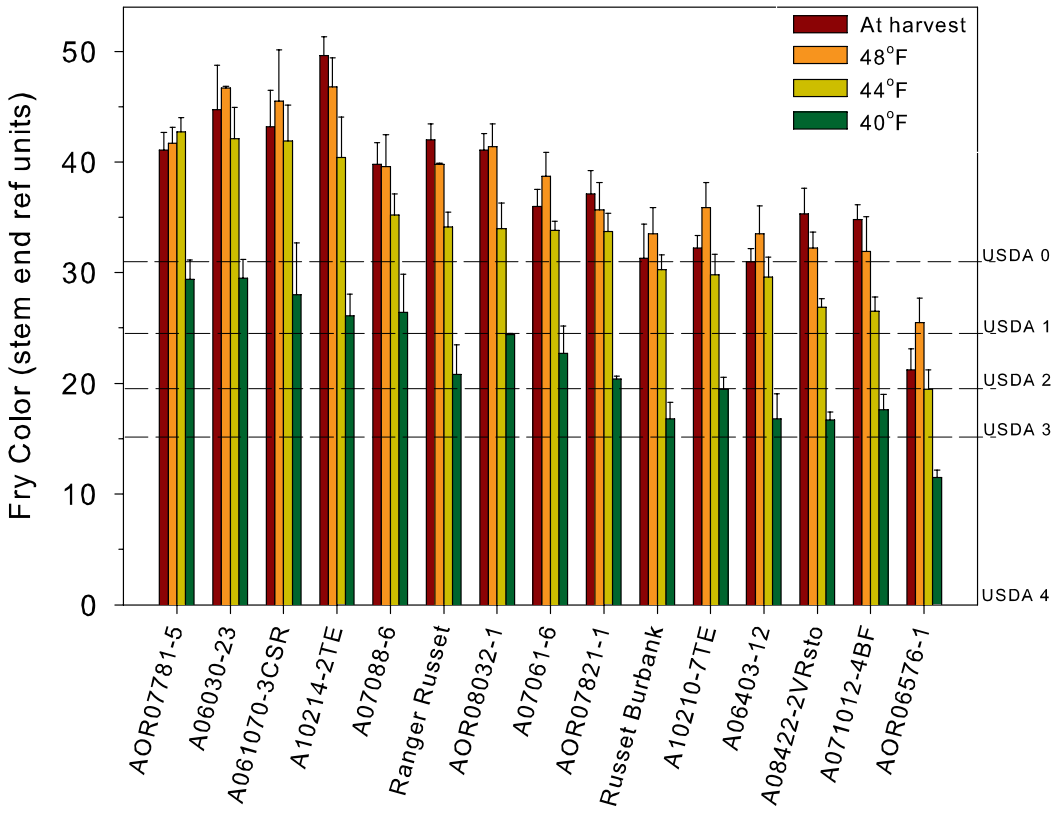
DIFF = Absolute difference between bud and stem Photovolt reading.

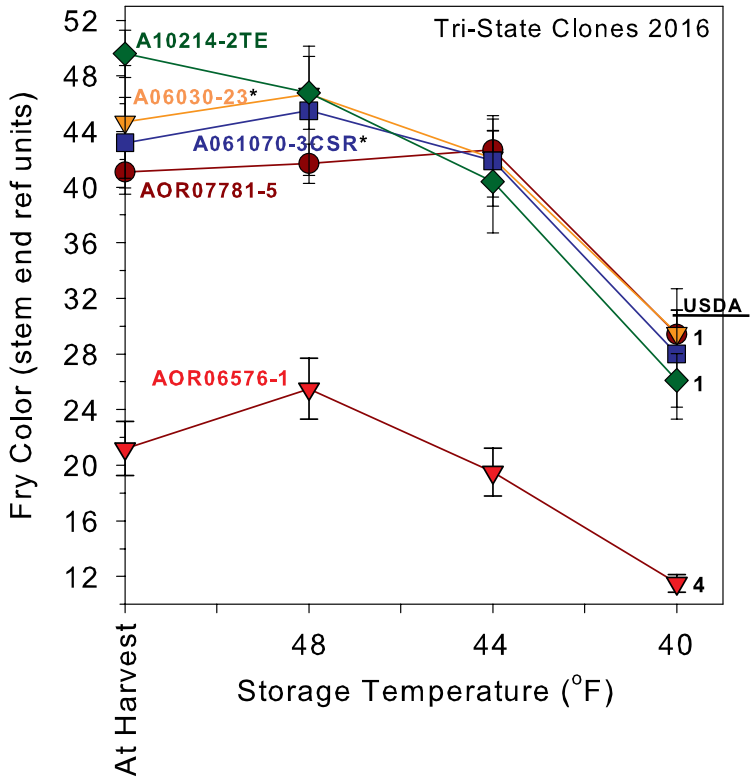
2016 Late Harvest Tri-State Trial

Tri-State Trial - 3 State Average of Stem End



2016 Late Harvest Tri-State Trial

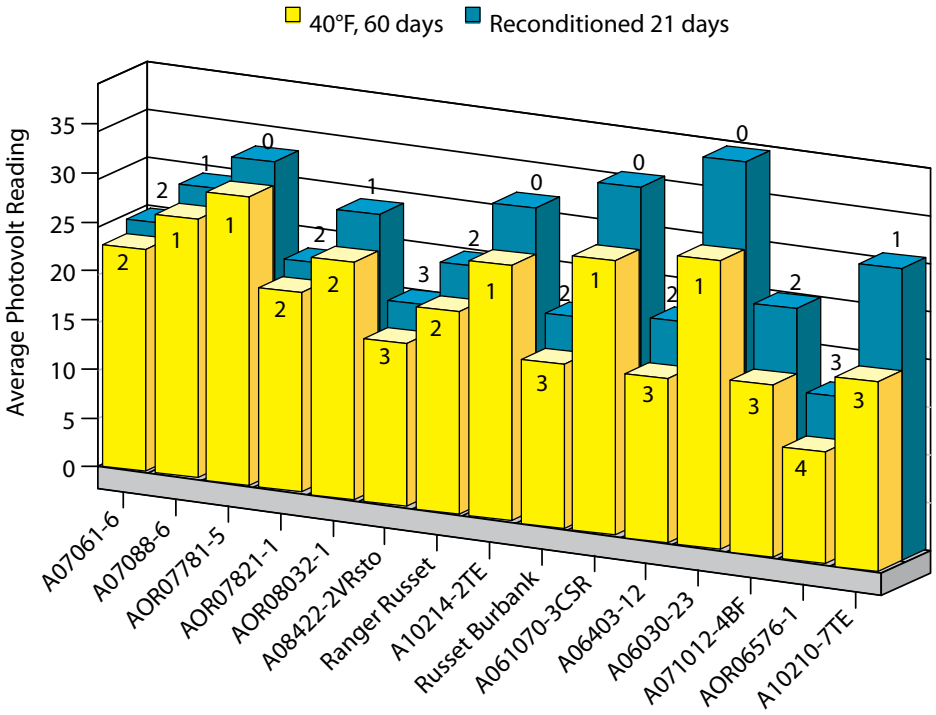


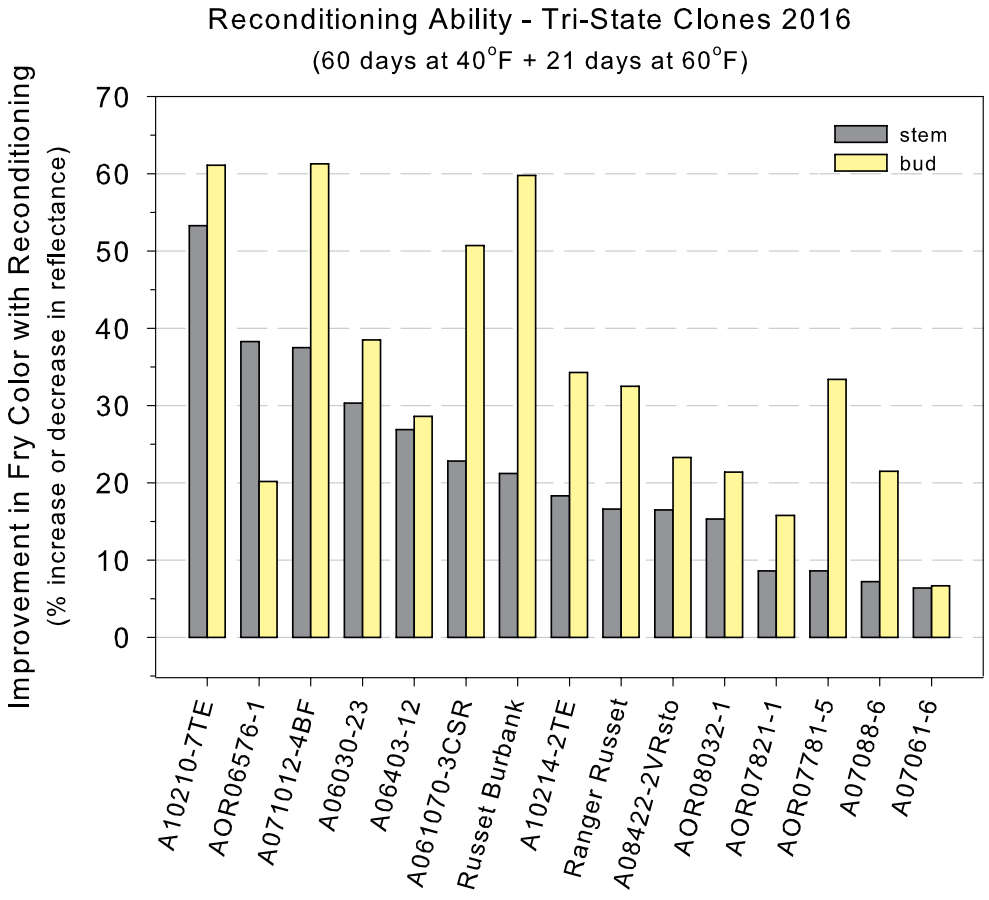


Top: At-harvest and after-storage French fry colors (stem end) of clones in the Tri-State Trial. Tubers were stored for 60 days at 48, 44, and 40°F. The clones are ranked from best to worst on fry color of the 44°F-stored tubers. High reflectance values indicate light colored fries.

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 (A10214-2TE, A06030-23, A061070-3CSR, and AOR07781-5) and susceptible (AOR06576-1) clones in the Tri-State Trial. *Indicates similar performance of the clones last year.

2016 Late Harvest Tri-State Trial



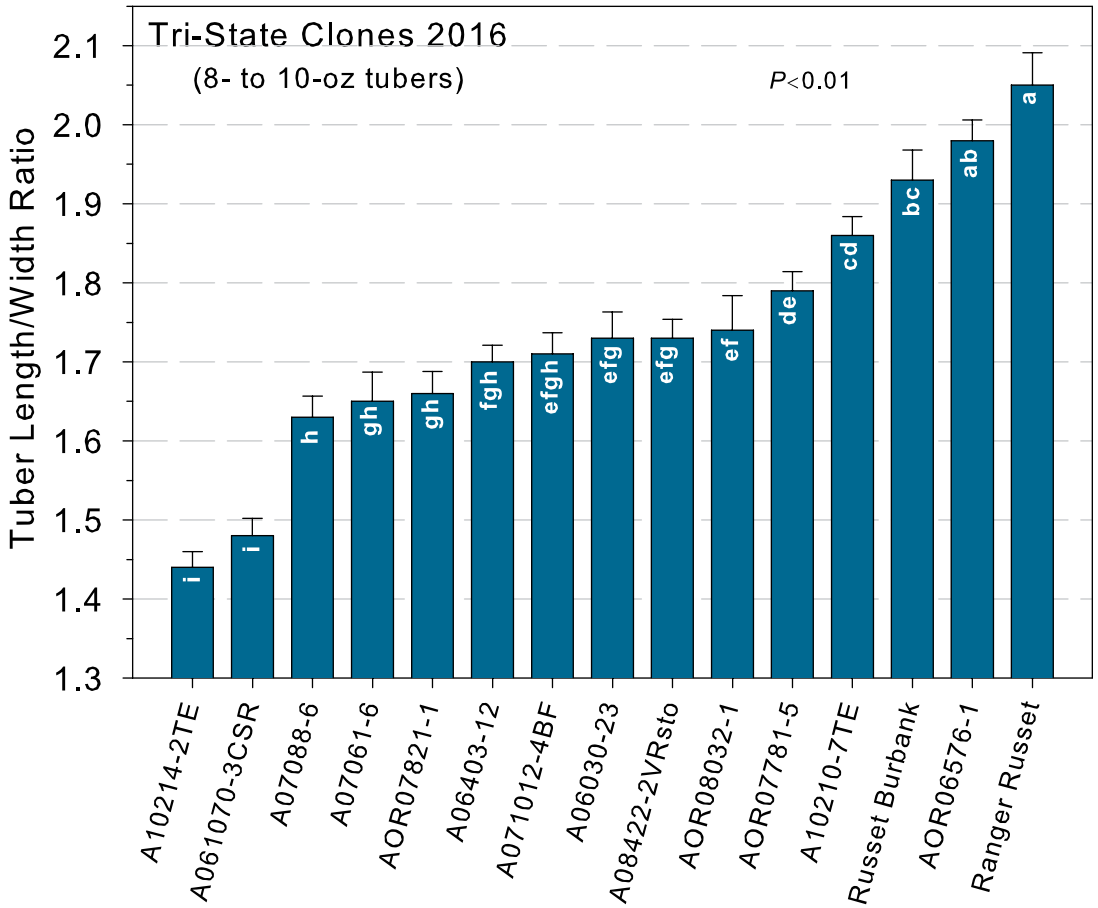


Reconditioning abilities of clones in the 2016 Tri-State Trial (3-state averages). Clones were stored at 40°F for 60 days after harvest and then reconditioned at 60°F for 21 days. **Top:** Stem end fry color before and after reconditioning. Numbers in bars indicate the USDA color rating of the stem end. **Bottom:** Percent improvement of stem and bud end fry color with reconditioning.

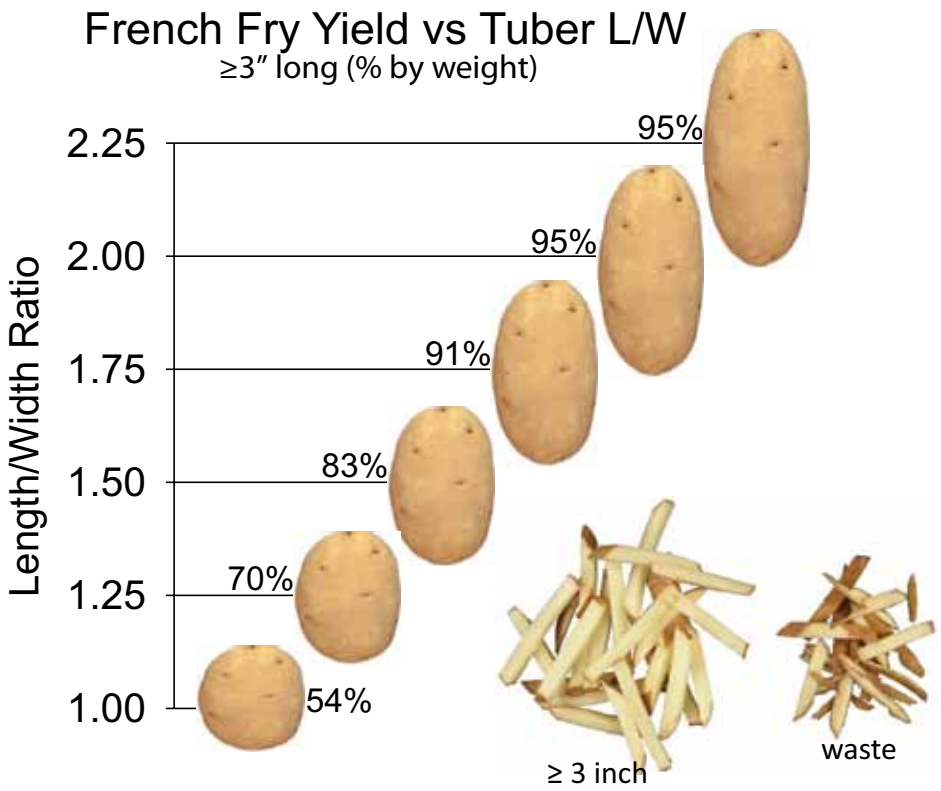
2016 Late Harvest Tri-State Trial

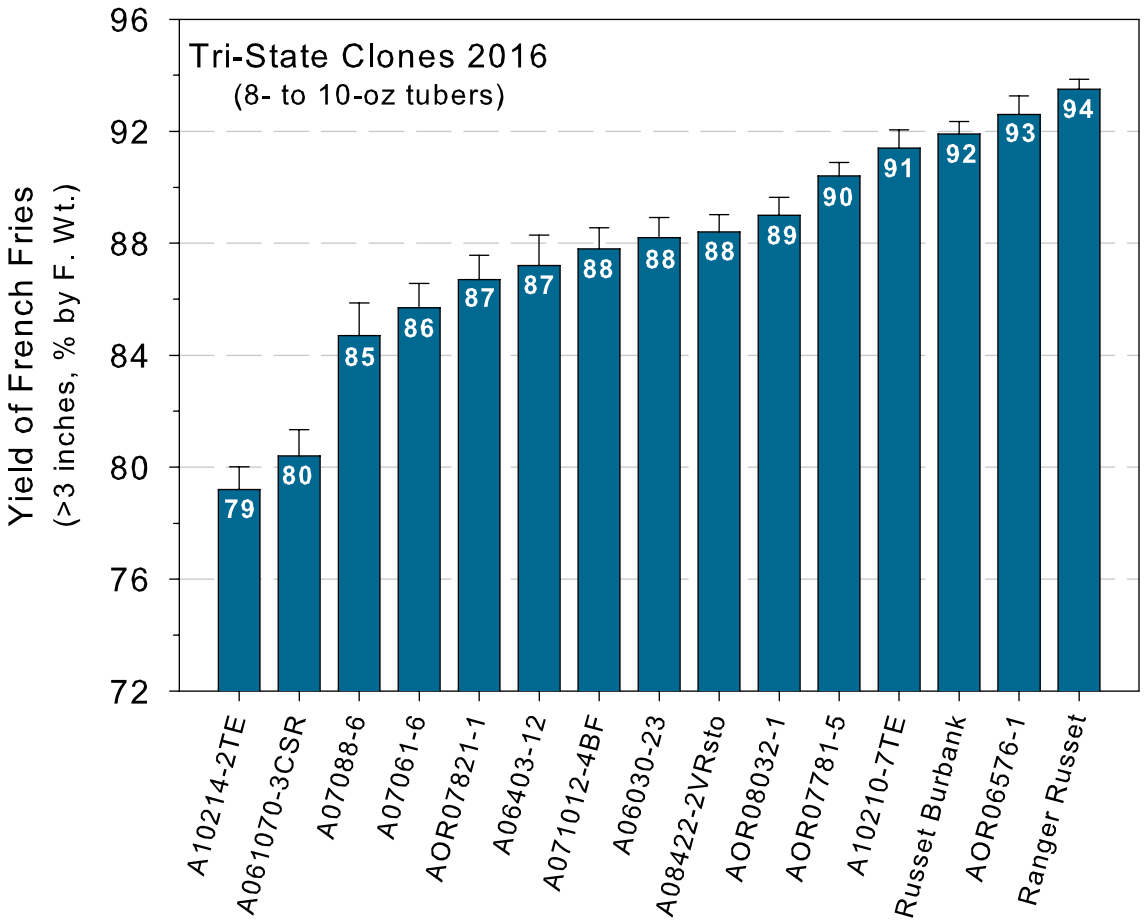
Length to Width Ratios of 8-10 oz Tubers

