2024 Potato Cultivar Yield and Postharvest Quality Evaluations

WSU Potato Research Group

WASHINGTON STATE UNIVERSITY

2024 Potato Cultivar Yield and Postharvest Quality Evaluations

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On the cover: 2024 Seed lot readers look for diseased plants.

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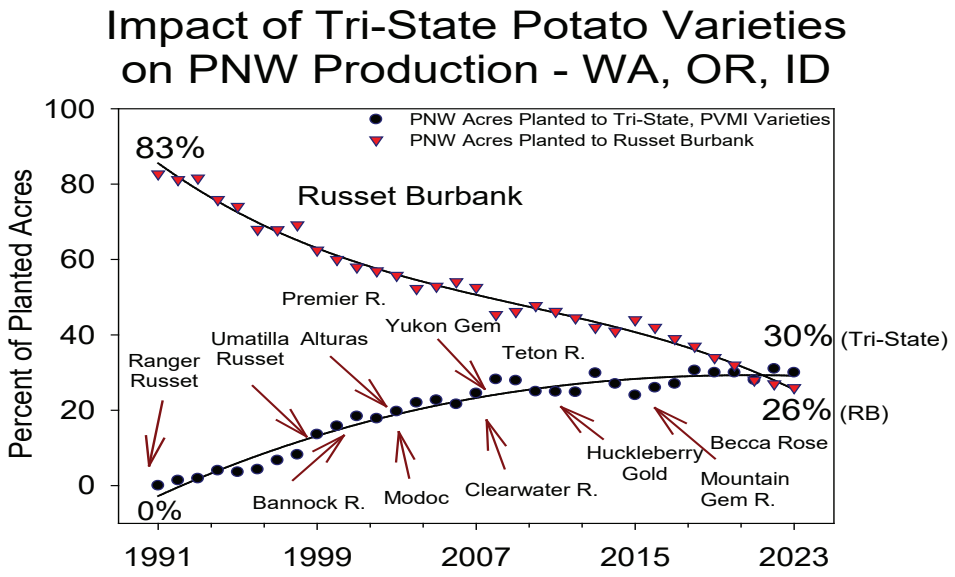
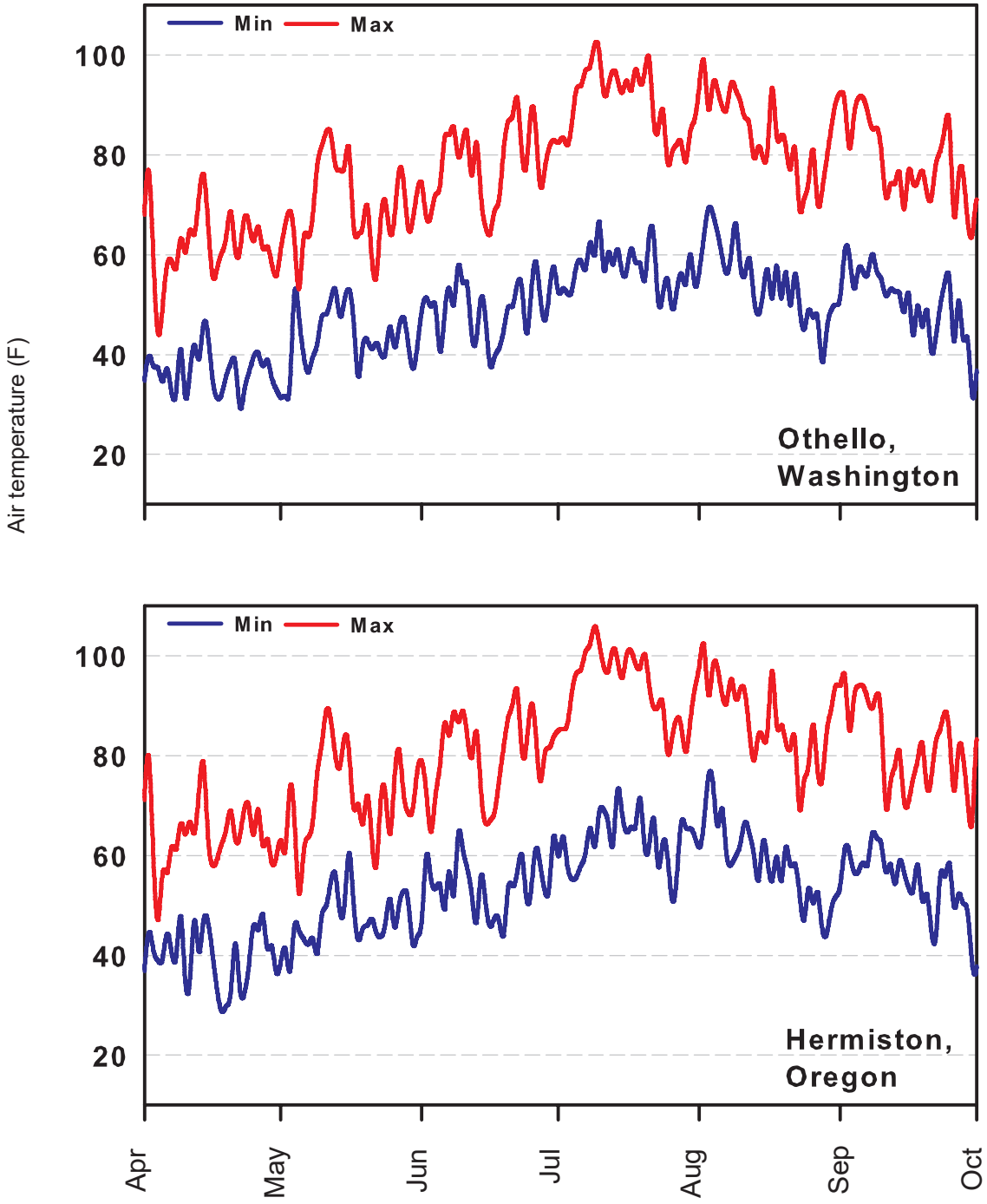
INTRODUCTION

The 2024 Washington "Potato Cultivar Yield and Postharvest Quality Evaluations" is an annual report providing detailed information about promising new potato clones and cultivars grown in Washington conducted by the **Washington State University (WSU) Potato Research Group**. **Our mission:** to identify and release new potato varieties that will provide profitable, sustainable production for the grower, improved competitiveness for the Washington and NW US potato industry, a healthy, inexpensive food supply for American consumers, and contributions towards a healthy environment. **Tri-State trials** include the newest clones which are created and evaluated in ID, OR, and WA by the USDA/ARS of Aberdeen, ID & Prosser, WA, Univ. of ID, OR State U., and WA State U. **Regional trials** include advanced clones from, and evaluated by, ID, OR, WA, CO, TX, and CA. Potato Commissions from the Tri-State area support and fund much of the variety development efforts. **Potato Variety Management Institute (PVMI)** is a nonprofit organization that licenses and promotes Tri-State varieties. PVMI collects royalties from the varieties which are then distributed among the Tri-State research programs to support the ongoing development efforts. Learn more at www.pvmi.org.

Recent Accomplishments: The **Northwest Potato Variety Development Program** NWPVD program has produced a number of widely adopted varieties, among these varieties, **Clearwater Russet (R.), Ranger R., Umatilla R., Alturas, Teton R., and Mountain Gem R.** have greatly benefited the United States and Northwest potato industry and as such, were the **2nd, 3rd, 5th, 11th, 20th, 33rd, and 44th** most widely grown varieties in the United States in 2023 (rankings out of 710 cultivars). They were also the 2nd, 3rd, 6th, 7th, 13th, and 29th most widely grown 2023 varieties in the Pacific Northwest (ID, OR, and WA), accounting for over 30% of the PNW planted acreage. Varieties released by the NWPVD Program are now produced on approximately 160,000 acres in the Pacific Northwest with value to growers estimated at approximately $800 million. NWPVD varieties represented approximately 24%, or 232,000 acres, of the 2023 fall crop nationally. The estimated 2023 US farm-gate value of NWPVD varieties was more than $1.21 billion (values extrapolated from 2022 certified seed acres (https://potatoassociation.org/seed-acres-reports/) and NASS 2023).