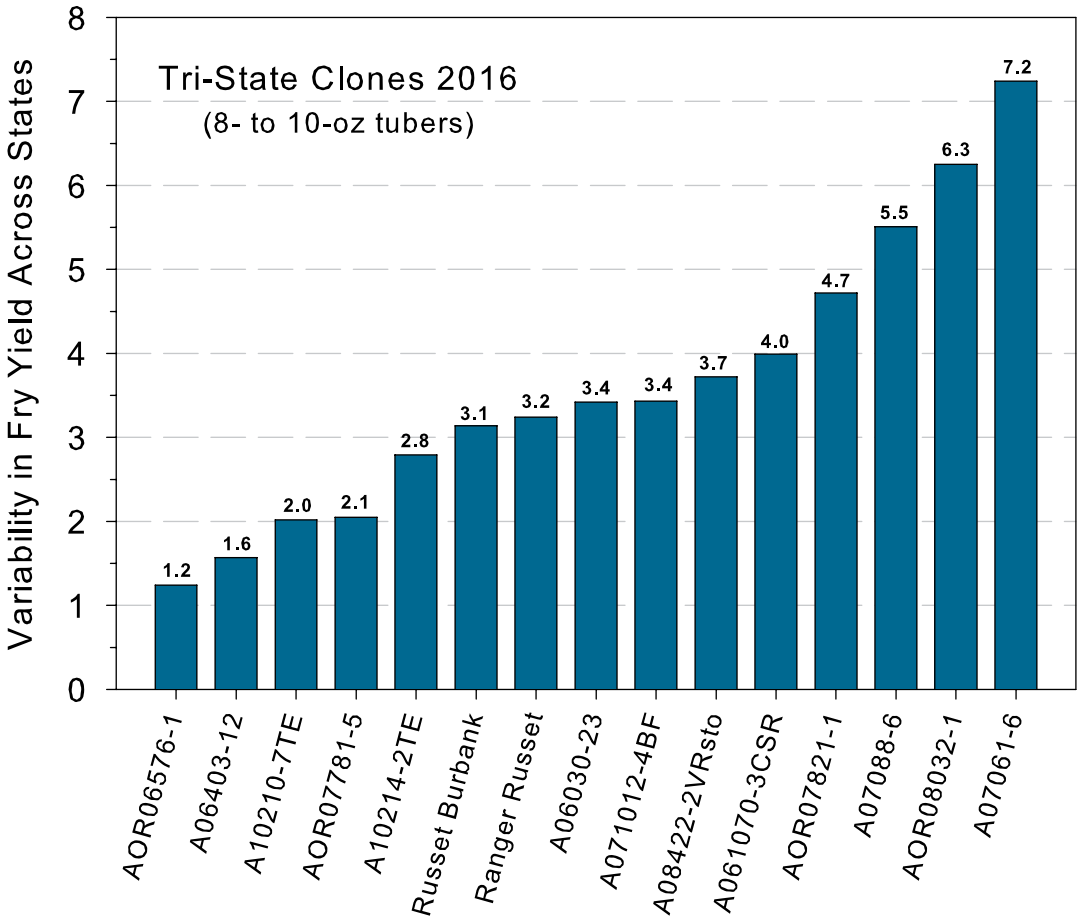
Clone	Length to width ratio WA	rtg §	ID	rtg §	OR	rtg §	3 State Avg.
1 Ranger Russet	1.72	**4**	2.36	**5**	2.08	**5**	2.05
2 Russet Burbank	1.68	**4**	2.00	**5**	2.11	**5**	1.93
3 A06030-23	1.56	**3**	1.97	**5**	1.65	**4**	1.73
4 A061070-3CSR	1.37	**2**	1.59	**3**	1.47	**2**	1.48
5 A06403-12	1.64	**3**	1.68	**4**	1.78	**4**	1.70
6 A07061-6	1.36	**2**	1.96	**5**	1.63	**3**	1.65
7 A07088-6	1.41	**2**	1.72	**4**	1.77	**4**	1.63
8 A071012-4BF	1.54	**3**	1.77	**4**	1.82	**5**	1.71
9 A08422-2VRsto	1.61	**3**	1.95	**5**	1.64	**3**	1.73
10 A10210-7TE	1.73	**4**	1.94	**5**	1.92	**5**	1.86
11 A10214-2TE	1.46	**2**	1.51	**3**	1.36	**2**	1.44
12 AOR06576-1	1.86	**5**	1.96	**5**	2.12	**5**	1.98
13 AOR07781-5	1.65	**4**	1.88	**5**	1.83	**5**	1.79
14 AOR07821-1	1.46	**2**	1.76	**4**	1.76	**4**	1.66
15 AOR08032-1	1.45	**2**	2.12	**5**	1.65	**4**	1.74
Average	1.57		1.88		1.77		1.74



2016 Late Harvest Tri-State Trial







Relative ranking of clones in the Late Season Tri-State Trial for variability in yield of French fries 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 1.65 (page 55), resulting in 86% of the tuber yielding French fries ≥3 inches in length. (page 56) Tuber shape of this entry also varied the most across production regions (above), resulting in fry yields ranging from 79% to 93% (86±7.2%).

Pages 55-56: Tuber length to width ratios and the associated percent yield of fries. Bars with same letter are not significantly different (P≤0.01).

2016 Early Harvest Regional Trial

Location: WSU Research Center – Othello, WA
Planting Date: March 30 Vine Kill Date: July 27
Harvest Date: August 9 Days Grown: 119

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 2016 early harvest trial compared 4 local reference varieties to 13 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.
Process Market Standout(s): AO06191-1.

Standcounts

- **30 Day**
  Slow emergence: CO05175-1RU (0%) and A03141-6 (2%).
  Best emergence: Russet Burbank (31%), Ranger Russet (24%).

- **40 Day**
  Slow emergence: TX08352-5Ru (11%) and AO06191-1 (24%).
  Best emergence: COTX09022-3RuRE/Y (91%), CO04220-7RU and CO05068-1RU (89%).

- **50 Day**
  Poor emergence: All varieties were above (87%).

Plant and Tuber Growth & Development

- **Above Ground Stem Number Per Plant**
  Most: CO04220-7RU (2.7) and COTX09022-3RuRE/Y (2.4).
  Least: Shepody (1.6) and COTX09052-2Ru (1.4).

- **Average Tuber Number Per Plant**
  Most: CO04220-7RU (11.4) and TX08352-5Ru (10.0).
  Least: Ranger Russet (6.1) and Shepody (4.9).

- **Average Tuber Size (oz)**
  Largest: Shepody (11.1), AO06191-1 (9.8) COTX09022-3RuRE/Y (9.6).
  Smallest: CO04220-7RU (4.7); AO03123-2 (5.8).

- **Undersized Tubers (<4 oz)**
  Most: AO03123-2, CO04220-7RU, and TX08352-5Ru.
  Fewest: Shepody, AO06191-1, and COTX09022-3Ru.

Yield and Economic Data

- **Total Yield and U.S. #1 Yield**
  Highest: COTX09022-3RuRE/Y had the highest total yield (633 CWT/A) and COTX09022-3RuRE/Y had the U.S. #1 yield (574 CWT/A). TX08352-5Ru had the second highest total yield (587 CWT/A) and AO06191-1 had the second highest U.S. #1 yield (543 CWT/A).
  Lowest: Ranger had the lowest total yield (465 CWT/A) and CO04220-7RU had the U.S. #1 yield (312 CWT/A). AO03123-2 had the second lowest total yield (469 CWT/A); AO03123-2 had the second lowest U.S. #1 yield (376 CWT/A).

- **% U.S. #1's (greater than 4 oz)**
  Highest: AO06191-1 (94%) and A03141-6 (92%).
  Lowest: CO04220-7RU (61%); Russet Burbank (73%) and AO03123-2 (80%).

- **Carton Yield (100 to 50 Count (7 to 18 oz U.S. #1 Tubers))**
  Highest: AO06191-1 (23.2 Tons/A) and A06141-6 (19.1 Tons/A).
  Lowest: CO04220-7RU (4.0 Tons/A).

- **Gross Return ($/acre)**
  Fresh Market Highest: AO06191-1 and COTX09022-3RuRE/Y.
  Fresh Market Lowest: CO04220-7RU, AO03123-2, and Russet Burbank.
  Process Market Highest: AO06191-1 and COTX09022-3RuRE/Y.

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

- **External Defects**
  Notable Defects: Russet Burbank had 6% growth cracks and 3% knobs. Most entries had little to no external defects.

- **Internal Defects**
  Notable Defects: AOR06070-1KF had 22% hollow heart, CO05068-1RU had 11% hollow heart. Russet Burbank had 11% internal brown spots. Most entries had no internal defects.

- **Bruise**
  Highest Blackspot: Ranger Russet (83%), Russet Burbank (67%).
  Highest Shatter: CO05152-5RU (100%) and AOR6070-1KF (81%).

2016 Early Harvest Regional Trial

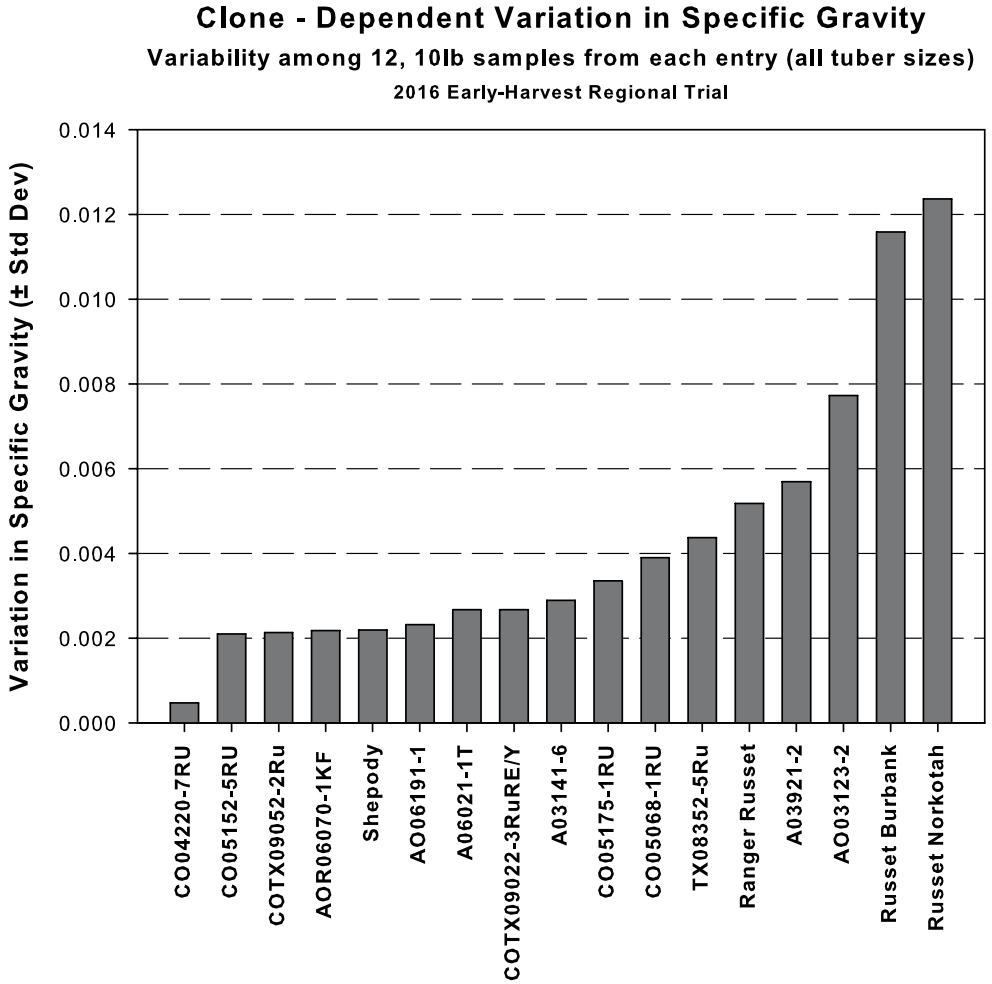
Summaries

ENTRY	TOTAL YIELD CWT/A		TOTAL YIELD Tons/A	US # 1's* > 4 oz % of Total Yield	US # 2's* > 4 oz % of Total Yield	Culls* & < 4 oz % of Total Yield	CARTON YIELD 100-50 count (US 1's 7-18 oz) % of Total Yield	CARTON YIELD 100-50 count (US 1's 7-18 oz) Tons/A	PROCESS YIELD US 1's and 2's > 6 oz % of Total Yield	PROCESS YIELD US 1's and 2's > 6 oz Tons/A
Ranger Russet	465	*E*	23.2	91	1	8	60	13.9	74	17.5
Russet Burbank	526	*BCDE*	26.3	73	0	27	44	11.6	53	14.2
Russet Norkotah	473	*DE*	23.7	84	0	16	53	12.7	64	15.5
Shepody	502	*BCDE*	25.1	91	1	9	56	14.0	82	20.9
A03141-6	569	*ABCD*	28.5	92	1	7	67	19.0	83	23.5
A03921-2	560	*ABCDE*	28.0	89	1	10	61	17.1	75	21.0
A06021-1T	534	*BCDE*	26.7	89	1	10	66	17.6	77	20.6
AO03123-2	469	*E*	23.5	80	0	20	35	8.3	49	11.6
AO06191-1	576	*ABC*	28.8	94	0	5	81	23.2	88	25.3
AOR06070-1KF	569	*ABCD*	28.4	85	1	14	55	15.7	73	21.2
CO04220-7RU	513	*BCDE*	25.6	61	1	39	16	4.0	26	6.7
CO05068-1RU	558	*ABCDE*	27.9	87	2	10	59	16.5	74	20.5
CO05152-5RU	580	*ABC*	29.0	86	2	12	51	14.8	66	19.1
CO05175-1RU	486	*CDE*	24.3	85	3	12	51	12.3	74	17.8
COTX09022-3RuRE/Y	633	*A*	31.7	90	0	10	60	19.1	78	24.7
COTX09052-2Ru	585	*AB*	29.3	87	0	13	54	15.9	66	19.3
TX08352-5Ru	587	*AB*	29.4	84	0	16	36	10.6	54	15.9

ENTRY	US # 1 YIELD > 4 oz CWT/A	STATS**	US # 1 YIELD > 4 oz Tons/A	4-7 oz* %	7-14 oz* %	> 14 oz* %	> 4 oz SPECIFIC GRAVITY	INTERNAL DEFECTS (%) (8-12 oz tubers) % HH	% BC	% IBS
Ranger Russet	426	*CDEF*	21.3	31	63	6	1.097	0	0	0
Russet Burbank	383	*EFG*	19.1	39	53	8	1.091	6	0	11
Russet Norkotah	402	*DEFG*	20.1	36	59	5	1.083	0	0	0
Shepody	456	*BCDE*	22.8	14	40	45	1.092	0	0	0
A03141-6	523	*AB*	26.1	24	60	17	1.104	0	0	0
A03921-2	501	*ABC*	25.0	28	55	17	1.112	0	0	0
A06021-1T	478	*ABCDE*	23.9	25	65	10	1.092	0	0	0
AO03123-2	376	*FG*	18.8	55	44	1	1.097	0	0	0
AO06191-1	543	*AB*	27.1	14	64	22	1.102	3	0	0
AOR06070-1KF	488	*ABCD*	24.4	26	46	28	1.106	22	0	0
CO04220-7RU	312	*G*	15.6	74	26	0	1.097	0	0	0
CO05068-1RU	485	*ABCD*	24.2	27	56	17	1.106	11	4	0
CO05152-5RU	500	*ABC*	25.0	41	55	4	1.090	0	0	0
CO05175-1RU	412	*CDEF*	20.6	28	49	23	1.095	0	0	0
COTX09022-3RuRE/Y	574	*A*	28.7	20	48	32	1.099	0	0	0
COTX09052-2Ru	508	*ABC*	25.4	35	58	6	1.098	0	0	0
TX08352-5Ru	494	*ABCD*	24.7	57	43	0	1.084	0	0	0

* Percent values may not total 100% due to rounding

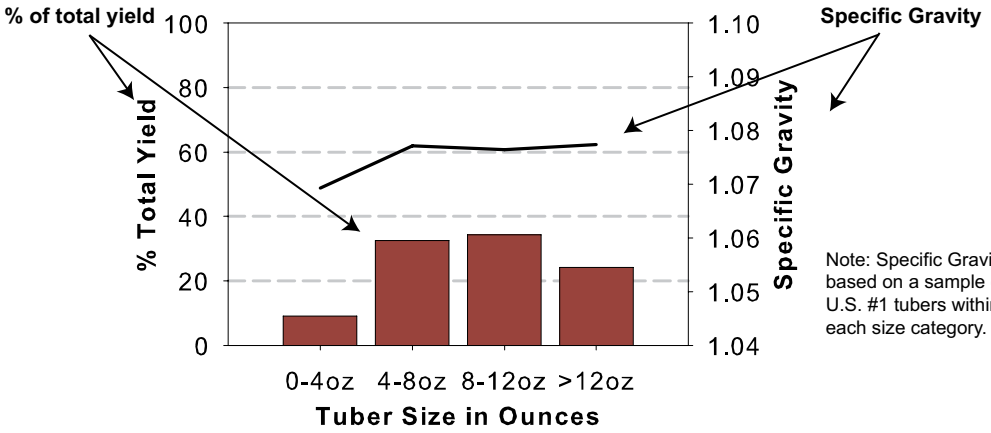
ENTRY	30 DAY STAND % Emerged	40 DAY STAND % Emerged	50 DAY STAND % Emerged	STEMS PER PLANT Above Ground	AVERAGE TUBER WEIGHT Ounces	AVERAGE TUBER NUMBER Tubers/Plant	SKIN SET 1 = Poor 5 = Good	TUBER SHAPE 1 = Round 5 = Long	BRUISE (%) (8-12 oz tubers) BLACKSPOT	BRUISE (%) (8-12 oz tubers) SHATTER
Ranger Russet	24	89	98	1.7	7.9	6.1	4	4	83	33
Russet Burbank	31	80	96	2.0	6.7	8.0	3	3	67	17
Russet Norkotah	4	62	98	1.8	6.8	7.2	3	3	32	0
Shepody	22	73	98	1.6	11.1	4.9	4	3	29	24
A03141-6	4	87	100	1.9	8.9	6.7	3	3	36	7
A03921-2	2	87	100	1.7	8.3	7.0	4	3	30	60
A06021-1T	13	31	91	1.9	8.1	6.8	4	3	25	30
AO03123-2	20	49	96	2.1	5.8	8.5	4	3	13	37
AO06191-1	4	24	93	1.8	9.8	6.1	3	4	20	30
AOR06070-1KF	11	73	100	1.8	8.7	6.8	3	3	33	81
CO04220-7RU	22	89	100	2.7	4.7	11.4	4	3	7	17
CO05068-1RU	4	89	98	1.8	8.4	6.9	3	3	36	25
CO05152-5RU	4	80	98	1.9	7.2	8.4	3	3	38	100
CO05175-1RU	0	62	96	2.0	8.3	6.1	4	3	22	22
COTX09022-3RuRE/Y	22	91	100	2.4	9.6	6.9	4	2	60	5
COTX09052-2Ru	11	36	91	1.4	7.0	8.7	4	4	0	27
TX08352-5Ru	4	11	96	1.8	6.1	10.0	4	3	0	20



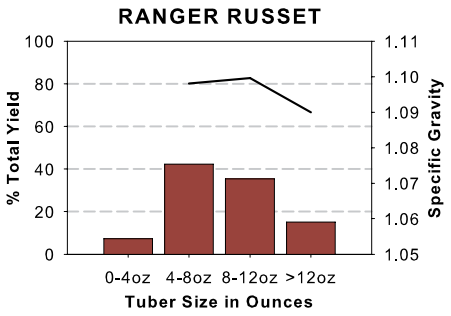
2016 Early Harvest Regional Trial

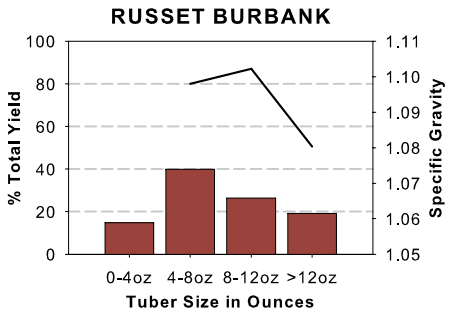
Tuber Yield and Specific Gravity Distributions

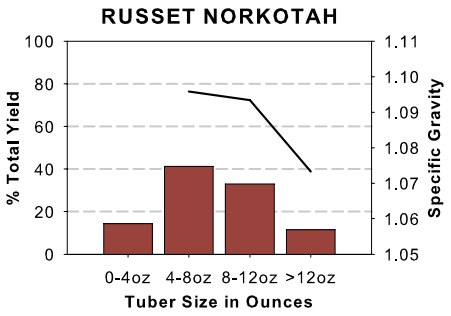
12 inch In-Row Spacing

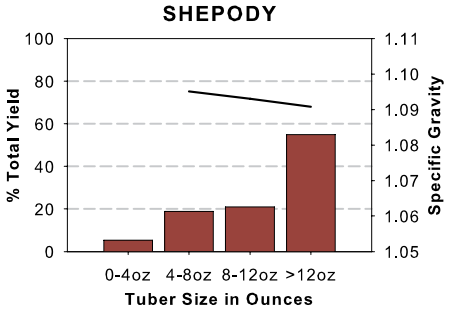


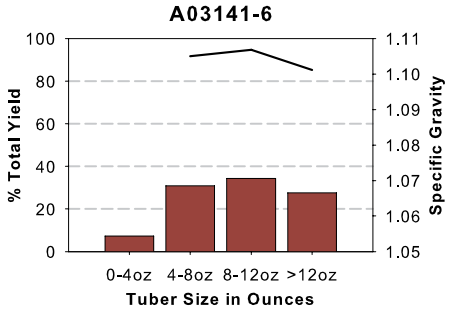
Note: Specific Gravity is based on a sample of U.S. #1 tubers within each size category.

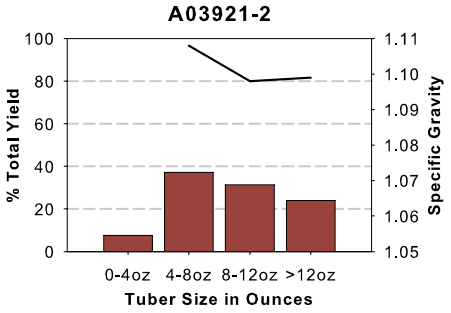


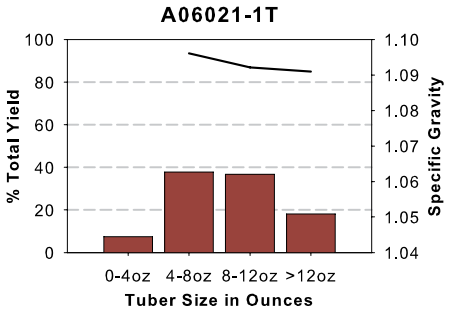


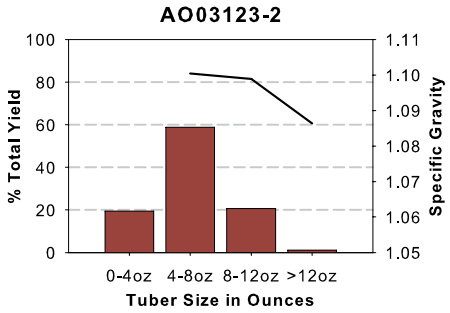


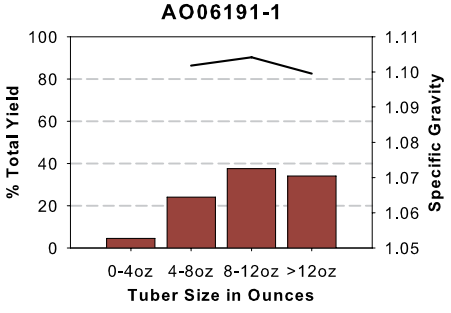




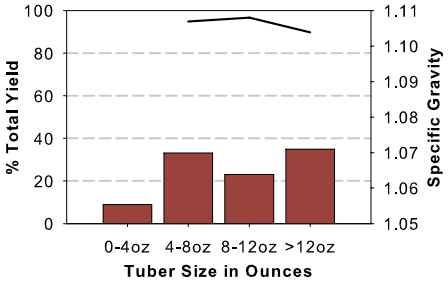




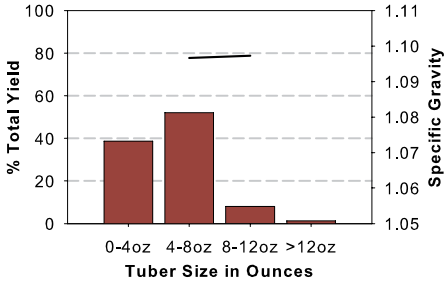




AOR06070-1KF

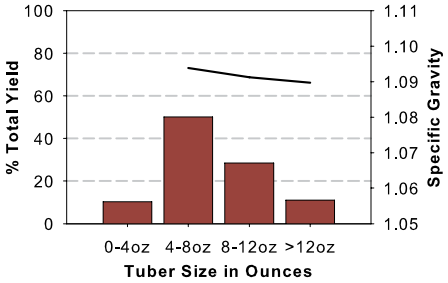


CO04220-7RU

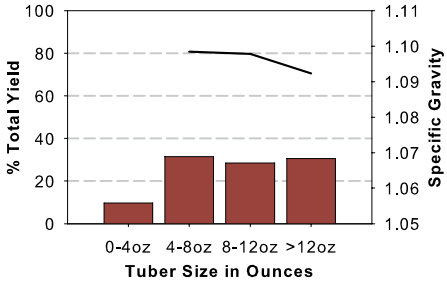


CO05068-1RU

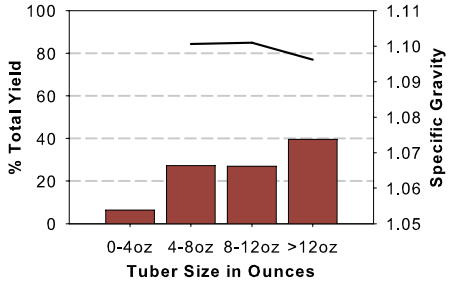
CO05152-5RU



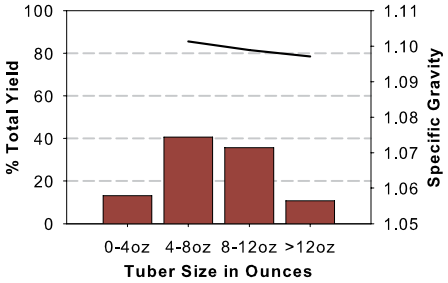
CO05175-1RU



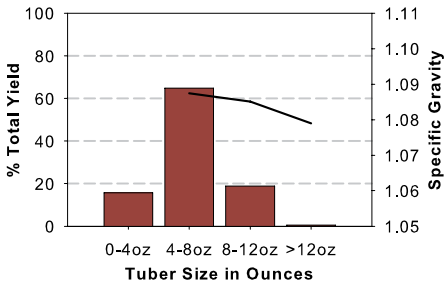
COTX09022-3RU



COTX09052-2RU



TX08352-5RU



2016 Early Harvest Regional Trial

Tubers

Ranger Russet

A03921-2

CO04220-7RU

COTX09052-2Ru

Russet Burbank

A06021-1T

CO05068-1RU

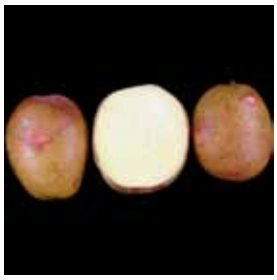
TX08352-5Ru

Russet Norkotah

AO03123-2

CO05152-5RU

COTX09022-3RuRE/Y

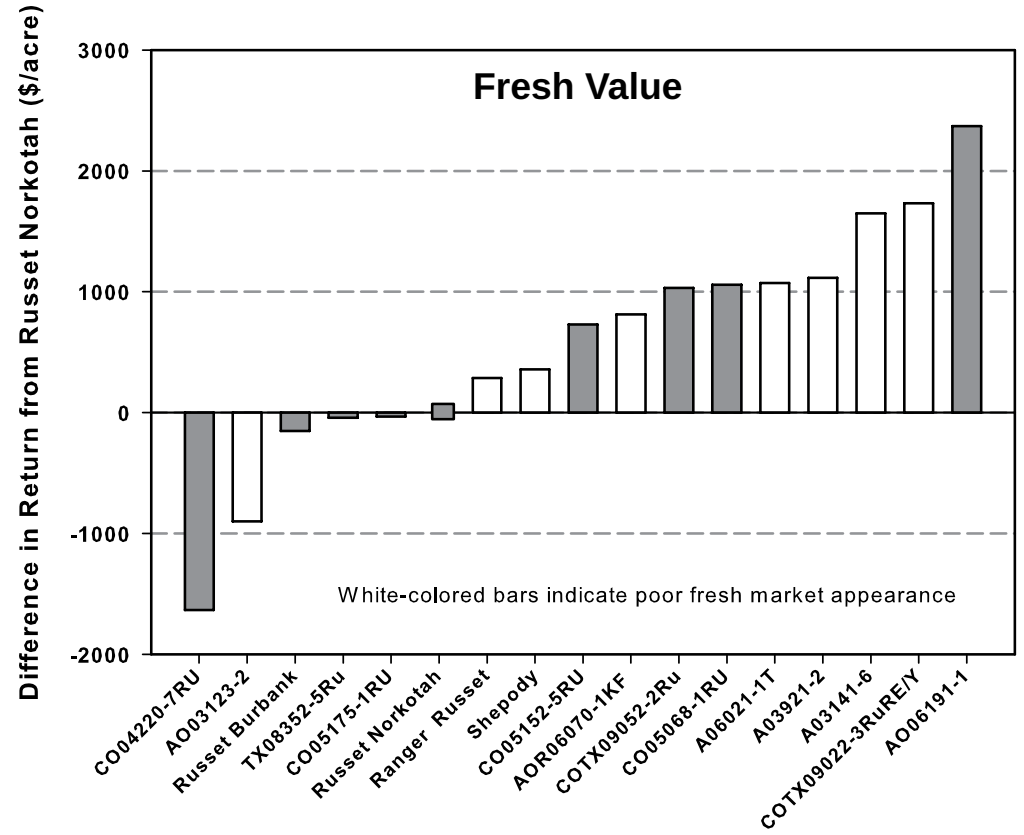


Shepody

AO06191-1

A03141-6

AOR06070-1KF



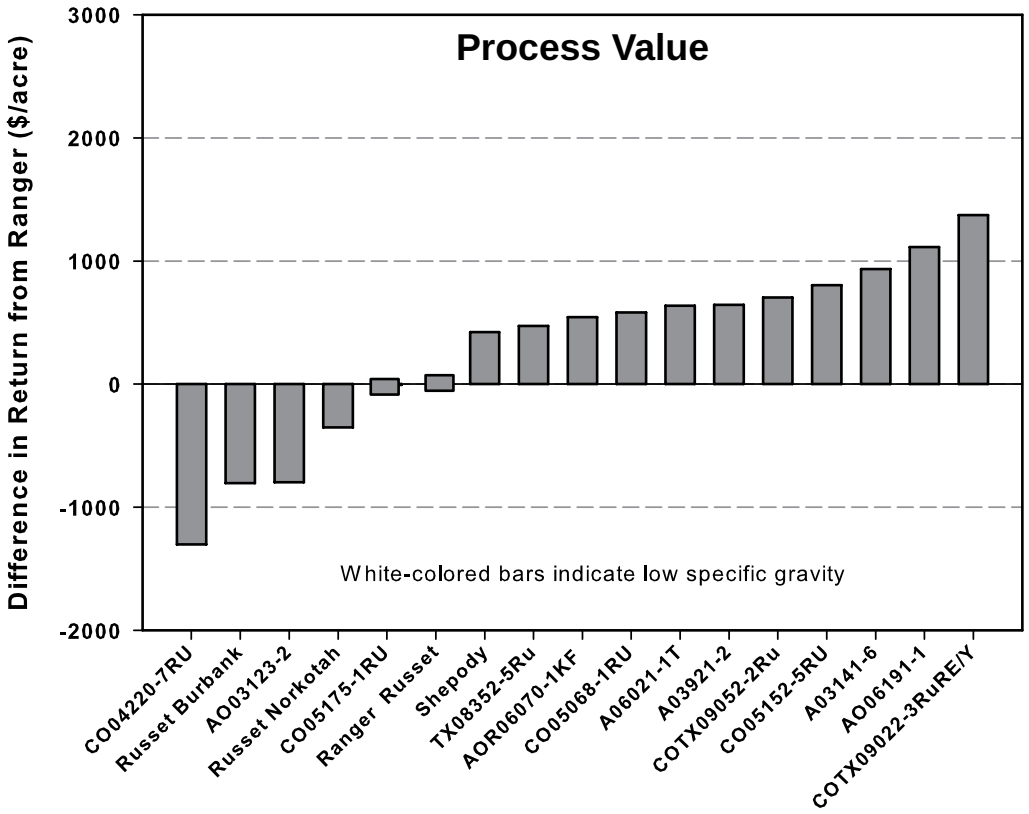


Figure 1 (Top). Difference in gross return per acre (Fresh Market) from Russet Norkotah calculated by subtracting the gross return of Russet Norkotah from the gross return of the particular entry. Entries with the white-colored bars may not appeal to fresh market consumers due to the undesirable shape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

2016 Late Harvest Regional Trial

Location: WSU Research Center – Othello, WA
Planting Date: April 5 Vine Kill Date: Sept 2
Harvest Date: Sept 13 Days Grown: 150

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 13 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): none
Process Market Standout(s): A03141-6

Standcounts

- **30 Day**
  Slow emergence: AO06191-1 (8%).
  Best emergence: Ranger Russet (94%).

- **40 Day**
  Slow emergence: Russet Norkotah (80%) and COTX09022-3RuRE/Y (83%).
  Best emergence: CO04220-7RU and CO05068-1RU both at (96%).

- **50 Day**
  Full emergence: A03141-6, AO03123-2, COTX09052-2Ru, and TX08352-5Ru were all at (100%).
  Best emergence: All entries were at least 91% emerged at 50 DAP.

Plant and Tuber Growth & Development

- **Above Ground Stem Number Per Plant**
  Most: CO04220-7RU (3.2) and Russet Norkotah (2.9).
  Least: COTX09052-2RU (1.3), AO06191-1 (1.5).

- **Average Tuber Number Per Plant**
  Most: CO04220-7RU (12.4), CO05152-5RU (10.8).
  Least: AO06191-1 (4.8), A03141-6 (5.7).

- **Average Tuber Size (oz)**
  Largest: A03141-6 (12.4), AO06191-1 (12.3), and A03921-2 (10.3).
  Smallest: CO04220-7RU (4.3), COTX09022-3RuRE/Y (6.4).

- **Undersized Tubers (< 4 oz)**
  Most: CO04220-7RU and CO05152-5RU.
  Least: A06021-1T, A03921-2, A03141-6, and AO06191-1.

Yield and Economic Data

- **Total and U.S. #1 Yield**
  Highest: CO05068-1RU had the highest total yield (876 CWT/A); A03141-6 had the highest U.S. # 1 yield (795 CWT/A). AOR06070-1KF had the second highest total yield (872 CWT/A); AOR06070-1KF and CO05068-1RU had the second highest U.S. #1 yield (790 CWT/A).
  Lowest: CO05068-1RU had the lowest total yield (642 CWT/A) and CO04220-7RU had the lowest U.S. #1 yield (347 CWT/A).

- **% U.S. #1 Yield Greater Than 4oz.**
  Highest: A03141-6 (94%), and AO06191-1 (93%).
  Lowest: CO04220-7RU (53%), Russet Burbank (78%).

- **Carton Yield (100 to 50 Count (7 to 18 oz US #1 Tubers))**
  Highest: CO05068-1RU (27.9 Tons/A), AOR06070-1KF (26.7 Tons/A).
  Lowest: CO04220-7RU (3.9 Tons/A), Russet Norkotah (17.5 Tons/A).

- **Gross Return ($/acre)**
  Fresh Market Highest: CO05068-1RU, Ranger Russet, and AOR06070-1KF.
  Fresh Market Lowest: CO04220-7RU, Russet Norkotah, and Russet Burbank.
  Process Market Highest: Ranger Russet, A04141-6, and CO05068-1RU.
  Process Market Lowest: CO04220-7RU, Russet Norkotah, and TX08352-5RU.

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

- **External Defects**
  Notable Defects: COTX09022-3RuRE/Y had 25% growth cracks, all other entries had little to no external defects.

- **Internal Defects**
  Notable Defects: CO05068-1RU had 5% hollow heart. Russet Burbank had 14% brown center. Other defects were present at 4% or less. Most entries were relatively free of internal defects.

- **Bruise**
  Highest Blackspot: Ranger Russet and CO05068-1RU both (58%), Russet Burbank (57%).
  Lowest Blackspot: AO03123-2 (3%), CO04220-7RU (7%).
  Highest Shatter: AOR06070-1KF (87%), AO06191-1 (82%).
  Lowest Shatter: Russet Norkotah (12%), Ranger Russet (12%).

2016 Late Harvest Regional Trial

Postharvest Information

The 2016 trial evaluated eight 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). An "*" in the summary below indicates similar performance and/or ranking in trials from previous years.

- **Overall Postharvest Rating**
  Highest scoring: A03921-2, AOR06070-1KF*, CO04220-7RU, A03141-6*
  Lowest scoring: RB*, A06021-1T, CO05068-1RU, AO06191-1

- **Low Temperature Sweetening**
  Most resistant: A03921-2*, AOR06070-1KF*, A03141-6*
  Most susceptible: AO06191-1, RR, CO05068-1RU, A06021-1T, RB*

- **Taste Panel**
  Highest rated: A03141-6*, AO03123-2, AOR06070-1KF
  Lowest rated: RB*, CO05068-1RU

- **Blackspot Bruise Susceptibility**
  Most resistant: CO04220-7RU, AO03123-2*
  Most susceptible: RR*, A03921-2*, CO05068-1RU*

- **Variability in Tuber Shape & Fry Yield (8- to 10-oz tubers)**
  Lowest L/W: A03141-6
  Highest L/W: CO04220-7RU, RR*, RB*
  Least variable: CO04220-7RU, A03141-6, AO03123-2*, RB*, RR*
  Most variable: AO06191-1, A03921-2, CO05068-1RU

Details

- A03921-2, AOR06070-1KF*, CO04220-7RU, and A03141-6* were the highest rated entries, accumulating an average of 30.3, 29.2, 29.1, and 28.7 of 38 possible points, respectively.

- A03921-2*, AOR06070-1KF*, and A03141-6* were resistant to cold sweetening (LTS), producing USDA 0-1 fries (stem end) when stored for 60 days at 40°F averaged across locations. AO06191-1, RR, CO05068-1RU, A06021-1T, and RB* were susceptible to LTS, producing USDA 3 fries after 60 days at 40°F.

- A03141-6*, AOR06070-1KF*, and AO03123-2* had ~44, 33, and 27% lower concentrations (P<0.05) of asparagine (acrylamide precursor) than RB, respectively. These clones also averaged 44% lower asparagine concentrations than RB in 2015. These entries underwent further evaluations in the 2016 National Fry Processing Trials for development of low acrylamide varieties.

- RB*, A06021-1T, CO05068-1RU, and AO06191-1 scored lowest on overall postharvest performance with 20.9, 22.8, 23.0, and 23.6 of 38 possible points, respectively.

- While specific gravities were good when averaged across states (1.080-1.094), 8 of 10 entries grown in OR (including RR and RB) had gravities ranging from 1.070-1.078 (too low for processing contracts). By contrast, gravities of 5 entries grown in WA and 8 entries from ID ranged from 1.088-1.100, which can be too high for some contracts.

- A03141-6*, AO03123-2, and AOR06070-1KF were the favorites in the taste panels, averaging 3.6/5 across growing locations (5 is best). RB* and CO05068-1RU were the lowest scoring clones (avg=2.9/5). However, the narrow range of taste panel scores (2.9-3.7) indicates that panelists rated all entries favorably for French fry culinary quality.

- On average, tubers grown in ID produced the lightest fry colors at harvest. The Regional entries retained 97 and 88% of their at-harvest process quality (stem end fry color) when stored at 48 and 44°F for 60 days, respectively.

- RB* was the only entry to produce non-uniform fry color prior to storage; all other entries produced light (USDA 0) and uniform fry color from bud to stem end regardless of production site. All samples from ID and OR produced light, uniform fry color following 60 days storage at 48 and 44°F. WA-grown samples of RR, RB, A03141-6, A06021-1T, AO032123-2, and AO06191-1 produced non-uniform fry color when stored at 48°F. AO06191-1 and RB* varied the most in ability to retain process quality during storage for 60 days at 44°F across production sites.

- CO04220-7RU 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 A03141-6, RB, CO05068-1RU, and A06021-1T had little effect on change in stem end fry color. Differences between bud and stem end fry color increased substantially in RB*, CO04220-7RU, AO03123-2, and A06021-1T during reconditioning, reflecting less improvement of stem vs bud end fry color and indicating that these clones may be more susceptible to sugar ends.

- CO04220-7RU and AO03123-2* were resistant to blackspot, with an average of 13% bruise (stem end) in the controlled impact study (3-state average). These entries also scored lowest in bruise severity, averaging 1.3/5 (1= no bruise; 5= 100% of impact area is dark). RR*, A03921-2*, and CO05068-1RU* were highly susceptible with 97, 74, and 72% bruise, respectively. Bruise severity was also greatest in these four entries (average 3.4/5).

- ID-grown tubers (8-10 oz) had the highest L/W ratios (1.92) compared with those grown in OR (1.80) and WA (1.66). A03141-6 had the lowest L/W ratios (avg. 1.59), indicating round tubers. CO04220-7RU, RR*, and RB* had the highest L/W ratios (1.9-2.1). AO06191-1, A03921-2, CO05068-1RU had the greatest variation in L/W ratios of 8- to 10-oz tubers across production sites. In contrast, the L/W ratios of CO04220-7RU, A03141-6, AO03123-2*, RB*, and RR* were least affected by growing location.

- On average, 73% of tubers of CO05068-1RU had 1-inch-long sprouts after 60 days at 48°F compared with 49% of RR tubers (avg sprout length = 0.3 inch). Sprouting of CO04220-7RU, RR, A03921-2, and AOR06070-1KF averaged 39% with sprout lengths ranging from 0.1-0.3 inches compared with no sprouting for RB and the remaining entries.

- In longer term (7-month) storage studies, AOR06070-1KF had relatively short dormancy, producing sprouts averaging 7.5 inches in length after 7 months storage (RB=4.8 in). In contrast, A06021-1T* and AO06191-1 produced 0.5-in-long sprouts after 7 months, indicating substantially longer dormancy than RB and RR.

- When stored for 7 months, RB produced light (USDA 0) but non-uniform fry color from WA and ID while RR fries were non-uniform in color from OR grown samples. The remaining eight entries produced USDA 0 fries that were uniform in color regardless of production site.

Overall Regional Postharvest Merit Scores

Clone	Postharvest Merit Scores WA	ID	OR	3 state Average
4 A03921-2	3.7	4.0	4.2	4.0
8 AOR06070-1KF	3.7	3.9	4.0	3.8
9 CO04220-7RU	3.9	4.3	3.4	3.8
3 A03141-6	3.5	4.0	3.8	3.8
6 AO03123-2	3.8	4.3	3.2	3.8
1 Ranger Russet	3.2	3.9	3.2	3.4
7 AO06191-1	3.0	3.3	3.1	3.1
10 CO05068-1RU	3.0	3.3	2.8	3.0
5 A06021-1T	2.7	3.7	2.6	3.0
2 Russet Burbank	2.2	3.8	2.3	2.8

Participants of the 2016 Potato Virus workshop and field demo interact on the WSU-Othello Research Farm.