2024 Growing Season Temperatures



Guide to Clone Designations

Example: ATX91137-1Ru		
	ATX91137-1Ru	Breeding Program (**A**berdeen, ID)
	A**TX**91137-1Ru	Selection Site (**Tex**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	**T**exas	
BTX	=	**B**eltsville, Maryland	**T**exas	
CO	=	**C**olorado		
MWTX	=	**M**adison **W**isconsin	**T**exas	
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	**C**olorado	
TXA	=	**T**exas	**A**berdeen, Idaho	
TXNS	=	**T**exas		**N**orkotah **S**train
OR	=	Hermiston, **Or**egon	Oregon	

Miscellaneous Designations

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
A10020-3**sto**	**sto**	=	Ry**sto** resistance gene

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.

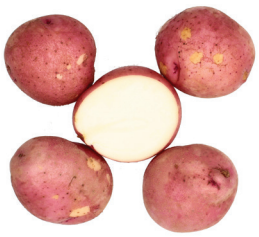
When it comes to potato research, everyone lends a hand!

2024 Tri-State Specialty Potato Clones - Washington State University

2024 Tri-State Specialty Trial					
	US #1 Yield 2024			Fresh Market Appearance	(See also Tri-State Specialty Section near end of book)
	US#1 Yield CWT/A	0-6 oz	6-10oz	5 = best	Comments
		-----%-----			
Red Skin/White Flesh*					
Chieftain	984	20	41	3.0	Deep eyes, a bit flat, skin set is not great.
Modoc	752	61	32	3.3	Good skin set, many shaped like pears.
POR17PG64-2	789	53	38	2.0	Red/purple, variable size, strange russeting, dicard.
A11582-1R	851	79	20	2.0	Nothing special, non-uniform shape, some knobs. Discard.
COOR15108-1	609	83	15	3.5	Smaller, deep red, smooth skin. Deep eyes.
Red-Purple/Yellow Flesh					
A11573-5RYsto	803	94	6	3.0	Smaller, deeper eyes, medium to dark red.
Yellow Flesh					
Yukon Gold	675	13	24	3.0	Slight russeting, deep eyes, large yellow.
A11569-1Y	810	72	27	2.0	Some scab, half are pear shaped, feathery skin. Discard.
A11661-2Y	558	95	5	1.0	Smaller, irregular shapes, oblong. Discard.
A11661-3Y	633	88	12	1.0	Bad skin. Yellow with red eyes, discard.
TXA18020-1DY	788	56	34	3.0	Looks like Yukon Gold, but skin not as nice.
A11576-1Ysto	855	89	10	4.0	Smaller yellow, smooth skin. Pink eyes with some pears.
Purple/Purple Flesh					
Purple Majesty	720	64	32	2.8	Round to oblong, severe russeting, some pear shaped.
POR18PG54-1	641	25	41	3.0	Deeper eyes, lumpy and bumpy, some russeting.
POR16PG25-2	801	72	23	3.5	Variable size. Oblong to round, some russeting.

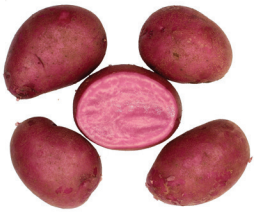
*Skin/Flesh Color: R = Red, W = White, Y = Yellow, P = Purple, Rus = Russet, Buff = off-white with or without light russeting.