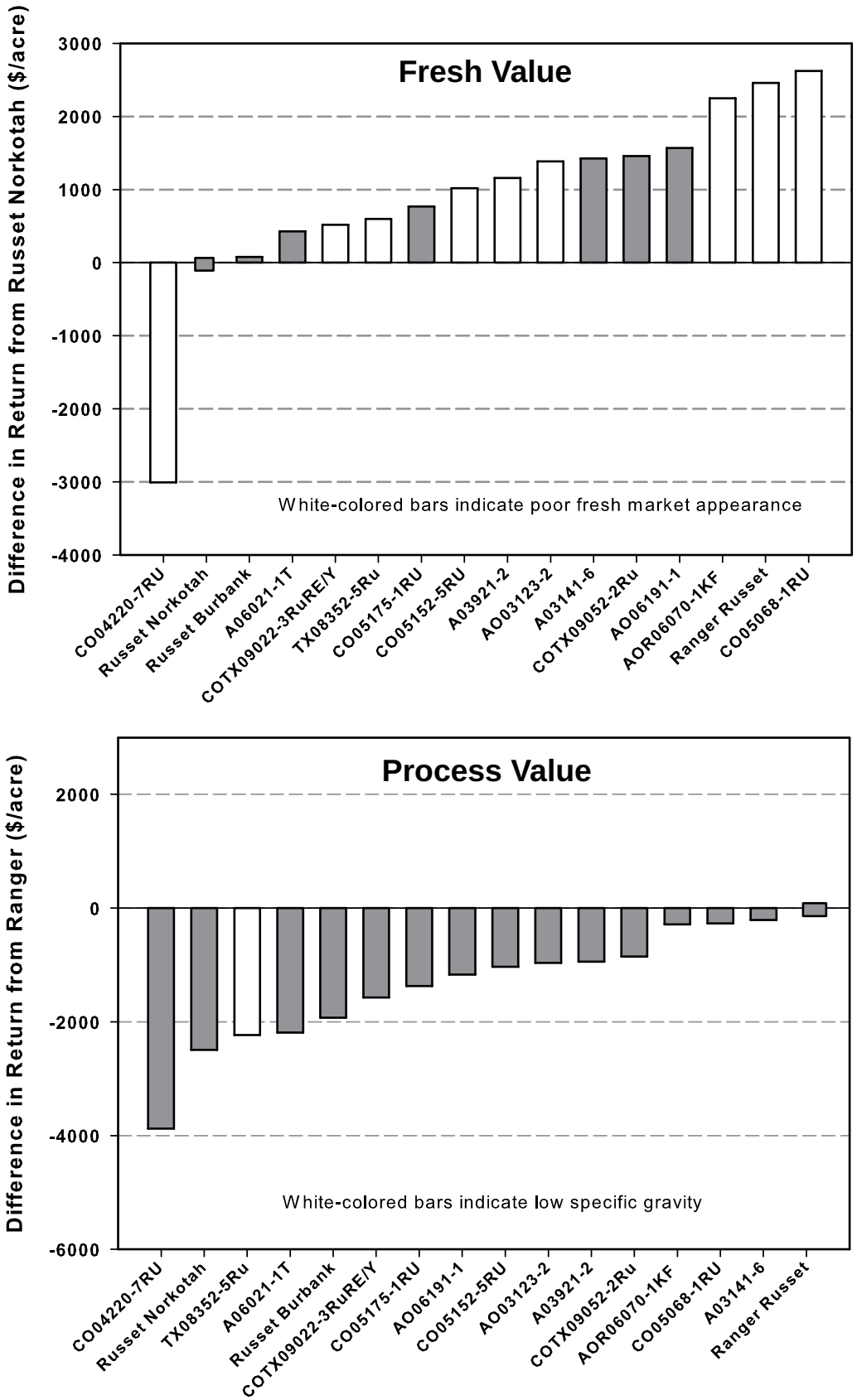


Figure 1 (Top). Difference in gross return per acre (Fresh Market) from Russet Norkotah calculated by subtracting the gross return of Russet Norkotah from the gross return of the particular entry. Entries with the white-colored bars may not appeal to fresh market consumers due to the undesirable shape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

2016 Late Harvest Regional Trial

Summaries

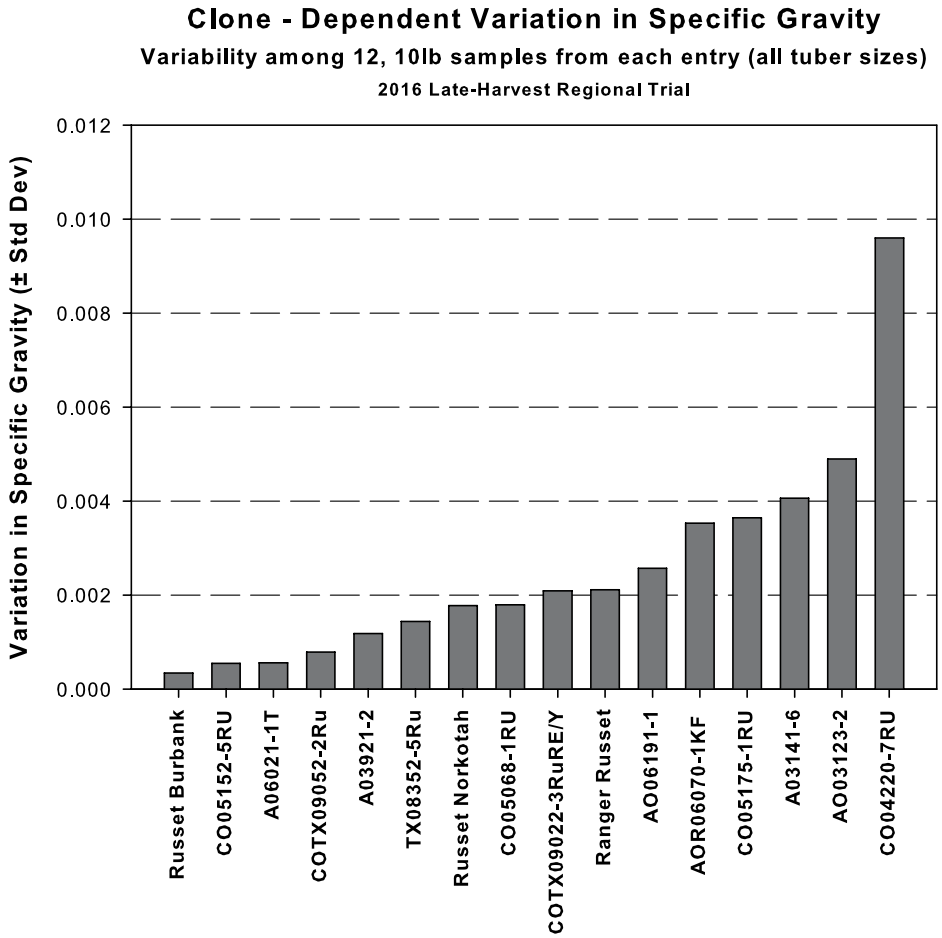
ENTRY	TOTAL YIELD			US # 1's* > 4 oz	US # 2's* > 4 oz	Culls* & < 4 oz	CARTON YIELD 100-50 count (US 1's 7-18 oz)		PROCESS YIELD US 1's and 2's > 6 oz	
	CWT/A	STATS**	Tons/A	% of Total Yield			% of Total Yield	Tons/A	% of Total Yield	Tons/A
Ranger Russet	901	*A*	45.1	88	2	10	58	26.3	77	32.6
Russet Burbank	734	*DEF*	36.7	78	1	20	48	17.7	63	23.2
Russet Norkotah	696	*EF*	34.8	82	1	17	50	17.5	63	22.5
A03141-6	845	*ABC*	42.3	94	1	5	56	23.9	91	38.4
A03921-2	816	*ABCD*	40.8	89	0	10	57	23.1	80	32.8
A06021-1T	688	*EF*	34.4	83	0	17	59	20.2	75	25.9
AO03123-2	771	*BCDE*	38.6	91	0	9	59	22.7	75	28.6
AO06191-1	711	*DEF*	35.6	93	2	5	69	24.7	91	32.5
AOR06070-1KF	872	*AB*	43.6	91	1	9	61	26.7	81	35.4
CO04220-7RU	642	*F*	32.1	53	1	46	12	3.9	22	7.4
CO05068-1RU	876	*AB*	43.8	90	0	10	64	27.9	80	35.2
CO05152-5RU	862	*AB*	43.1	83	1	16	46	19.8	60	26.0
CO05175-1RU	721	*DEF*	36.0	87	3	10	58	20.8	77	27.6
COTX09022-3RuRE/Y	782	*BCDE*	39.1	82	0	18	46	18.1	57	23.0
COTX09052-2Ru	853	*ABC*	42.6	86	0	14	52	22.3	67	28.8
TX08352-5Ru	754	*CDE*	37.7	88	0	12	50	18.8	67	25.2

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	788	*A*	39.4	26	55	19	1.087	0	0	0
Russet Burbank	574	*D*	28.7	36	58	6	1.085	0	14	4
Russet Norkotah	580	*D*	29.0	36	55	8	1.076	0	0	0
A03141-6	795	*A*	39.8	9	40	51	1.095	0	0	0
A03921-2	728	*ABC*	36.4	17	48	35	1.098	0	3	3
A06021-1T	571	*D*	28.5	14	52	34	1.080	0	0	0
AO03123-2	700	*ABC*	35.0	29	56	15	1.091	0	0	0
AO06191-1	665	*BCD*	33.2	7	47	46	1.092	0	0	0
AOR06070-1KF	790	*A*	39.5	19	52	30	1.096	3	0	0
CO04220-7RU	347	*E*	17.3	77	23	0	1.086	0	0	0
CO05068-1RU	790	*A*	39.5	18	55	27	1.093	5	0	0
CO05152-5RU	720	*ABC*	36.0	45	51	4	1.082	0	0	0
CO05175-1RU	625	*CD*	31.2	24	56	20	1.085	0	0	0
COTX09022-3RuRE/Y	646	*BCD*	32.3	42	49	9	1.089	0	0	0
COTX09052-2Ru	732	*AB*	36.6	35	52	13	1.080	0	0	0
TX08352-5Ru	666	*BCD*	33.3	41	53	5	1.066	0	0	0

ENTRY	30 DAY STAND	40 DAY STAND	60 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	94	94	96	2.4	8.4	8.8	4	4	58	13
Russet Burbank	84	88	98	2.1	6.8	9.0	4	3	57	57
Russet Norkotah	64	80	96	2.9	6.8	8.3	4	4	24	12
A03141-6	73	91	100	1.8	12.4	5.7	4	3	29	68
A03921-2	68	93	99	2.2	10.3	6.5	4	3	23	74
A06021-1T	29	88	91	1.8	9.7	5.8	4	3	34	77
AO03123-2	25	93	100	2.4	8.0	7.9	4	3	3	67
AO06191-1	8	91	96	1.5	12.3	4.8	4	4	29	82
AOR06070-1KF	75	95	98	2.0	9.2	7.9	4	3	18	87
CO04220-7RU	79	96	96	3.2	4.3	12.4	4	4	7	17
CO05068-1RU	54	96	96	2.5	9.6	7.5	3	3	58	50
CO05152-5RU	53	90	95	2.4	6.5	10.8	4	3	21	76
CO05175-1RU	60	88	98	2.8	8.6	6.9	4	3	13	23
COTX09022-3RuRE/Y	61	83	98	2.7	6.4	10.0	4	1	38	30
COTX09052-2Ru	16	89	100	1.3	7.3	9.6	4	3	18	58
TX08352-5Ru	13	93	100	2.1	7.1	8.8	4	3	50	60

* Percent values may not total 100% due to rounding

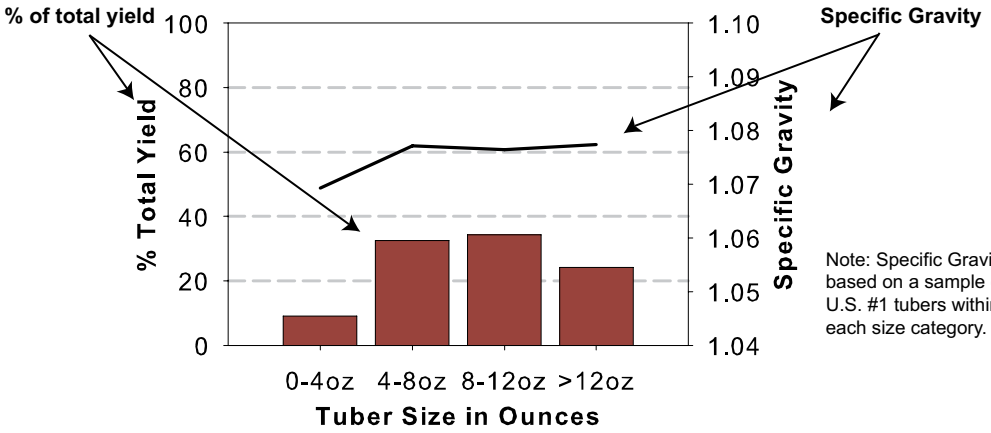
Participants of the 2016 WSU Potato Field Day listen as WSU PhD candidate Chandler Dolezal explains his phosphorus research.



2016 Late Harvest Regional Trial

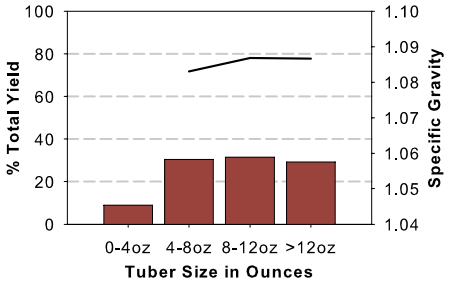
Tuber Yield and Specific Gravity Distributions

10 inch In-Row Spacing

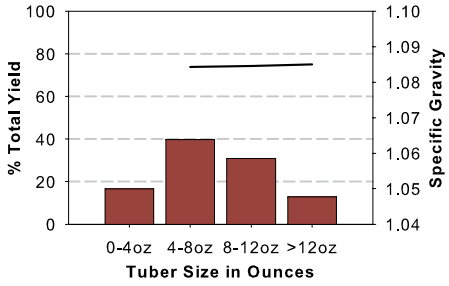


Note: Specific Gravity is based on a sample of U.S. #1 tubers within each size category.

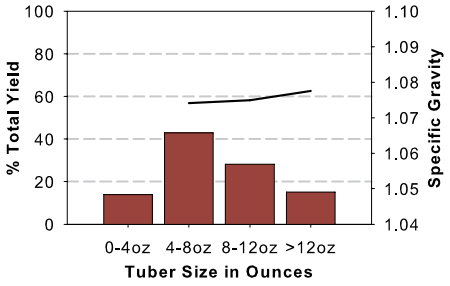
RANGER RUSSET



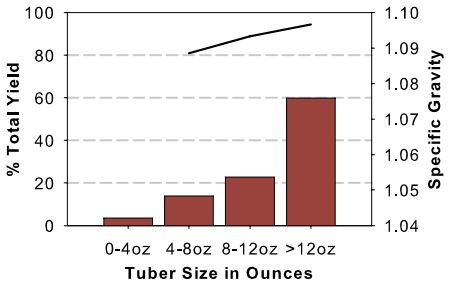
RUSSET BURBANK



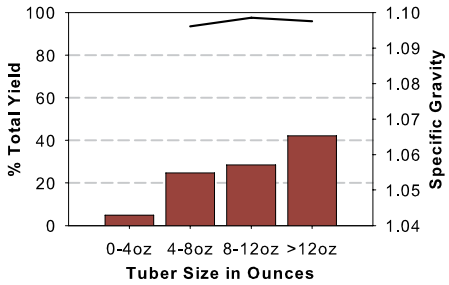
RUSSET NORKOTAH



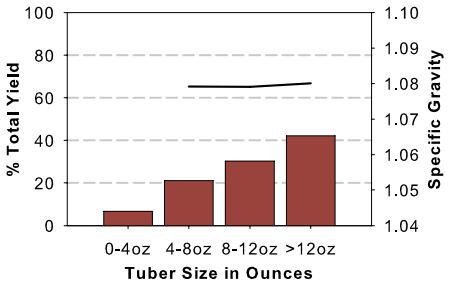
A03141-6



A03921-2

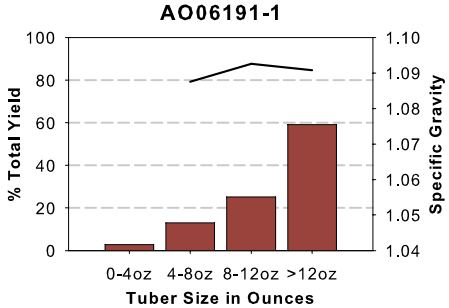


A06021-1T

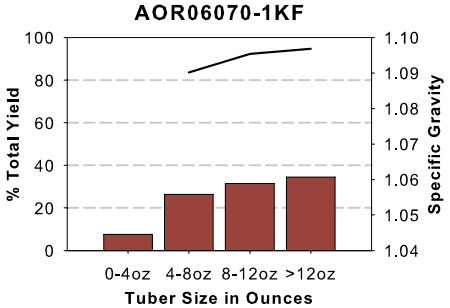


AO03123-2

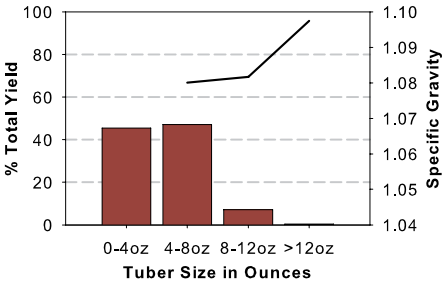
AO06191-1



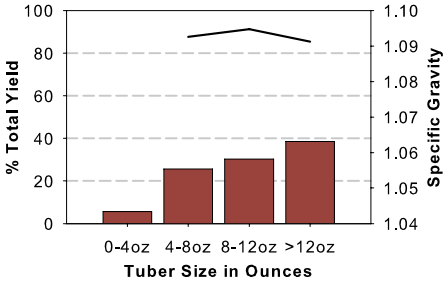
AOR06070-1KF



CO04220-7RU



CO05068-1RU



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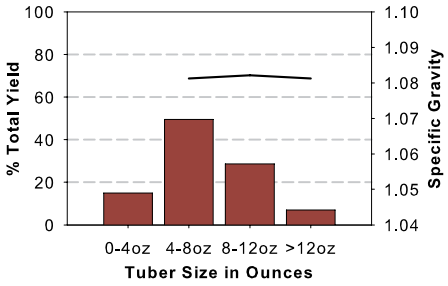
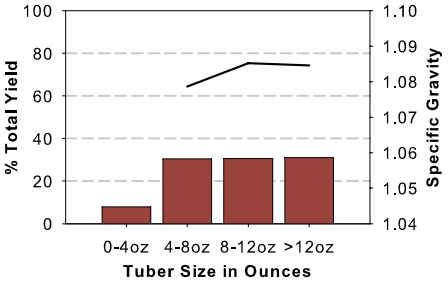
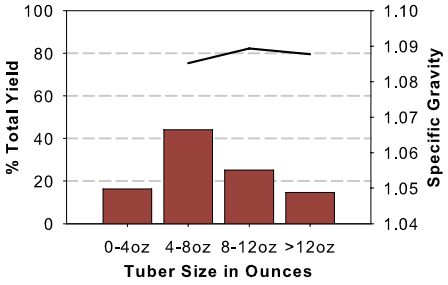


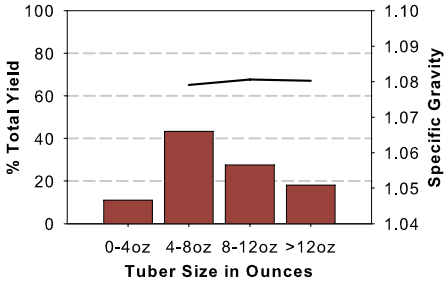
CO05175-1RU



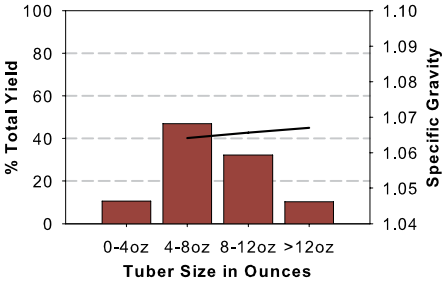
COTX09022-3RuRE/Y



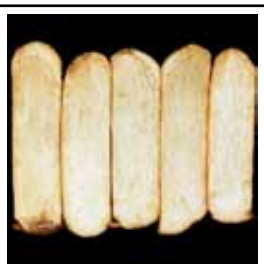
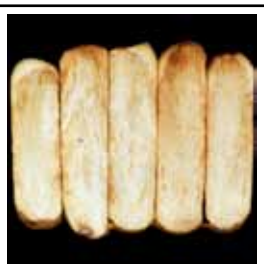
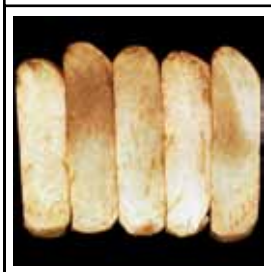
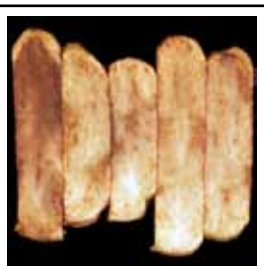
COTX09052-2RU



TX08352-5RU



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, 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 = unacceptably dark, uniform; Reconditioned = relatively dark, non-uniform.
A03141-6	
	**Tubers:** Oblong tubers. Good skin set; moderate eye depth. **Fry color:** At harvest= light, uniform; 48°F = light, non-uniform; 44°F = light, uniform; 40°F = light, uniform; Reconditioned = light, non-uniform.
A03921-2	
	**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.
A06021-1T	
	**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= light, uniform; 48°F = light, non-uniform; 44°F = relatively dark,uniform; 40°F = unacceptably dark, uniform; Reconditioned = relatively dark, uniform.