Chieftain



Modoc

POR17PG64-2



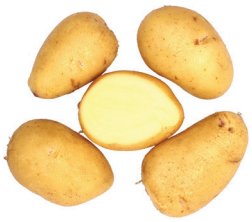
A11582-1R

COOR15108-1

A11573-5RYsto

Yukon Gold

A11569-1Y



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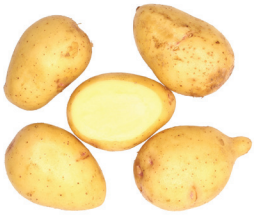

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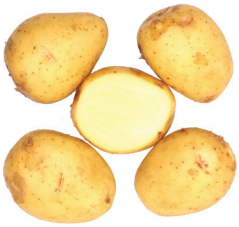

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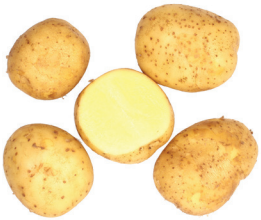
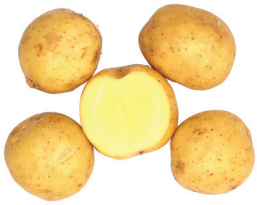


A11576-1Ysto



Purple Majesty

POR18PG54-1

POR16PG25-2

At-Harvest Grading Comments & Fresh Market Appearance

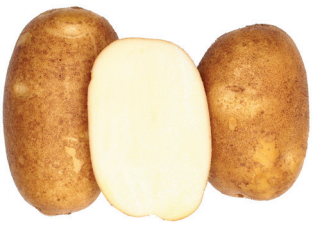
Newest Lines - 2024 Tri-State Trials			
	Fresh Market Appearance 1-5 (5 = Best)		
Clone	2024	2023	Tuber Appearance Comments*
Early Harvest Tri-State			
Ranger Russet	2.0	3.0	Long, mostly typy, irregular shapes.
Russet Burbank	2.0	2.3	A bit flat. Non-uniform shape.
A10020-3sto	3.3	3.7	Good length, typy.
A12308-3adg	2.0	2.0	A bit pointy, non-uniform shapes.
A12327-5VR	2.3	3.0	Plump, mostly typy, a bit short.
A13036-1	2.0	3.0	Smaller, mostly typy, plump. Feathery skin.
A13072-5	1.3	2.0	Plump, larger, typy, bad skin.
A13085-2	2.3	-	Typy, plump, shape a bit non-uniform.
A13094-1	2.0	-	Short, round, discard.
A15028-2TE	3.0	-	Plump, typy, feathery skin.
A15038-6	2.0	-	Plump, typy, shape a bit irregular.
A15053-17	2.0	-	Short and round, some flat.
A15082-9	2.0	-	Large, plump, feathery skin.
A16051-3	2.0	-	Typy, plump. Light skin, scab, uniform shape.
AOR15152-2	2.0	-	Large, plump, shape a bit irregular. Bad skin.
AOR15194-2	2.0	-	Large, typy, bad skin. Many seed pieces came over belt.
OR11222-4	2.3	-	Shape a bit non-uniform. Feathery skin. Good length.
Norkotah TX278	3.3	-	Shape mostly uniform. Feathery skin. Typy, with some rot.
Shepody	1.0	1.0	Long, skinny, irregular shape.
Late Harvest Tri-State			
Clearwater Russet	4.0	3.8	Typy, nice shape and size. Medium russet.
Ranger Russet	1.3	2.0	Very long, shape highly irregular.
Russet Burbank	2.0	2.0	Long, non-uniform shape, scab and some rot.
A10020-3sto	2.8	3.0	Plump, looks like Clearwater, some variable shapes.
A12308-3adg	2.0	2.5	Some pears, shape variable and elephant hide on bud end.
A12327-5VR	3.3	2.8	Some round and flat, short, darker russet.
A13036-1	3.0	2.8	Variable length, feathery skin, shape a bit oval or round.
A13072-5	2.5	2.0	Bad greening! Larger, plump, ok length. Discard.
A13085-2	2.5	-	Shape is variable, cracks on the end of some.
A13094-1	2.3	-	Baseballs and softballs!
A15028-2TE	2.5	-	Oval to round, feathery skin and some scab.
A15038-6	1.5	-	Lumpy, irregular shape, bad scab.
A15053-17	2.3	-	Lumpy, oval and short, with feathery skin.
A15082-9	2.5	-	Plump, larger, good length, shape fairly uniform.
A16051-3	2.0	-	Plump, light skin. Feathery skin, with scab and end cracks.
AOR15152-2	2.0	-	Larger tuber with end cracks, mix of shapes.
AOR15194-2	2.5	-	Larger, plump, with lots of greening. Feathery skin.
OR11222-4	2.0	-	Bad greening and growth cracks. Feathery skin, rot.
Norkotah TX278	3.0	-	Dark russet, mostly typy, some irregular shapes and greening.