Initial Fries	48º F Storage	44º F Storage	40º F Storage	40º F Recon.
Ranger Russet				
				
Russet Burbank				
				
A03141-6				
				
A03921-2				
				
A06021-1T				
				

Tubers	WA Late Harvest Regional Trial Comments
AO03123-2	
	**Tubers:** Oblong 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 = 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 = relatively dark, non-uniform.
AOR06070-1KF	
	**Tubers:** Oblong 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, uniform; Reconditioned = light, non-uniform.
CO04220-7RU	
	**Tubers:** Oblong to long tubers. Good skin set; shallow eyes. **Fry color:** At harvest= light, uniform; 48°F = light, uniform; 44°F = relatively dark, uniform; 40°F = relatively dark, uniform; Reconditioned = light, non-uniform.
CO05068-1RU	
	**Tubers:** Oblong tubers. Fair skin set; moderate eye depth. **Fry color:** At harvest= light, uniform; 48°F = light, 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.
AO03123-2				
				
AO06191-1				
				
AOR06070-1KF				
				
CO04220-7RU				
				
CO05068-1RU				
				

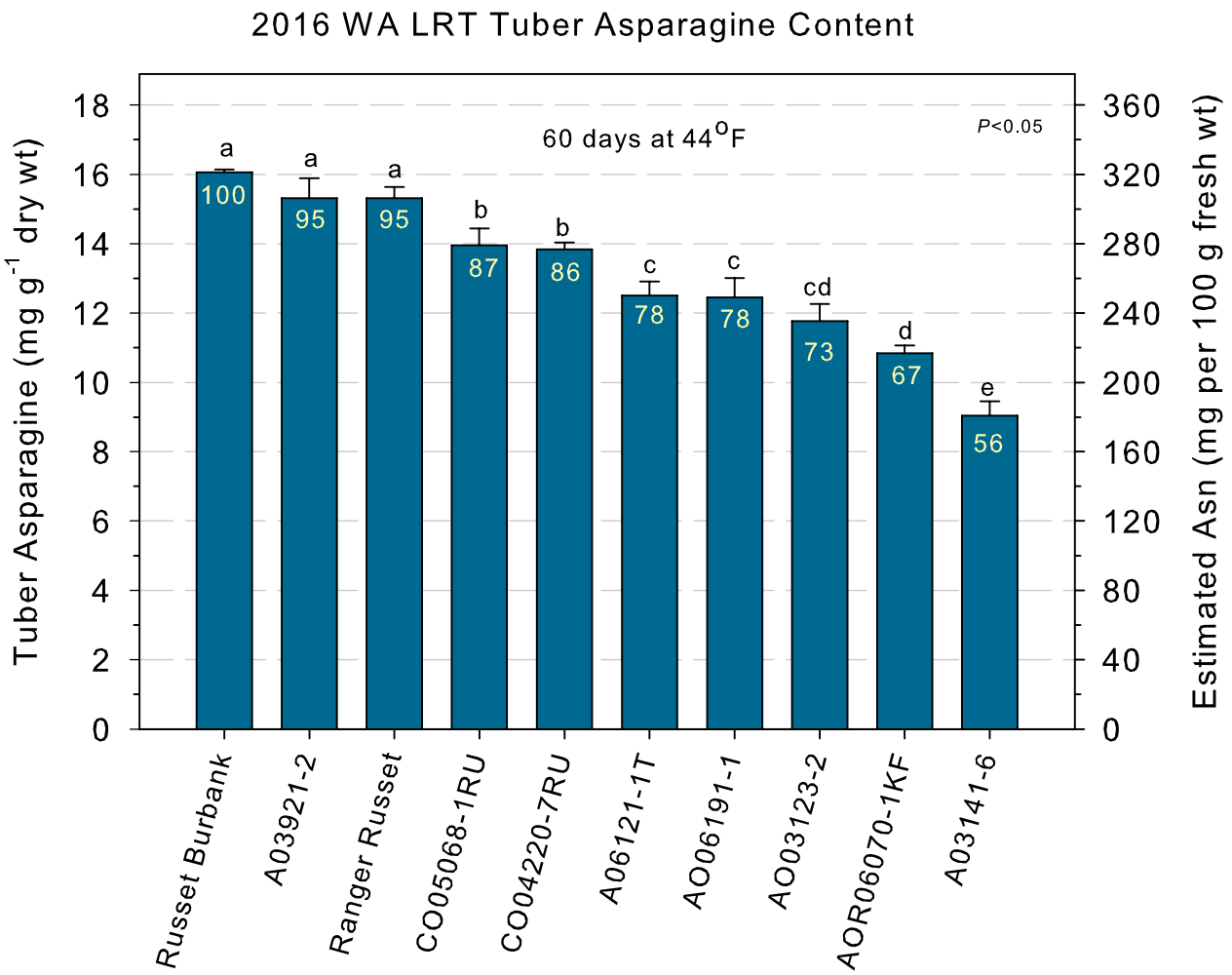
2016 Late Harvest Regional Trial

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
4 A03921-2	28.3		30.3		32.2		30.3
8 AOR06070-1KF	27.8		29.4		30.5		29.2
9 CO04220-7RU	29.4		32.4		25.5	SG	29.1
3 A03141-6	26.7		30.6		28.8		28.7
6 AO03123-2	28.6		32.8		24.5	SG, 40°F	28.6
1 Ranger Russet	24.2		30.0	40°F	24.2	SG, 40°F	26.1
7 AO06191-1	22.5		25.1		23.3	40°F	23.6
10 CO05068-1RU	23.1		25.0		20.9		23.0
5 A06021-1T	20.2	40°F	28.2		20.0	SG, 40°F	22.8
2 Russet Burbank	16.7	40°F	28.9		17.1	SG, 40°F	20.9
	24.8		29.3		24.7		26.2

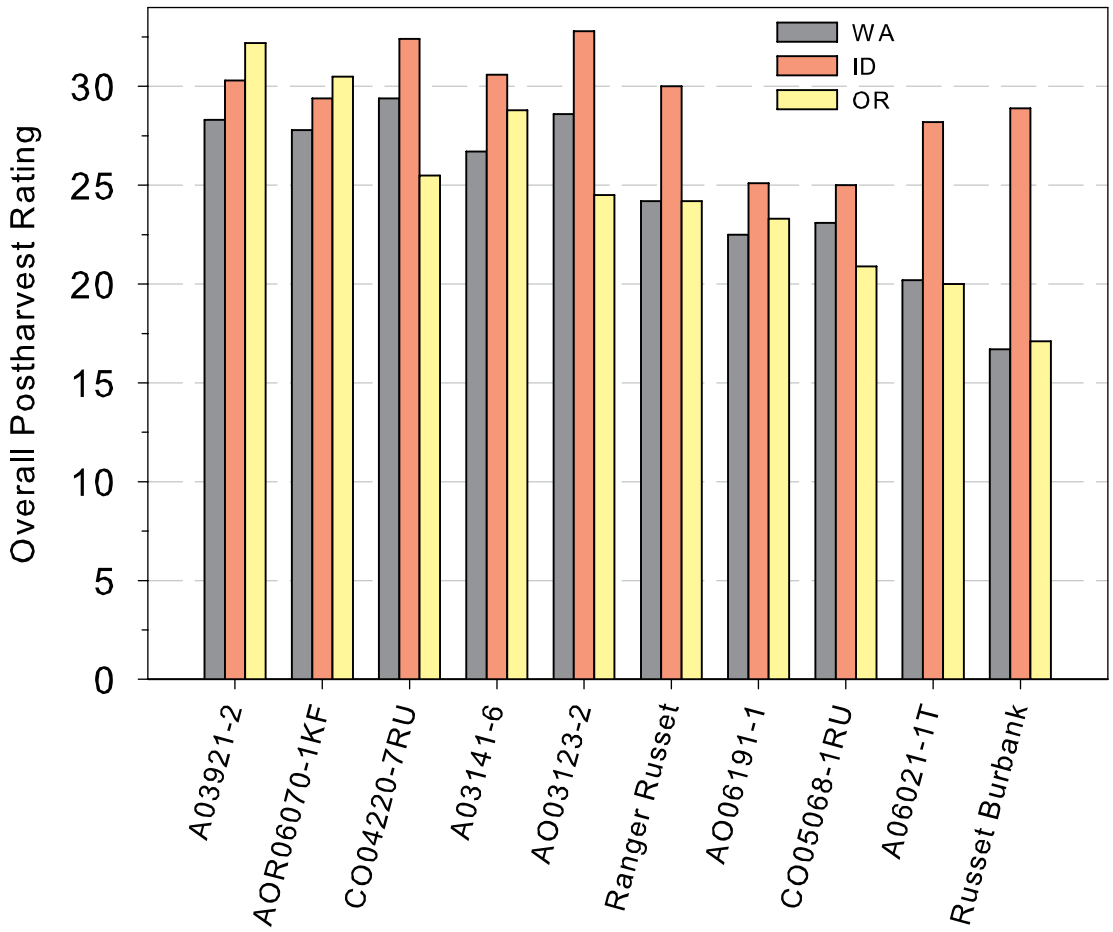
§ maximum rating possible = 38

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



2016 Late Harvest Regional Trial

Late Harvest Regional Postharvest Ratings



2016 Late Harvest Regional Trial

Prior to Storage

Clone	PHOTOVOLT READING stem	bud	av	rtg §	DIFF	USDA COLOR	SPECIFIC GRAVITY	rtg
Washington								
1 Ranger Russet	38.1	45.2	41.7	**5+**	7.1	0	1.085	**5**
2 Russet Burbank	27.8	42.3	35.0	**3-**	14.5	1	1.084	**5**
3 A03141-6	42.3	47.3	44.8	**5+**	5.2	0	1.098	**1**
4 A03921-2	47.1	48.7	47.9	**5+**	3.1	0	1.100	**1**
5 A06021-1T	36.9	43.7	40.3	**4+**	7.6	0	1.080	**3**
6 AO03123-2	40.3	47.3	43.8	**5+**	7.8	0	1.087	**5**
7 AO06191-1	40.6	45.5	43.1	**5+**	5.3	0	1.091	**4**
8 AOR06070-1KF	44.8	47.5	46.1	**5+**	3.7	0	1.099	**1**
9 CO04220-7RU	39.5	47.0	43.2	**5+**	8.0	0	1.087	**5**
10 CO05068-1RU	37.1	43.3	40.2	**4+**	6.2	0	1.096	**1**
		LSD 0.05	*2.9*		*4.4*		*0.005*	
Average	39.4	45.8	42.6		6.8	0	1.091	
Idaho								
1 Ranger Russet	45.6	43.4	44.5	**5+**	4.2	0	1.092	**3**
2 Russet Burbank	37.7	42.2	40.0	**4+**	7.4	0	1.083	**5**
3 A03141-6	51.1	46.5	48.8	**5+**	4.9	0	1.093	**3**
4 A03921-2	49.6	46.3	48.0	**5+**	3.8	0	1.100	**1**
5 A06021-1T	40.7	41.2	40.9	**5+**	4.0	0	1.092	**3**
6 AO03123-2	47.7	44.1	45.9	**5+**	4.4	0	1.089	**4**
7 AO06191-1	31.3	35.6	33.4	**3+**	6.3	0	1.098	**1**
8 AOR06070-1KF	53.9	49.6	51.7	**5+**	5.8	0	1.097	**1**
9 CO04220-7RU	53.5	51.7	52.6	**5+**	3.8	0	1.083	**5**
10 CO05068-1RU	35.8	38.8	37.3	**4+**	5.5	0	1.096	**1**
		LSD 0.05	*3.7*		*3.1*		*0.005*	
Average	44.7	43.9	44.3		5.0	0	1.092	
Oregon								
1 Ranger Russet	43.0	42.9	42.9	**5+**	2.7	0	1.072	**0**
2 Russet Burbank	26.4	33.7	30.0	**2-**	9.1	1	1.071	**0**
3 A03141-6	47.0	46.6	46.8	**5+**	5.3	0	1.077	**1**
4 A03921-2	45.9	47.6	46.7	**5+**	5.2	0	1.081	**4**
5 A06021-1T	37.6	40.7	39.2	**4+**	4.7	0	1.070	**0**
6 AO03123-2	42.3	43.9	43.1	**5+**	4.0	0	1.071	**0**
7 AO06191-1	36.1	43.1	39.6	**4+**	7.6	0	1.079	**2**
8 AOR06070-1KF	42.6	46.0	44.3	**5+**	5.0	0	1.078	**2**
9 CO04220-7RU	49.9	52.6	51.3	**5+**	3.2	0	1.070	**0**
10 CO05068-1RU	35.5	38.1	36.8	**4+**	3.8	0	1.076	**1**
		LSD 0.05	*3.5*		*3.3*		*0.004*	
Average	40.6	43.5	42.1		5.1	0	1.075	

Date test performed:

Washington	Sept. 28	Sept. 19
Idaho	Sept. 30	Sept. 23
Oregon	Oct. 4	Sept. 30

§ 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.

2016 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	**3.2**	100	38	4.5	1.8	12	14
2 Russet Burbank	**2.7**	83	8	3.6	1.2	18	17
3 A03141-6	**3.7**	100	8	3.9	1.2	15	13
4 A03921-2	**3.3**	96	38	4.0	2.0	14	18
5 A06021-1T	**3.2**	83	4	3.3	1.1	15	14
6 AO03123-2	**3.6**	8	8	1.2	1.2	11	11
7 AO06191-1	**3.5**	83	8	3.1	1.2	11	12
8 AOR06070-1KF	**3.8**	92	29	4.0	1.8	14	18
9 CO04220-7RU	**3.4**	21	4	1.4	1.1	16	10
10 CO05068-1RU	**3.1**	92	21	3.1	1.5	14	10
LSD 0.05	*0.4*	*19*	*24*			*5*	*6*
Average	3.4	75.8	16.7	av	av	14.0	13.7
Idaho							
1 Ranger Russet	**3.0**	100	4	4.2	1.1	11	12
2 Russet Burbank	**2.9**	46	0	2.0	1.0	15	14
3 A03141-6	**3.6**	25	0	1.7	1.0	12	15
4 A03921-2	**3.3**	100	9	3.7	1.2	13	20
5 A06021-1T	**3.2**	46	0	2.0	1.0	13	15
6 AO03123-2	**3.8**	4	0	1.1	1.0	10	9
7 AO06191-1	**3.1**	71	0	2.7	1.0	13	14
8 AOR06070-1KF	**3.4**	77	5	2.6	1.1	11	14
9 CO04220-7RU	**3.4**	17	0	1.3	1.0	15	14
10 CO05068-1RU	**3.0**	67	25	2.8	1.5	11	12
LSD 0.05	*0.4*	*27*	*13*			*4*	*7*
Average	3.3	55.2	4.3	2.4	1.1	12.3	13.9
Oregon							
1 Ranger Russet	**3.2**	92	29	3.9	1.6	10	9
2 Russet Burbank	**3.1**	75	0	3.0	1.0	14	16
3 A03141-6	**3.8**	17	4	1.4	1.1	12	12
4 A03921-2	**3.2**	25	42	1.8	2.0	9	9
5 A06021-1T	**3.0**	25	4	1.6	1.1	13	15
6 AO03123-2	**3.5**	29	4	1.7	1.1	10	9
7 AO06191-1	**3.3**	38	0	1.9	1.0	12	11
8 AOR06070-1KF	**3.5**	0	0	1.0	1.0	14	14
9 CO04220-7RU	**3.5**	0	0	1.0	1.0	15	12
10 CO05068-1RU	**2.9**	58	13	2.4	1.3	8	6
LSD 0.05	*0.3*	*24*	*17*			*5*	*3*
Average	3.3	35.8	9.6	2.0	1.2	11.6	11.4

Date test performed:

Washington	Oct. 14	Oct. 21	Nov. 4
Idaho	Oct. 17	Oct. 26	Nov. 15
Oregon	Oct. 18	Oct. 28	Nov. 15

2016 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	25.8	40.8	33.3	**3-**	15.0	1	1.8	0.7	93	0.75
2 Russet Burbank	22.2	43.1	32.7	**3-**	20.9	2	2.3	0.6	0	
3 A03141-6	40.7	50.0	45.4	**5-**	9.9	0	0.7	0.5	0	
4 A03921-2	42.8	48.8	45.8	**5+**	7.1	0	0.6	0.5	53	0.25
5 A06021-1T	27.3	40.1	33.7	**3-**	13.0	1	1.7	0.7	0	
6 AO03123-2	41.0	50.1	45.5	**5-**	10.3	0	0.7	0.5	0	
7 AO06191-1	33.5	48.6	41.1	**5-**	15.1	0	1.1	0.5	0	
8 AOR06070-1KF	40.8	46.3	43.6	**5+**	7.0	0	0.7	0.5	60	0.25
9 CO04220-7RU	40.3	45.8	43.0	**5+**	6.2	0	0.7	0.6	100	0.25
10 CO05068-1RU	34.8	43.6	39.2	**4+**	8.9	0	1.0	0.6	100	1.13
		LSD 0.05	*3.5*		*4.1*				*16*	
Average	34.9	45.7	40.3		11.3	0	1.1	0.6	41	
Idaho										
1 Ranger Russet	42.6	42.9	42.7	**5+**	2.6	0	0.6	0.6	0	
2 Russet Burbank	41.1	45.0	43.1	**5+**	4.9	0	0.7	0.6	0	
3 A03141-6	51.7	46.8	49.2	**5+**	5.4	0	0.5	0.5	0	
4 A03921-2	51.8	50.6	51.2	**5+**	3.7	0	0.5	0.5	0	
5 A06021-1T	38.8	39.0	38.9	**4+**	3.3	0	0.8	0.8	0	
6 AO03123-2	50.5	46.5	48.5	**5+**	4.5	0	0.5	0.5	0	
7 AO06191-1	40.7	42.0	41.3	**5+**	4.6	0	0.7	0.7	0	
8 AOR06070-1KF	54.9	52.4	53.7	**5+**	4.4	0	0.5	0.5	0	
9 CO04220-7RU	49.1	45.2	47.1	**5+**	4.5	0	0.5	0.6	0	
10 CO05068-1RU	34.4	38.7	36.5	**4+**	5.9	0	1.0	0.8	33	0.25
		LSD 0.05	*3.2*		*2.7*				*11*	
Average	45.6	44.9	45.2		4.4	0	0.7	0.6	3	
Oregon										
1 Ranger Russet	39.9	41.6	40.8	**5+**	3.6	0	0.7	0.7	53	0.25
2 Russet Burbank	36.2	35.0	35.6	**4+**	4.7	0	0.9	1.0	0	
3 A03141-6	45.4	49.0	47.2	**5+**	5.7	0	0.6	0.5	0	
4 A03921-2	44.1	49.3	46.7	**5+**	5.8	0	0.6	0.5	13	0.13
5 A06021-1T	34.0	37.4	35.7	**4+**	4.3	0	1.1	0.9	0	
6 AO03123-2	42.7	45.6	44.1	**5+**	5.1	0	0.6	0.6	0	
7 AO06191-1	38.3	42.3	40.3	**4+**	5.7	0	0.8	0.6	0	
8 AOR06070-1KF	47.1	51.3	49.2	**5+**	4.5	0	0.5	0.5	0	
9 CO04220-7RU	39.7	45.0	42.4	**5+**	6.2	0	0.7	0.6	100	0.75
10 CO05068-1RU	29.4	35.5	32.5	**3+**	6.1	1	1.4	1.0	87	1.50
		LSD 0.05	*3.6*		*ns*				*16*	
Average	39.7	43.2	41.4		5.2	0	0.8	0.7	25	

Date test performed:

Washington	Nov. 28	Nov. 28	Dec. 14
Idaho	Dec. 4	Dec. 4	Dec. 14
Oregon	Dec. 9	Dec. 9	Dec. 14

§ 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.

2016 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	30.9	42.1	36.5	**4-**	11.2	0	1.3	0.7
2 Russet Burbank	22.7	38.0	30.3	**2-**	15.2	2	2.3	0.8
3 A03141-6	41.9	44.7	43.3	**5+**	5.0	0	0.7	0.6
4 A03921-2	42.3	50.3	46.3	**5+**	7.9	0	0.6	0.5
5 A06021-1T	27.9	31.2	29.5	**2+**	4.8	1	1.6	1.3
6 AO03123-2	36.9	41.3	39.1	**4+**	5.2	0	0.9	0.7
7 AO06191-1	29.3	40.5	34.9	**3-**	11.2	1	1.5	0.7
8 AOR06070-1KF	44.9	47.2	46.0	**5+**	3.7	0	0.6	0.5
9 CO04220-7RU	25.7	33.5	29.6	**2+**	7.7	1	1.9	1.1
10 CO05068-1RU	31.6	40.3	36.0	**4+**	8.6	0	1.2	0.7
		LSD 0.05	*2.9*		*3.6*			
Average	33.4	40.9	37.2		8.1	1	1.2	0.8
Idaho								
1 Ranger Russet	39.1	41.9	40.5	**5+**	4.4	0	0.8	0.7
2 Russet Burbank	33.7	38.5	36.1	**4+**	4.8	0	1.1	0.8
3 A03141-6	48.0	41.6	44.8	**5+**	6.4	0	0.5	0.7
4 A03921-2	48.8	46.8	47.8	**5+**	5.0	0	0.5	0.5
5 A06021-1T	37.1	36.0	36.5	**4+**	3.1	0	0.9	0.9
6 AO03123-2	42.2	39.8	41.0	**5+**	5.9	0	0.6	0.7
7 AO06191-1	37.2	39.5	38.4	**4+**	2.7	0	0.9	0.8
8 AOR06070-1KF	44.3	46.3	45.3	**5+**	4.3	0	0.6	0.5
9 CO04220-7RU	42.5	40.2	41.3	**5+**	5.7	0	0.6	0.7
10 CO05068-1RU	37.6	40.7	39.1	**4+**	3.7	0	0.8	0.7
		LSD 0.05	*3.3*		*2.7*			
Average	41.0	41.1	41.1		4.6	0	0.7	0.7
Oregon								
1 Ranger Russet	31.7	31.4	31.6	**3+**	4.2	0	1.2	1.3
2 Russet Burbank	28.5	31.8	30.2	**2+**	5.2	1	1.5	1.2
3 A03141-6	38.8	42.7	40.7	**5+**	7.0	0	0.8	0.6
4 A03921-2	45.7	49.1	47.4	**5+**	3.9	0	0.6	0.5
5 A06021-1T	31.0	32.0	31.5	**3+**	2.8	0	1.3	1.2
6 AO03123-2	35.9	41.4	38.7	**4+**	6.8	0	0.9	0.7
7 AO06191-1	35.2	37.3	36.2	**4+**	3.8	0	1.0	0.9
8 AOR06070-1KF	42.3	48.1	45.2	**5+**	5.8	0	0.6	0.5
9 CO04220-7RU	31.9	36.1	34.0	**3+**	6.2	0	1.2	0.9
10 CO05068-1RU	31.2	33.0	32.1	**3+**	3.9	0	1.3	1.1
		LSD 0.05	*3.6*		*2.5*			
Average	35.2	38.3	36.8		4.9	0	1.0	0.9

Date test performed:

Washington	Nov. 29	Nov. 29
Idaho	Dec. 5	Dec. 5
Oregon	Dec. 11	Dec. 11

§ 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.

2016 Late Harvest Regional Trial

Stored at 40°F for 60 Days and Reconditioned

		PHOTOVOLT(60 Days at 40°F)						PHOTOVOLT AFTER RECONDITIONING				
	SPROUTING						USDA	(21 days at 60°F)				USDA
Clone	(%)	stem	bud	average	rtg §	DIFF	COLOR	stem	bud	average	DIFF	COLOR
Washington												
1 Ranger Russet	0	16.8	28.2	22.5	**1**	11.4	3	22.0	36.8	29.4	17.6	2
2 Russet Burbank	0	12.7	18.6	15.7	**0**	5.9	4	16.2	34.8	25.5	18.6	3
3 A03141-6	0	29.1	34.3	31.7	**3**	6.0	1	30.1	37.9	34.0	10.0	1
4 A03921-2	0	29.7	40.4	35.1	**3**	10.7	1	38.6	46.1	42.4	7.5	0
5 A06021-1T	0	17.8	18.2	18.0	**0**	3.2	3	17.8	23.6	20.7	6.6	3
6 AO03123-2	0	17.0	22.5	19.7	**1**	5.9	3	26.3	37.3	31.8	11.0	1
7 AO06191-1	0	16.8	23.9	20.4	**1**	7.1	3	18.9	29.5	24.2	10.6	3
8 AOR06070-1KF	0	24.2	32.7	28.5	**2**	8.6	2	29.6	38.6	34.1	9.1	1
9 CO04220-7RU	0	17.7	23.9	20.8	**1**	6.3	3	23.3	37.9	30.6	14.6	2
10 CO05068-1RU	0	17.8	23.4	20.6	**1**	5.6	3	18.4	25.8	22.1	7.5	3
LSD 0.05	*ns*			*2.7*		*3.1*				*3.2*	*4.5*	
Average	0	20.0	26.6	23.3		7.1	3	24.1	34.8	29.5	11.3	2
Idaho												
1 Ranger Russet	0	19.0	28.2	23.6	**1**	9.3	3	27.1	37.0	32.1	10.9	1
2 Russet Burbank	0	14.3	18.3	16.3	**0**	4.3	4	23.1	31.9	27.5	10.3	2
3 A03141-6	0	34.7	30.4	32.5	**3**	6.2	1	33.7	34.7	34.2	5.8	0
4 A03921-2	0	33.6	37.6	35.6	**3**	6.0	0	39.3	42.1	40.7	4.7	0
5 A06021-1T	0	19.1	20.7	19.9	**1**	2.5	3	24.0	29.2	26.6	5.9	2
6 AO03123-2	0	28.4	30.0	29.2	**2**	3.5	1	26.9	30.9	28.9	5.9	1
7 AO06191-1	0	17.4	23.5	20.4	**1**	6.3	3	22.3	29.1	25.7	8.3	2
8 AOR06070-1KF	0	31.0	36.5	33.8	**3**	6.9	0	31.6	39.6	35.6	8.0	0
9 CO04220-7RU	0	22.4	24.4	23.4	**1**	4.7	2	25.0	33.1	29.1	10.2	1
10 CO05068-1RU	0	17.3	22.3	19.8	**1**	5.0	3	21.0	25.9	23.5	5.5	2
LSD 0.05	*ns*			*3.4*		*3.0*				*4.2*	*3.9*	
Average	0	23.7	27.2	25.5		5.5	2	27.4	33.4	30.4	7.5	1
Oregon												
1 Ranger Russet	0	18.2	17.1	17.6	**0**	3.1	3	17.7	17.4	17.5	3.3	3
2 Russet Burbank	0	19.4	18.5	19.0	**0**	2.4	3	18.6	20.3	19.5	2.8	3
3 A03141-6	0	33.7	36.3	35.0	**3**	5.1	0	30.1	36.7	33.4	6.7	1
4 A03921-2	0	38.0	41.3	39.7	**4**	4.0	0	33.3	41.9	37.6	9.0	0
5 A06021-1T	0	19.8	17.8	18.8	**0**	3.7	2	17.6	18.7	18.1	2.8	3
6 AO03123-2	0	18.1	19.7	18.9	**0**	4.2	3	19.1	28.5	23.8	9.3	3
7 AO06191-1	0	17.6	18.7	18.1	**0**	1.6	3	17.7	19.2	18.4	3.2	3
8 AOR06070-1KF	0	25.8	32.7	29.3	**2**	7.1	1	26.9	36.2	31.5	10.0	1
9 CO04220-7RU	0	19.5	20.1	19.8	**1**	3.3	2	25.5	29.8	27.6	7.2	1
10 CO05068-1RU	0	22.3	24.5	23.4	**1**	3.6	2	20.7	24.2	22.4	4.2	2
LSD 0.05	*ns*			*3.6*		*2.4*				*3.6*	*3.5*	
Average	0	23.2	24.7	24.0		3.8	2	22.7	27.3	25.0	5.9	av

Date test performed:

Washington	Dec. 13	Nov. 30	Dec. 15
Idaho	Dec. 13	Dec. 6	Dec. 15
Oregon	Dec. 13	Dec. 12	Dec. 15

DIFF = Absolute difference between bud and stem Photovolt reading.

Entries Retained from the 2015 Trials Currently in the Regional Trial

Harvested fall of 2015 Held at 48°F until December 18 Stored at 44°F until analysis

AO06191-1 was the only clone advanced from the 2015 Tri-State Trial into the 2016 Regional Trial. Six clones were retained in the Regional Trial. When averaged across states, A03921-2 (53.5 ref units), A03141-6 (52.7) and AOR06070-1KF (51.4) produced the lightest fries. A03141-6 and A03921-2 also produced the lightest fries following long-term storage last year. Uniformity of fry color was unacceptable for the OR entries, A03141-6 and AO03123-2. At least one check from all three states also produced unacceptable stem to bud fry color differences. When grown in OR, all tubers of AO03123-2 produced mottled fries. WA- and ID-grown samples of this clone also produced mottled fries, but at a somewhat lower frequency than OR samples. All entries sprouted over the 7-mo storage period. AOR06070-1KF had the shortest dormancy, producing the highest 3-state average sprout length of 7.5 inches. The most dormant entries were A06021-1T (2nd year) and AO06191-1, each with 0.5-inch-long sprouts.

	PHOTOVOLT READING				USDA	% REDUCING SUGAR			Sprouting	
Clone	stem	bud	avg	DIFF	COLOR	stem	bud	avg	percent	length (in.)
Washington										
1 Ranger Russet	38.2	46.4	42.3	8.9	0	0.8	0.5	0.7	100	4.0
2 Russet Burbank	36.1	45.7	40.9	10.4	0	0.9	0.6	0.7	100	5.5
3 A03141-6	52.0	52.5	52.3	1.8	0	0.5	0.5	0.5	100	2.0
4 A03921-2	54.2	54.1	54.2	2.3	0	0.5	0.5	0.5	100	2.0
5 A06021-1T	36.0	42.5	39.3	6.4	0	0.9	0.6	0.8	100	0.5
6 AO03123-2	52.9	52.1	52.5	3.6	0	0.5	0.5	0.5	100	2.0
7 AO06191-1 §	45.8	48.6	47.2	3.5	0	0.6	0.5	0.5	100	0.8
8 AOR06070-1KF	52.8	51.2	52.0	2.7	0	0.5	0.5	0.5	100	9.0
9 CO05068-1RU	45.5	45.9	45.7	1.7	0	0.6	0.5	0.6	100	2.5
		LSD 0.05	*2.8*	*2.8*						
Average	45.2	48.3	46.8	4.9	0	0.6	0.5	0.6	100	
Idaho										
1 Ranger Russet	41.0	44.1	42.5	5.9	0	0.7	0.6	0.6	100	4.0
2 Russet Burbank	34.8	48.2	41.5	16.6	0	1.0	0.5	0.8	100	2.0
3 A03141-6	54.1	52.8	53.5	4.5	0	0.5	0.5	0.5	100	2.0
4 A03921-2	54.5	52.0	53.2	3.7	0	0.5	0.5	0.5	100	3.0
5 A06021-1T	43.3	43.2	43.2	3.1	0	0.6	0.6	0.6	100	0.5
6 AO03123-2	50.8	51.8	51.3	3.1	0	0.5	0.5	0.5	100	1.5
7 AO06191-1 §	41.7	44.4	43.0	5.8	0	0.7	0.6	0.6	100	0.3
8 AOR06070-1KF	53.2	49.1	51.1	4.1	0	0.6	0.5	0.5	100	8.0
9 CO05068-1RU	36.2	43.1	39.7	6.9	0	0.9	0.6	0.8	100	3.0
		LSD 0.05	*3.0*	*3.3*						
Average	45.5	47.6	46.6	6.0	0	0.7	0.6	0.6	100	
Oregon										
1 Ranger Russet	31.2	41.8	36.5	10.6	0	1.3	0.7	1.0	100	3.0
2 Russet Burbank	35.2	41.4	38.3	8.0	0	1.0	0.7	0.8	100	7.0
3 A03141-6	50.7	53.0	51.9	9.0	0	0.5	0.6	0.5	100	2.0
4 A03921-2	55.4	50.8	53.1	4.7	0	0.5	0.5	0.5	100	4.0
5 A06021-1T	43.1	46.1	44.6	4.1	0	0.6	0.5	0.6	100	2.0
6 AO03123-2	49.1	44.6	46.8	9.2	0	0.5	0.6	0.6	100	2.0
7 AO06191-1 §	43.5	47.6	45.5	4.1	0	0.6	0.5	0.6	100	0.5
8 AOR06070-1KF	49.7	52.1	50.9	6.8	0	0.5	0.5	0.5	100	5.5
9 CO05068-1RU	37.0	43.2	40.1	7.6	0	0.9	0.6	0.7	100	2.0
		LSD 0.05	*3.9*	*4.7*						
Average	43.9	46.7	45.3	7.1	0	0.7	0.6	0.7	100	

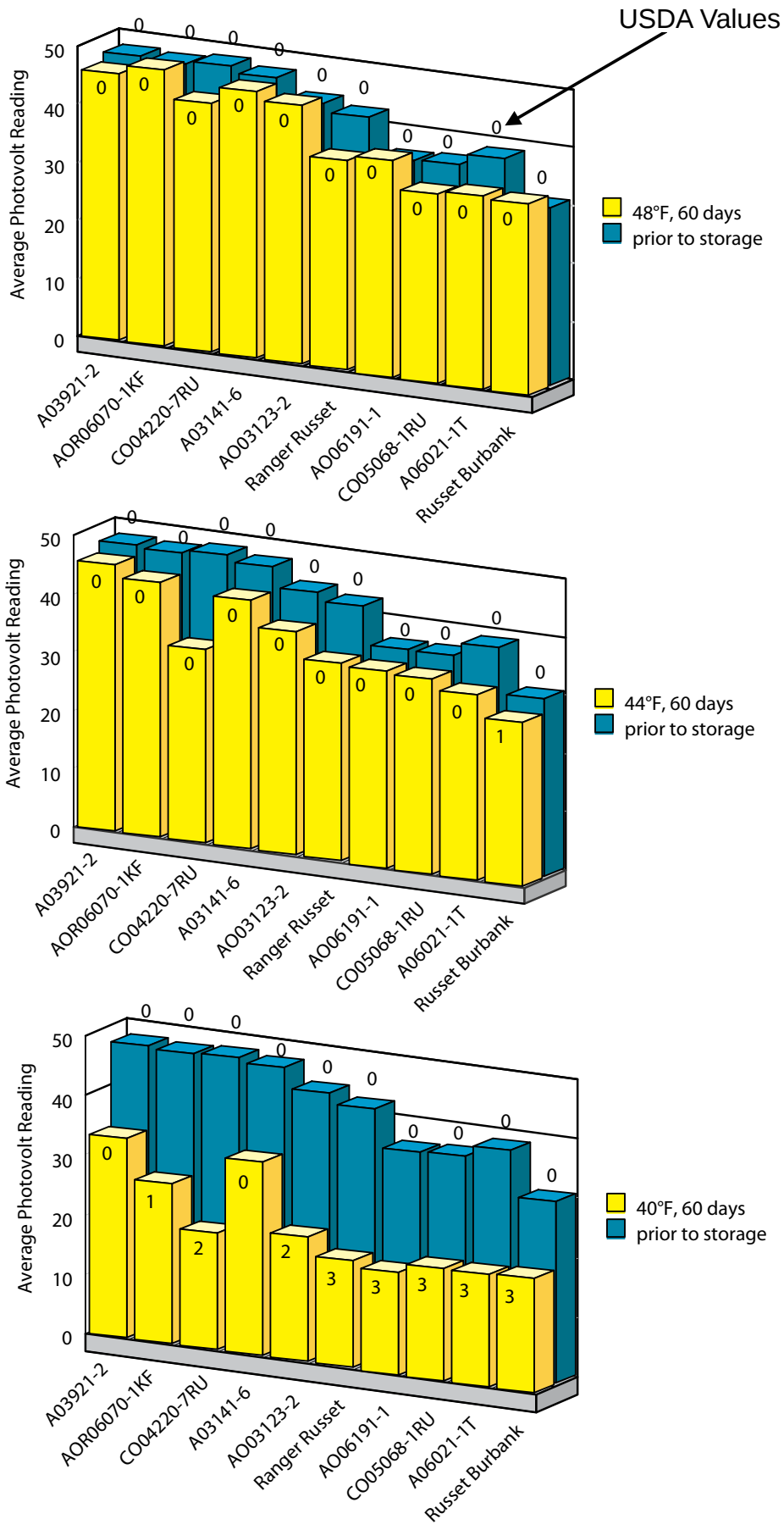
§ Advanced from 2015 Tri-State Trial.

Date test performed:

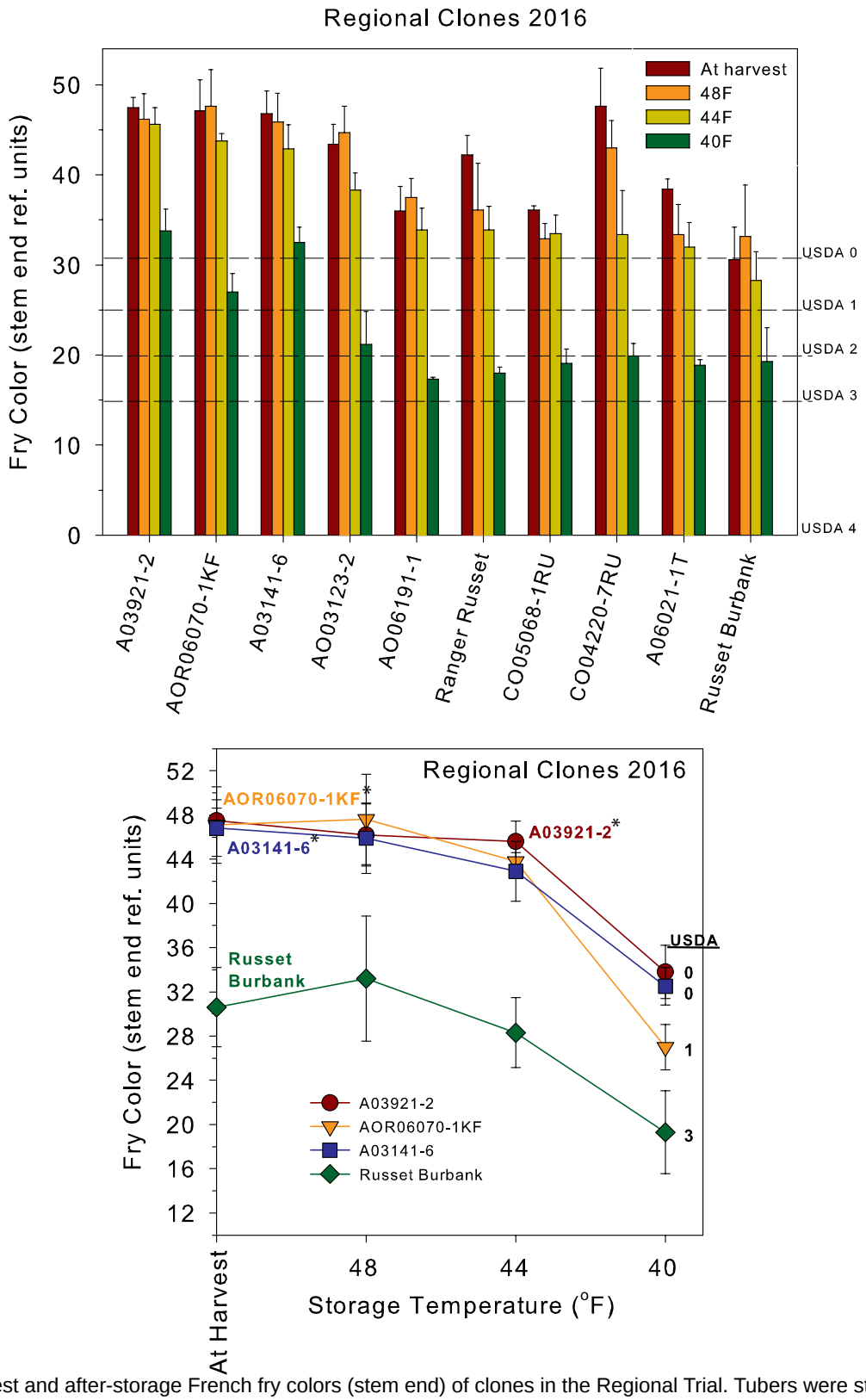
Washington	May 5
Idaho	May 5
Oregon	May 4