*Typy - Visually appealing, uniform tuber shape.

A10020-3sto

EARLY

A15028-2TE



EARLY

A12327-5VR

LATE

Clearwater Russet

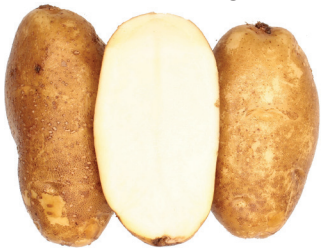
LATE

At-Harvest Grading Comments & Fresh Market Appearance

Advanced Lines - 2024 Regional Trials				
	Fresh Market Appearance 1-5 (5 = Best)			
Clone	2024	2023	2022	Tuber Appearance Comments*
Early Harvest Regional				
Ranger Russet	1.7	2.0	3.0	Irregular shapes, but mostly typy. Some bottlenecks.
Russet Burbank	2.0	2.0	2.0	Shape irregular. Long, skinny.
A09086-1LB	1.7	1.7	2.0	Not an early variety, small, with bad scab.
A09136-9LB	1.7	-	-	Short, pears and irregular shapes.
A12305-2adg	2.0	3.0	3.0	Many pears, some plump, points. Lot of lenticils.
A13072-7	3.0	3.0	2.0	Shape a bit variable. Plump, larger.
A13091-5	2.0	4.0	2.0	Plump, a bit short, uniform shape.
AFA5661-8	2.0	2.0	3.0	Plump, light skin, somewhat typy. Larger.
AOR11217-3	3.3	3.3	4.0	Typy, dark russet, shape a bit irregular.
AOR13064-2	2.7	3.0	3.0	Large, typy, some short.
AOR15166-2	2.3	3.0	-	Short, irregular shapes, smaller.
AOR15227-2	2.0	3.0	-	Plump, leathery skin, a bit short. Some scab.
Norkotah TX278	3.5	-	-	Mostly typy, light russet, smaller, lots of rot.
Shepody	1.0	1.0	2.0	Long, skinny, light skin, irregular shapes.
CO13003-1RU	3.3	4.0	3.7	Typy, dark skin, small.
CO15016-1RUsto	3.3	-	-	Look like standard Norkotah, but smaller.
COTX08063-2Ru	2.7	2.0	-	Light skin, typy, some pear shapes and a bit flat.
COTX10080-2Ru	2.7	-	-	Lots of rot, somewhat typy, discard.
Late Harvest Regional				
Clearwater Russet	3.3	4.0	3.3	Typy, plump, medium russet.
Ranger Russet	2.0	2.0	2.8	Long, large, deeper eyes, shape a bit irregular.
Russet Burbank	2.8	1.8	2.3	Mostly typy, a few irregular shapes, some rot.
A09086-1LB	2.0	2.0	2.3	Scabby, spotty skin. Shape mostly uniform.
A09136-9LB	2.0	-	-	Some pears, shape a bit irregular.
A12304-1sto	3.0	3.5	3.5	Bad greening! Medium size, typy.
A12305-2adg	2.3	2.0	2.3	Shape a bit irregular, spotty skin, some points.
A13072-7	2.3	2.5	2.0	Eyes a bit too deep. Blocky, with folded tubers.
A13091-5	2.8	3.0	2.5	Smaller, typy, ok length, looks like CW, some a bit short.
AFA5661-8	1.8	2.0	2.3	Knobs and cracks, discard.
AOR11217-3	3.0	2.5	3.3	Mostly typy, good length, could have Fresh potential.
AOR13064-2	1.3	2.0	2.3	Severe scab and rhizoc, a bit pointy.
AOR15166-2	3.0	3.0	-	Typy, nice skin, but some are flat on one side.
AOR15227-2	2.8	2.3	-	Some irregular shapes. Plump, typy, a bit short.
Norkotah TX278	3.0	-	-	Mostly typy, some irregular shapes, some scab.
CO13003-1RU	4.0	3.3	3.3	Small, typy, dark russet.
CO15016-1RUsto	4.0	-	-	Smaller, typy, dark russet, looks like Norkotah.
COTX08063-2Ru	2.3	2.0	-	Smaller, feathery skin, some pears and points.
COTX10080-2Ru	1.0	-	-	Pointy, small, ugly, and lots of rot! Discard.