2016 Late Harvest Regional Trial

Regional Trial - 3 State Average of Stem End



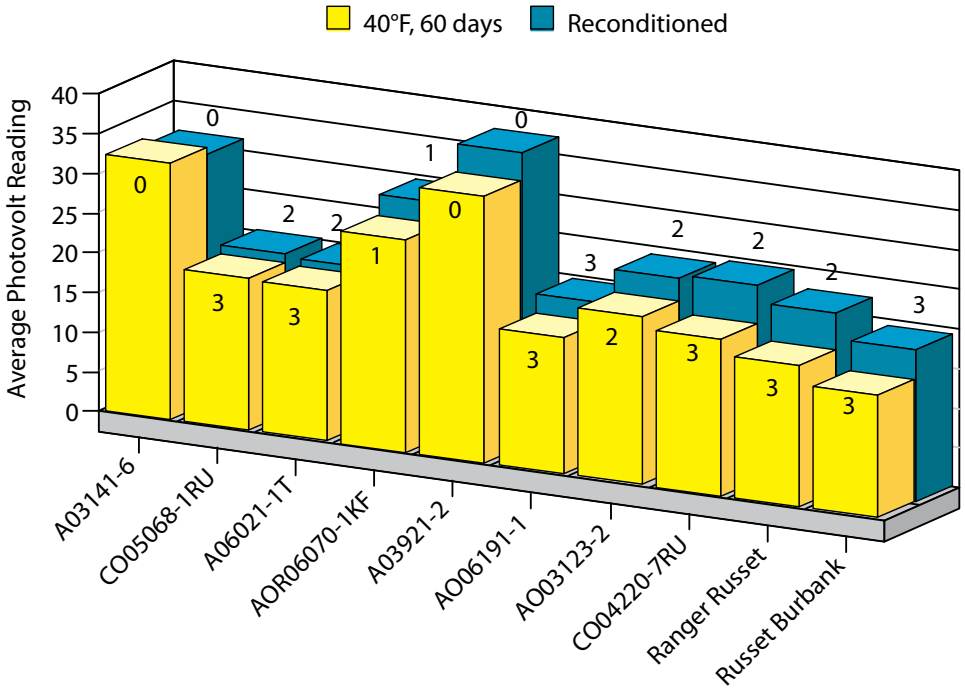
2016 Late Harvest Regional Trial

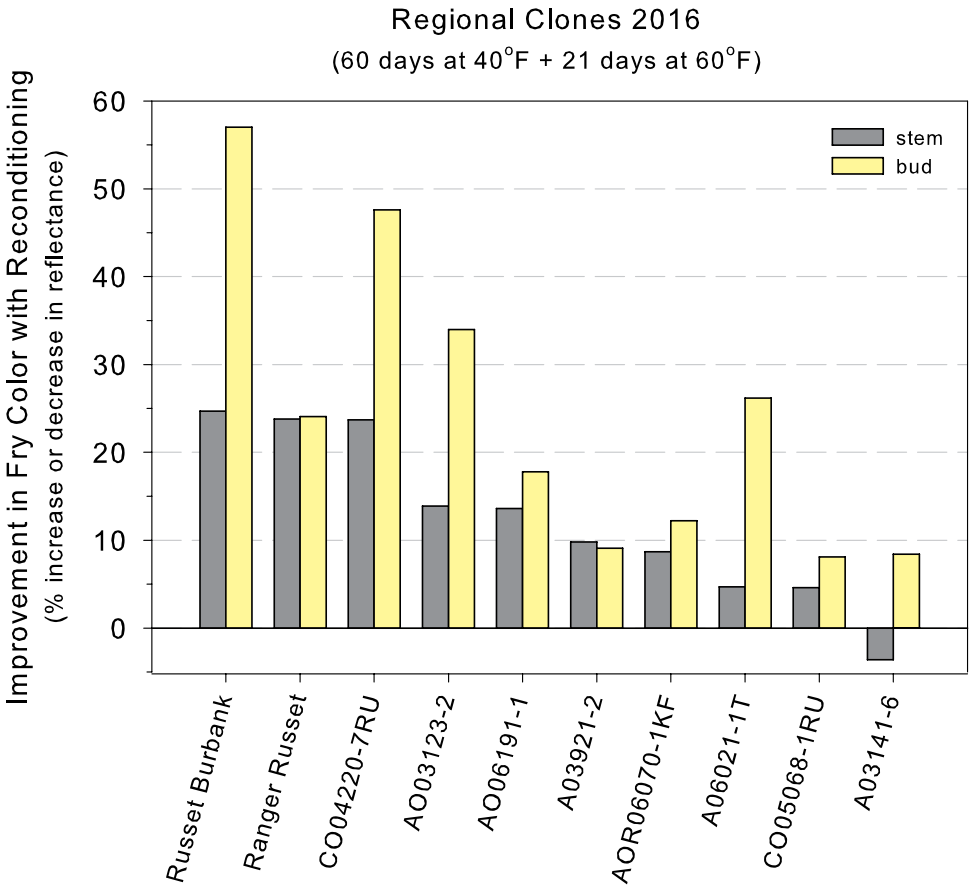


Top: At-harvest and after-storage French fry colors (stem end) of clones in the Regional Trial. Tubers were stored for 60 days at 48, 44 and 40°F. The clones are ranked from best to worst based on fry color of the 44°F-stored tubers. High reflectance values indicate light colored fries.

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 (A03141-6, AOR06070-1KF, and A03921-2) and susceptible (Russet Burbank) clones in the Regional Trial. *Indicates similar performance of the clones last year.

2016 Late Harvest Regional Trial



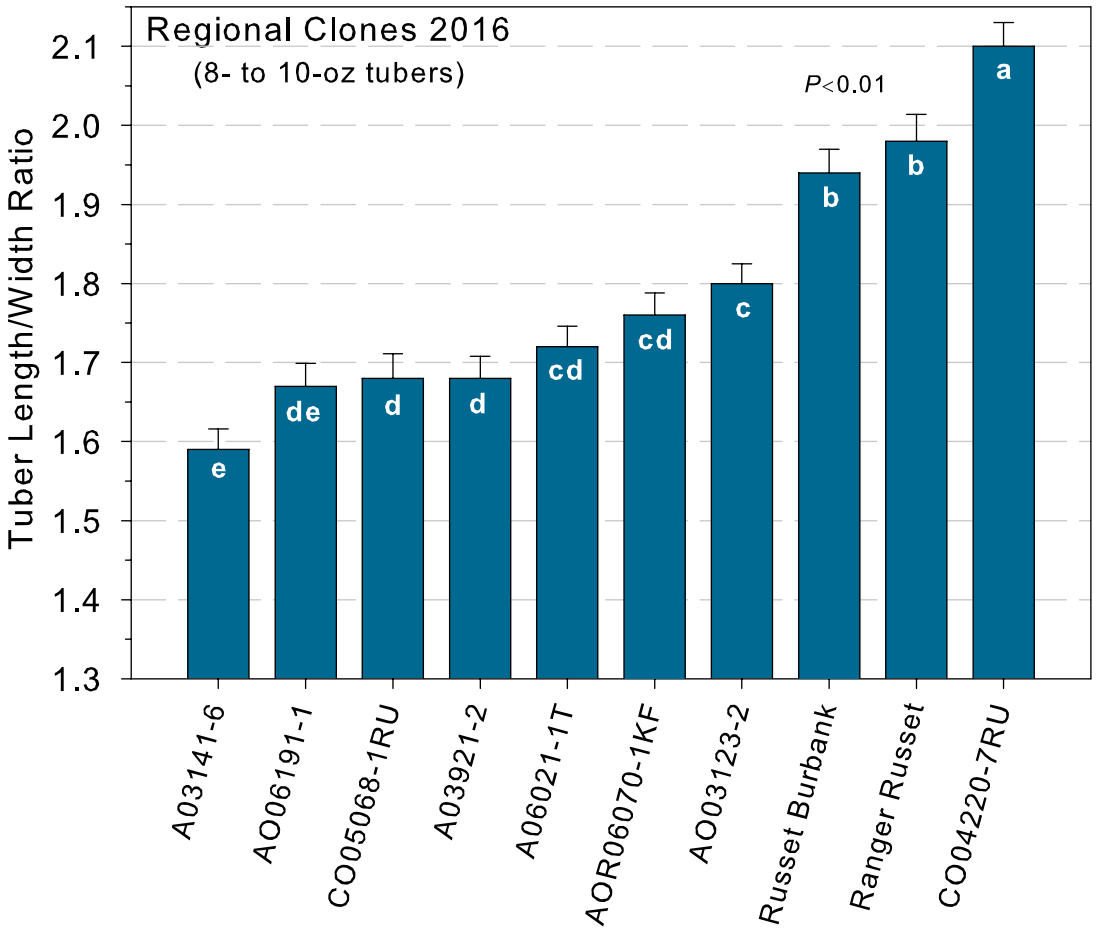


Reconditioning abilities of clones in the 2016 Regional Trial (3-state averages). Clones were stored at 40°F for 60 days after harvest and then reconditioned at 60°F for 21 days. **Top:** Stem end fry color before and after reconditioning. Numbers in bars indicate the USDA color rating of the stem end. **Bottom:** Percent improvement of stem and bud end fry color with reconditioning.

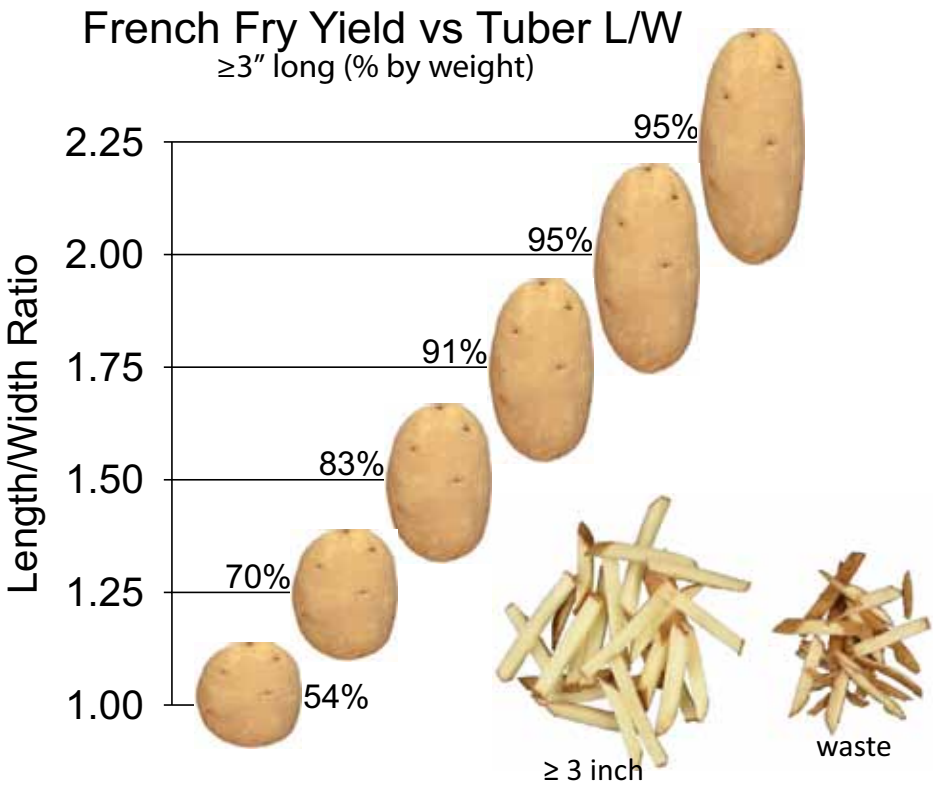
2016 Late Harvest Regional Trial

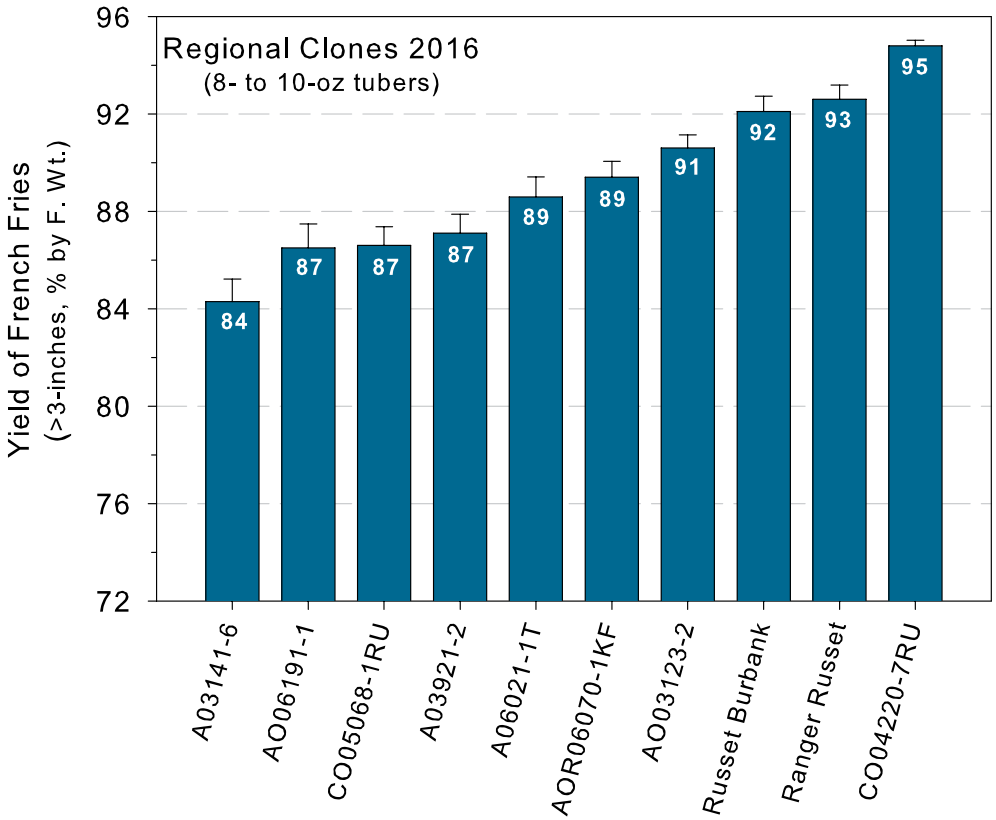
Length to Width Ratios of 8-10 oz Tubers

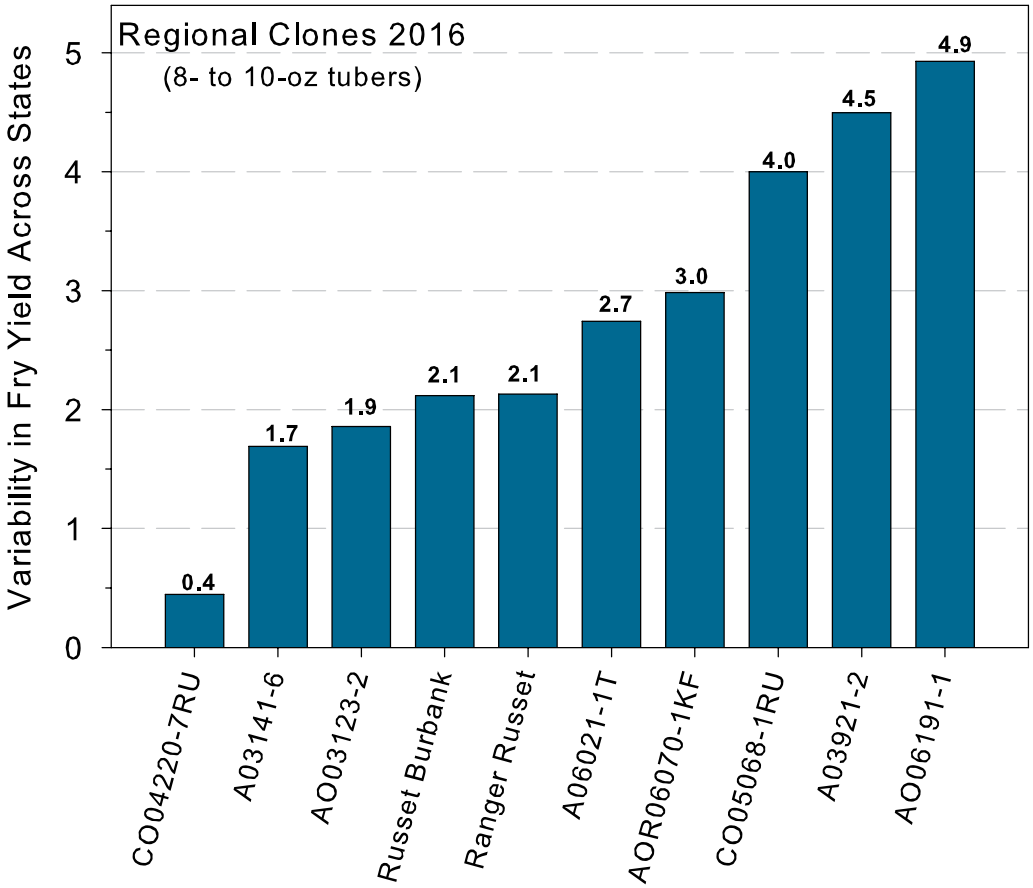
Clone	Length to width ratio WA	rtg §	ID	rtg §	OR	rtg §	3 State Avg.
1 Ranger Russet	1.77	**4**	2.10	**5**	2.08	**5**	1.98
2 Russet Burbank	1.73	**4**	1.99	**5**	2.11	**5**	1.94
3 A03141-6	1.52	**3**	1.64	**3**	1.60	**3**	1.59
4 A03921-2	1.54	**3**	1.93	**5**	1.58	**3**	1.68
5 A06021-1T	1.66	**4**	1.88	**5**	1.63	**3**	1.72
6 AO03123-2	1.70	**4**	1.95	**5**	1.75	**4**	1.80
7 AO06191-1	1.49	**2**	1.90	**5**	1.60	**3**	1.67
8 AOR06070-1KF	1.60	**3**	1.79	**4**	1.90	**5**	1.76
9 CO04220-7RU	2.06	**5**	2.08	**5**	2.18	**5**	2.11
10 CO05068-1RU	1.54	**3**	1.94	**5**	1.55	**3**	1.68
Average	1.66		1.92		1.80		1.79



2016 Late Harvest Regional Trial







Relative ranking of clones in the Late Season Regional Trial for variability in yield of French fries 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, AO06191-1 had a length to width ratio of 1.7 (page 91), resulting in 87% of the tuber yielding French fries ≥3 inches in length (page 92). Tuber shape of this entry also varied the most across production regions (above), resulting in fry yields ranging from 82% to 92% (87±4.9%).

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).

2016 Tri-State Specialty Trial

Location: WSU Research Center – Othello, WA
Planting Date: March 31 Vine Kill Date: July 27
Harvest Date: August 9 Days Grown: 118
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 2 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/Yellow flesh: COA07365-4RY
Yellow flesh:
Suggested Discards:.

Standcounts

- **50 Day**
  Full emergence: Every entry was 94% or higher.
  Poor emergence: POR11PG62-3 (94%).

Plant and Tuber Growth & Development

- **50 Day Stems per plant**
  Most: POR11PG20-2 (2.3) and A06336-5Y (2.2).
  Fewest: Yukon Gold (1.6) and A06336-2Y (1.8).

- **Average Tuber Number Per Plant**
  Most: A06336-5Y (10.5) and POR11PG20-2 (9.7).
  Fewest: Yukon Gold (5.0) and A06336-2Y (7.7).

- **Average Tuber Size (oz)**
  Largest: Yukon Gold (7.4), Chieftain (5.8), and POR11PG20-2 (5.3).
  Smallest: A06336-5Y (3.4).

Yield Data

- **Total Yield and U.S. #1 Yield**
  Highest: POR11PG20-2 had the highest total (741 CWT/A) and the highest U.S. #1 yield (706 CWT/A).
  Lowest: POR11PG62-3 had the lowest total (459 CWT/A) and U.S. #1 yield (429 CWT/A).

- **% U.S. #1's**
  Highest: Yukon Gold (86%) and Chieftain (74%).

Tuber Defects (percent out of 40, 6-10 oz tubers)

- **External Defects**
  Most entries were free of external defects.

- **Internal Defects**
  Every single entry was free of any internal defect.

- **Bruise**
  Highest Blackspot: POR11PG20-2 (37%) and Chieftain (23%).
  Highest Shatter: COA07365-4RY (77%) and A06336-5Y (72%).

Postharvest Analysis

- The top scoring clones were A06336-5Y and Chieftain with 58.6 and 58 points, respectively, in the 2016 culinary evaluations.

- COA07365-4RY has red skin and creamy yellow flesh. Chieftain has white flesh and red skin. POR11PG20-2 has yellow skin with pink splashes; some tubers had only yellow skin. Most tubers of POR11PG20-2 had yellow flesh, while a few had yellow streaked with white. Yukon Gold, A06336-2Y, A06336-5Y, and POR11PG62-3 have yellow skin and flesh.

- As in previous years, culinary scores were high with all entries receiving 62 to 78% of total points possible.

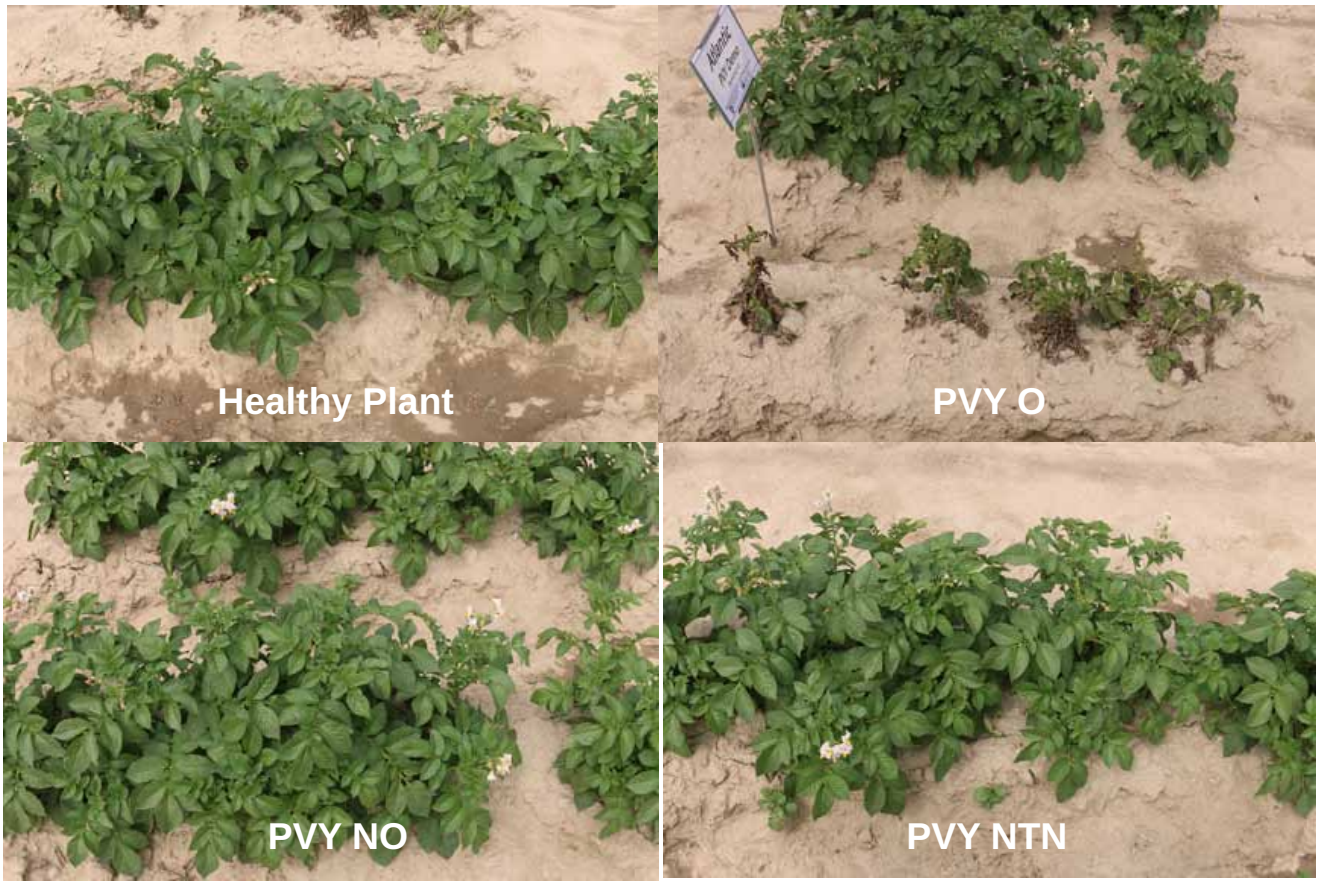
- POR11PG20-2 had severe after cooking darkening when oven baked. All other entries had moderate to slight after cooking darkening. Texture of the baked samples of all entries except Yukon Gold and POR11PG20-2 was rated favorably as “creamy” or “fluffy”; Yukon Gold and POR11PG20-2 had a pasty texture. The flavor of most of the baked samples was rated “bland” while Chieftain and COA07365-4RY received “good” ratings. Half of the evaluators rated the flavor of Yukon Gold as unacceptable. Tuber centers of baked samples received acceptable ratings of “mushy” for all entries except Chieftain, which was rated as fully cooked. Skins of most of the baked samples were also rated as acceptable (“steamy”) for all entries except Yukon Gold and POR11PG62-3, which were rated as “crispy”. The skin of POR11PG20-2s was rated as slightly burnt after baking.

- All entries showed slight to moderate sloughing when boiled, except for POR11PG20-2 which was rated severe. POR11PG62-3 had moderate after cooking darkening. All other entries had slight after cooking darkening when boiled. The texture of all boiled samples was rated favorably as “creamy” or “fluffy” and flavor was rated as “good”. The tuber centers of all entries were rated as “mushy” or “fully cooked”.

- Microwaving produced “slight” or “moderate” after cooking darkening in all entries. The texture of all microwaved samples was favorably rated as “fluffy”, except POR11PG20-2 which was “pasty”. The flavor ratings of microwaved samples of all entries ranged from “bland” to “good”. All entries received “mushy” tuber center ratings. Skins were rated favorably as either “steamy” or “fully cooked”.

- COA07365-4RY produced the lightest chips with a SFA color rating of 2.3 and A06336-2Y was rated 2.8. All other entries produced darker chips, ranging from 3.0 to 3.7 on the SFA scale (1-5).

- 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 of a 90-g probe was recorded. Stem end cores averaged 5.5 min to fully cook compared with 3.6 min for bud end cores. Cooking times (stem end) ranged from 4.2 min (POR11PG20-2 & POR11PG62-3) to 6.3 min (COA07365-4RY). All entries cooked relatively quickly this year with averages (stem and bud ends) ranging from 3.7 (POR11PG20-2) to 5.2 (A06336-2Y) minutes.



Above: One of the 42 varieties displayed (healthy vs. 3 strains of PVY) within the 2016 WSU-Othello Potato Virus Y demonstration plot.

2016 Regional Red and Specialty Trial

Summaries

ENTRY	TOTAL YIELD		US # 1's* > 0 oz	US # 2's* > 0 oz	Culls* > 0 oz	EXTERNAL DEFECTS (%)				SPECIFIC GRAVITY
	CWT/A	Tons/A	% of Total Yield			Knobs	Malformed	Growth Cracks	Green	
Red Skin/White Flesh										
Chieftain	664	33.2	74	1	25	0	0	4	0	1.080
Red-Purple/White Flesh										
COA07365-4RY	530	26.5	54	1	45	0	1	1	0	1.084
Yellow Flesh										
Yukon Gold	530	26.5	86	1	13	0	0	1	1	1.094
A06336-2Y	534	26.7	63	1	36	0	0	1	2	1.080
A06336-5Y	504	25.2	31	0	69	0	0	0	0	1.078
POR11PG20-2	741	37.1	68	3	29	0	0	0	1	1.095
POR11PG62-3	459	22.9	35	1	64	5	0	0	0	1.094

ENTRY	US # 1 YIELD							INTERNAL DEFECTS (%) (6-10 oz tubers)		
	CWT/A	Tons/A	0-2 oz*	2-4 oz*	4-6 oz*	6-10 oz*	> 10 oz*	% HH	% BC	% IBS
			%							
Red Skin/White Flesh										
Chieftain	626	31.3	3	18	23	39	16	0	0	0
Red-Purple/White Flesh										
COA07365-4RY	512	25.6	7	38	29	24	3	0	0	0
Yellow Flesh										
Yukon Gold	514	25.7	1	10	17	44	28	0	0	0
A06336-2Y	518	25.9	3	32	38	25	3	0	0	0
A06336-5Y	500	25.0	15	54	25	7	0	0	0	0
POR11PG20-2	706	35.3	4	24	26	34	12	0	0	0
POR11PG62-3	429	21.5	14	48	26	12	1	0	0	0

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	BRUISE (%) (6-10 oz tubers) BLACKSPOT	BRUISE (%) (6-10 oz tubers) SHATTER	Length to Width Ratio 1 = Round 2 = Oblong
Red Skin/White Flesh											
Chieftain	4	2	97	2.0	5.8	7.9	3	4	23	63	1.2
Red-Purple/White Flesh											
COA07365-4RY	5	2	97	1.9	4.3	8.6	3	4	7	77	1.2
Yellow Flesh											
Yukon Gold	5	2	98	1.6	7.4	5.0	3	3	20	10	1.1
A06336-2Y	5	3	95	1.8	4.8	7.7	3	2	0	0	1.3
A06336-5Y	5	1	98	2.2	3.4	10.5	4	4	17	72	1.1
POR11PG20-2	5	2	99	2.3	5.3	9.7	3	2	37	0	1.2
POR11PG62-3	5	4	94	2.0	3.5	9.1	3	3	5	0	1.7

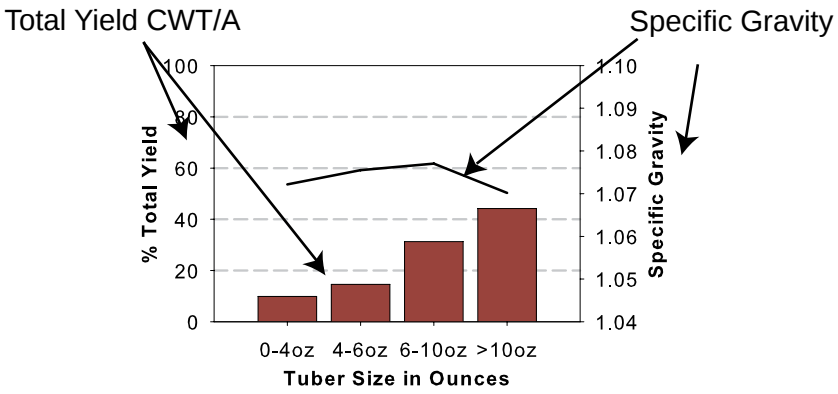
* Percent values may not total 100% due to rounding

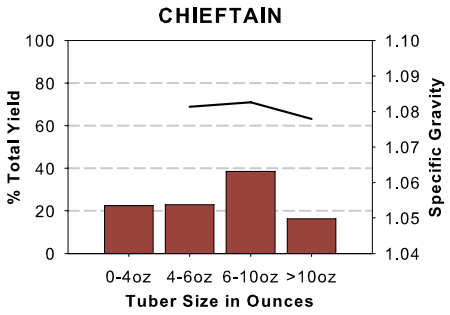
2016 Regional Red and Specialty Trial

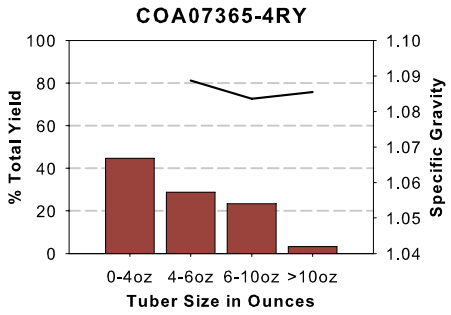
Tuber Yield and Specific Gravity Distributions

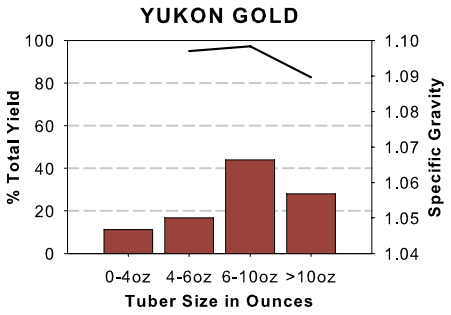
Note: Specific Gravity is based on a sample of U.S. #1 tubers within each size category

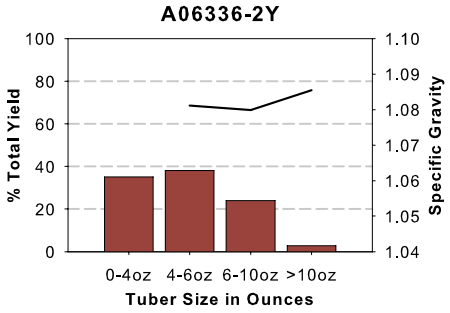
8 inch In-Row Spacing

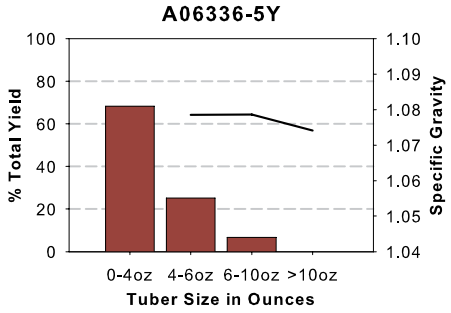


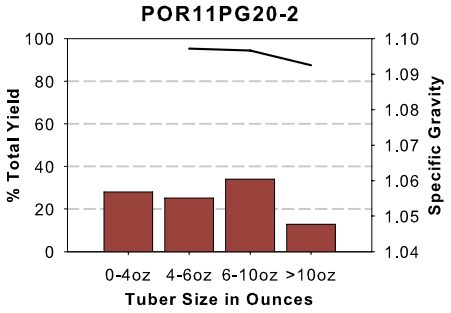


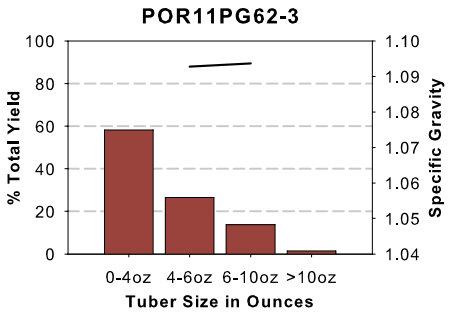








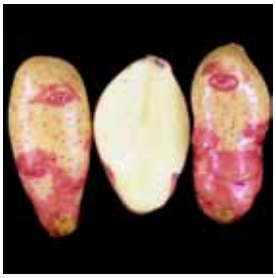




Caleb and Lucas Garza measure potato plant internode length in a study to define growth differences of multiple varieties.

Tubers	WA Tri-State Specialty Trial Comments
Chieftain	
	**Tubers:** Round to oblong tubers. Good skin set; shallow eyes. **Baked:** slight after cooking darkening, fluffy texture, good flavor, fully cooked tuber center, steamy skin. **Boiled:** slight sloughing, slight after cooking darkening, creamy texture, good flavor, fully cooked tuber center. **Microwaved:** moderate after cooking darkening, fluffy texture, bland flavor, mushy tuber center, steamy skin.
COA07365-4RY	
	**Tubers:** Round to oblong tubers. Good skin set; very shallow eyes. **Baked:** slight after cooking darkening, creamy texture, good flavor, mushy tuber center, steamy skin. **Boiled:** slight sloughing, slight after cooking darkening, creamy texture, good flavor, fully cooked tuber center. **Microwaved:** moderate after cooking darkening, fluffy texture, bland flavor, mushy tuber center, steamy skin.
Yukon Gold	
	**Tubers:** Round to oblong tubers. Good skin set; shallow eyes. **Baked:** slight after cooking darkening, pasty texture, unacceptable flavor, mushy tuber center, crispy skin. **Boiled:** moderate sloughing, slight after cooking darkening, fluffy texture, good flavor, mushy tuber center. **Microwaved:** slight after cooking darkening, fluffy texture, good flavor, mushy tuber center, steamy skin.
A06336-2Y	
	**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Baked:** moderate after cooking darkening, creamy texture, bland flavor, mushy tuber center, steamy skin. **Boiled:** moderate sloughing, slight after cooking darkening, creamy texture, good flavor, fully cooked tuber center. **Microwaved:** slight after cooking darkening, fluffy texture, bland flavor, mushy tuber center, steamy skin.
A06336-5Y	
	**Tubers:** Round tubers. Good skin set; shallow eyes. **Baked:** slight after cooking darkening, creamy texture, bland flavor, mushy tuber center, steamy skin. **Boiled:** slight sloughing, slight after cooking darkening, creamy texture, good flavor, fully cooked tuber center. **Microwaved:** slight after cooking darkening, fluffy texture, bland flavor, mushy tuber center, fully cooked skin.

Chips	Baked	Boiled	Microwaved
Chieftain			
			
COA07365-4RY			
			
Yukon Gold			
			
A06336-2Y			
			
A06336-5Y			
			

Tubers	WA Tri-State Specialty Trial Comments
POR11PG20-2	
	**Tubers:** Round to oblong tubers. Good skin set; moderate eye depth. **Baked:** Severe after cooking darkening, pasty texture, bland flavor, mushy tuber center, Slightly burnt skin. **Boiled:** moderate sloughing, severe after cooking darkening, creamy texture, good flavor, fully cooked tuber center. **Microwaved:** moderate after cooking darkening, pasty texture, good 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, crispy skin. **Boiled:** moderate sloughing, moderate after cooking darkening, fluffy texture, good flavor, fully cooked tuber center. **Microwaved:** slight after cooking darkening, fluffy texture, bland flavor, mushy tuber center, steamy skin.

Chipping and Boiling Evaluations

		(Chips)	(BOILED Cooking Time)		
	Clone	Av of 8 raters SFA	Time to Breakdown (min) Stem	Bud	Average
1	Chieftain	3.7	5.6	3.6	4.6
2	COA07365-4RY	2.3	6.3	3.7	5.0
3	Yukon Gold	3.2	6.2	3.0	4.6
4	A06336-2Y	2.8	6.2	4.2	5.2
5	A06336-5Y	3.3	5.7	4.1	4.9
6	POR11PG20-2	3.4	4.2	3.1	3.7
7	POR11PG62-3	3.0	4.2	3.6	3.9
	*LSD 0.05 **		*1.2*	*0.6*	
	Average	3.1	5.5	3.6	4.5

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

Chips	Baked	Boiled	Microwaved
POR11PG20-2			
			
POR11PG62-3			
			

Overall Culinary Evaluation Scores

	Clone	Boiled (25 max)	Baked (25 max)	Microwaved (25 max)	Total (75 max)
5	A06336-5Y	18.3	20.4	19.9	58.6
1	Chieftain	20.4	20.0	17.6	58.0
2	COA07365-4RY	20.0	18.9	17.9	56.7
7	POR11PG62-3	17.1	18.9	18.7	54.7
3	Yukon Gold	14.6	19.8	19.0	53.3
4	A06336-2Y	16.8	18.0	17.7	52.5
6	POR11PG20-2	12.4	16.8	17.8	46.9

Chipped:	Aug. 18
Boiled:	Aug. 25
Microwaved:	Aug. 23
Baked:	Aug. 24
Cooking Time:	Aug. 18

2016 Washington Regional Red and Specialty Trial

Red Clone Culinary Evaluation

Boiled

Clone	Flavor	After Cooking Darkening	Texture	Tuber Center	Sloughing	Total Rating
1 Chieftain	3.7	4.4	3.5	4.5	4.3	20.4
2 COA07365-4RY	4.0	4.3	3.3	4.3	4.1	20.0
LSD 0.05	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Average	3.9	4.4	3.4	4.4	4.2	20.2

Oven Baked

Clone	Flavor	After cooking Darkening	Texture	Tuber Center	Skin Rating	Total Rating
1 Chieftain	3.8	4.4	3.4	3.5	5.0	20.0
2 COA07365-4RY	3.6	4.1	2.9	3.6	4.6	18.9
LSD 0.05	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Average	3.7	4.3	3.1	3.6	4.8	19.4

Microwaved

Clone	Flavor	After cooking Darkening	Texture	Tuber Center	Skin Rating	Total Rating
1 Chieftain	3.1	3.6	3.2	3.5	4.2	17.6
2 COA07365-4RY	3.1	4.2	2.6	3.9	4.1	17.9
LSD 0.05	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Average	3.1	3.9	2.9	3.7	4.2	17.8

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

2016 Washington Regional Red and Specialty Trial

Specialty Clone Culinary Evaluation

Boiled

Clone	Flavor	After Cooking Darkening	Texture	Tuber Center	Sloughing	Total Rating
3 Yukon Gold	2.2	3.9	2.2	3.9	2.4	14.6
4 A06336-2Y	2.9	3.4	3.0	3.9	3.6	16.8
5 A06336-5Y	3.5	4.1	2.8	3.8	4.1	18.3
6 POR11PG20-2	2.6	2.4	1.9	3.7	1.8	12.4
7 POR11PG62-3	2.8	3.8	3.5	4.1	2.9	17.1
LSD 0.05	*1.2*	*0.8*	*1.0*	*ns*	*0.9*	*3.1*
Average	2.8	3.5	2.7	3.9	3.0	15.8

Oven Baked

Clone	Flavor	After cooking Darkening	Texture	Tuber Center	Skin Rating	Total Rating
3 Yukon Gold	3.3	3.8	4.4	4.1	4.3	19.8
4 A06336-2Y	3.3	3.8	2.5	4.0	4.5	18.0
5 A06336-5Y	4.0	4.1	3.3	4.3	4.8	20.4
6 POR11PG20-2	3.0	2.1	3.1	3.8	4.8	16.8
7 POR11PG62-3	3.1	3.3	3.6	4.3	4.6	18.9
	0.7	*0.8*	*1.0*	*ns*	*ns*	*3.2*
Average	*3.3*	*3.4*	*3.4*	*4.1*	*4.6*	*18.8*

Microwaved

Clone	Flavor	After cooking Darkening	Texture	Tuber Center	Skin Rating	Total Rating
3 Yukon Gold	3.5	3.9	3.7	3.9	4.0	19.0
4 A06336-2Y	3.5	3.6	2.7	3.5	4.4	17.7
5 A06336-5Y	3.6	4.0	3.5	4.0	4.8	19.9
6 POR11PG20-2	3.4	2.3	3.7	4.0	4.4	17.8
7 POR11PG62-3	3.8	3.7	3.1	4.2	3.9	18.7
	ns	*0.8*	*1.0*	*ns*	*0.8*	*ns*
Average	3.6	3.5	3.3	3.9	4.3	18.6

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

Index of Clones and Cultivars