*Typy - Visually appealing, uniform tuber shape

A12305-2adg



EARLY

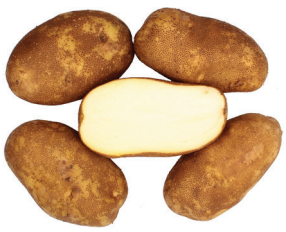
AOR11217-3

EARLY

AOR15166-2

LATE

AOR11217-3



LATE

FRESH MARKET MERIT - NEWEST LINES
2022-2024

EARLY HARVEST - Fresh Market Merit Scores

	Entry	Mean	2024	2023	2022
1	A15028-2TE	**4.1**	4.1	-	-
2	Russet Norkotah 278	**3.3**	3.5	3.4	2.1
3	Ranger Russet	**2.4**	1.8	2.6	1.9
4	OR11222-4	**2.1**	2.1	-	-
5	A10020-3sto	**2.1**	2.0	2.2	-
6	A12327-5VR	**2.1**	1.2	2.9	-
7	A16051-3	**2.1**	2.1	-	-
8	A13072-5	**2.0**	2.1	2.1	1.8
9	AOR15152-2	**1.8**	1.8	-	-
10	A15053-17	**1.6**	1.6	-	-
11	A12308-3adg	**1.6**	2.5	0.6	-
12	Russet Burbank	**1.3**	1.5	0.9	2.0
13	A15082-9	**1.3**	1.3	-	-
14	A13085-2	**1.2**	1.2	-	-
15	A13036-1	**1.2**	0.9	1.4	-
16	A15038-6	**1.1**	1.1	-	-
17	A13094-1	**0.9**	0.9	-	-
18	AOR15194-2	**0.8**	0.8	-	-

LATE HARVEST - Fresh Market Merit Scores

	Entry	Mean	2024	2023	2022
1	A12327-5VR	**2.4**	2.9	1.9	-
2	Russet Norkotah 278	**2.3**	3.1	1.4	2.5
3	Clearwater Russet	**2.3**	2.0	2.6	2.4
4	A12308-3adg	**2.3**	2.3	2.3	-
5	OR11222-4	**2.1**	2.1	-	-
6	A10020-3sto	**2.0**	1.0	2.9	2.1
7	A15053-17	**1.8**	1.8	-	-
8	A15028-2TE	**1.8**	1.8	-	-
9	A13036-1	**1.5**	1.7	0.6	2.2
10	Ranger Russet	**1.5**	1.1	1.4	2.0
11	A13085-2	**1.4**	1.4	-	-
12	A16051-3	**1.4**	1.4	-	-
13	Russet Burbank	**1.4**	1.7	0.9	1.4
14	A13072-5	**1.3**	1.8	0.9	-
15	AOR15152-2	**1.3**	1.3	-	-
16	A15082-9	**1.0**	1.0	-	-
17	A13094-1	**0.8**	0.8	-	-
18	AOR15194-2	**0.6**	0.6	-	-
19	A15038-6	**0.5**	0.5	-	-

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

FRESH MARKET MERIT - ADVANCED LINES
2020-2024

EARLY HARVEST - Fresh Market Merit Scores

	Entry	Mean	2024	2023	2022	2021	2020
1	AOR11217-3	**3.5**	3.2	3.1	3.0	4.1	4.3
2	A13072-7	**3.0**	3.5	2.6	-	-	-
3	Russet Norkotah TX278	**2.9**	3.3	2.6	3.2	3.4	1.8
4	A12305-2adg	**2.8**	2.1	3.5	2.4	3.0	3.0
5	AOR15227-2	**2.8**	1.8	3.8	-	-	-
6	AOR13064-2	**2.7**	2.0	3.7	2.0	3.4	-
7	AFA5661-8	**2.3**	1.4	2.2	3.2	3.8	0.9
8	AOR15166-2	**2.0**	1.4	2.6	-	-	-
9	Ranger Russet	**1.9**	2.1	2.1	2.5	1.4	1.4
10	A09136-9LB	**1.9**	1.9	-	-	-	-
11	A13091-5	**1.8**	1.3	2.9	1.2	-	-
12	COTX10080-2Ru	**1.8**	1.8	-	-	-	-
13	CO13003-1RU	**1.7**	0.9	2.1	2.1	-	-
14	A09086-1LB	**1.5**	1.9	1.8	1.1	1.3	-
15	CO15016-1RUsto	**1.5**	1.5	-	-	-	-
16	COTX08063-2Ru	**1.4**	1.4	1.4	-	-	-
17	Russet Burbank	**1.2**	1.8	1.4	1.0	0.7	1.3

LATE HARVEST - Fresh Market Merit Scores

	Entry	Mean	2024	2023	2022	2021	2020
1	AOR15166-2	**3.4**	3.5	3.3	-	-	-
2	A12304-1sto	**3.2**	3.0	3.1	3.7	-	-
3	Russet Norkotah TX278	**2.7**	2.5	3.5	2.5	3.1	1.8
4	A12305-2adg	**2.3**	2.3	2.3	2.4	2.1	2.3
5	AOR11217-3	**2.2**	1.0	1.6	2.6	2.8	3.1
6	Clearwater Russet	**2.2**	1.9	2.3	2.3	2.5	2.1
7	AOR15227-2	**2.0**	2.1	1.9	-	-	-
8	AOR13064-2	**1.9**	1.2	1.2	2.0	3.4	-
9	A09086-1LB	**1.9**	1.7	2.1	1.7	2.3	-
10	CO13003-1RU	**1.8**	2.1	2.1	1.2	-	-
11	A09136-9LB	**1.7**	1.7	-	-	-	-
12	AFA5661-8	**1.6**	1.1	2.0	1.6	1.6	1.5
13	COTX10080-2Ru	**1.4**	1.4	1.6	0.9	1.6	-
14	Ranger Russet	**1.2**	1.1	1.3	2.2	0.6	1.1
15	Russet Burbank	**1.1**	1.4	0.8	1.6	0.6	1.3
16	CO15016-1RUsto	**1.0**	1.0	-	-	-	-
17	A13091-5	**1.0**	1.4	0.9	0.7	-	-
18	COTX08063-2Ru	**0.8**	1.0	0.7	-	-	-
19	A13072-7	**0.8**	1.0	0.3	1.2	-	-

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

PROCESS MARKET MERIT - NEWEST LINES
2022-2024

EARLY HARVEST - Process Market Merit Scores

	Entry	Field Performance Mean	Field Performance Only* 2024	2023	2022
1	A15028-2TE	**4.1**	4.1	-	-
2	Ranger Russet	**3.5**	3.9	2.8	3.2
3	A13072-5	**3.4**	3.2	3.6	-
4	A16051-3	**3.3**	3.3	-	-
5	A15082-9	**3.3**	3.3	-	-
6	AOR15152-2	**3.1**	3.1	-	-
7	A12327-5VR	**2.8**	2.5	3.1	-
8	OR11222-4	**2.7**	2.7	-	-
9	A13036-1	**2.6**	2.7	2.5	-
10	A15053-17	**2.6**	2.6	-	-
11	Russet Burbank	**2.4**	3.9	1.2	3.4
12	A10020-3sto	**2.2**	1.6	2.7	-
13	AOR15194-2	**2.1**	2.1	-	-
14	A15038-6	**1.9**	1.9	-	-
15	Shepody	**1.8**	1.6	1.4	2.7
16	A13094-1	**1.7**	1.7	-	-
17	A13085-2	**1.4**	1.4	-	-

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		2024		2023		2022	
	Entry	Field Mean	Post Harvest Mean	Field	Post Harv	Field	Post Harv	Field	Post Harv
1	Clearwater Russet	**3.8**	**3.4**	3.9	3.0	4.1	-	3.4	3.9
2	Ranger Russet	**3.3**	**3.1**	2.4	2.8	3.7	-	3.8	3.5
3	A15082-9	**0.9**	**2.6**	0.9	2.6	-	-	-	-
4	AOR15194-2	**1.1**	**2.6**	1.1	2.6	-	-	-	-
5	A13036-1	**2.6**	**2.2**	2.9	2.2	2.3	-	-	-
6	A13094-1	**0.7**	**2.2**	0.7	2.2	-	-	-	-
7	A12308-3adg	**3.5**	**2.0**	3.4	2.0	3.7	-	-	-
8	A12327-5VR	**1.7**	**2.0**	2.5	2.0	1.0	-	-	-
9	OR11222-4	**1.7**	**2.0**	1.7	2.0	-	-	-	-
10	Russet Burbank	**2.1**	**1.9**	2.3	1.7	1.7	-	2.4	2.1
11	A13072-5	**2.6**	**1.9**	2.0	1.9	3.3	-	-	-
12	A15028-2TE	**1.2**	**1.9**	1.2	1.9	-	-	-	-
13	A15038-6	**1.0**	**1.9**	1.0	1.9	-	-	-	-
14	A10020-3sto	**2.3**	**1.7**	2.0	1.7	2.6	-	-	-
15	AOR15152-2	**1.9**	**1.7**	1.9	1.7	-	-	-	-
16	A13085-2	**1.2**	**1.5**	1.2	1.5	-	-	-	-
17	A16051-3	**1.8**	**1.1**	1.8	1.1	-	-	-	-
18	A15053-17	**1.4**	**0.7**	1.4	0.7	-	-	-	-

The dash (" - ") indicates the clone was not yet entered into the trial or data were not available. For more information on these cultivars, see the Early and Late Harvest Tri-State Trial sections in this book.

PROCESS MARKET MERIT - ADVANCED LINES
2020-2024

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

EARLY HARVEST - Process Market Merit Scores

	Entry	Field Performance Mean	Field Performance Only* 2024	2023	2022	2021	2020
1	AOR11217-3	**4.1**	3.4	4.1	3.5	4.7	4.8
2	A12305-2adg	**3.8**	2.7	4.1	3.1	4.5	4.4
3	AOR15227-2	**3.7**	3.1	4.3	-	-	-
4	A09086-1LB	**3.5**	3.3	4.6	3.2	3.0	-
5	AOR15166-2	**3.5**	3.1	3.9	-	-	-
6	AOR13064-2	**3.5**	3.1	4.4	2.1	4.2	-
7	A13072-7	**3.3**	3.8	3.2	3.0	-	-
8	Ranger Russet	**3.1**	3.4	3.9	3.0	2.4	2.7
9	COTX08063-2Ru	**2.9**	3.9	2.0	-	-	-
10	A09136-9LB	**2.9**	2.9	-	-	-	-
11	A13091-5	**2.6**	2.1	3.3	2.4	-	-
12	AFA5661-8	**2.1**	1.7	2.0	2.8	2.8	1.5
13	Shepody	**2.0**	1.7	0.8	3.0	1.4	3.2
14	Russet Burbank	**1.9**	2.1	1.8	1.8	1.2	2.7

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

LATE HARVEST - Process Market Merit Scores

		Field & Postharvest Processing Performance											
		All Years		2024		2023		2022		2021		2020	
	Entry	Field Mean	Post Harvest Mean	Field	Post Harv	Field	Post Harv	Field	Post Harv	Field	Post Harv	Field	Post Harv
1	AOR15227-2	**4.6**	**3.3**	4.4	2.9	4.7	3.7	-	-	-	-	-	-
2	A12304-1sto	**4.2**	**2.9**	3.3	2.1	3.6	2.4	4.9	3.5	4.9	3.5	-	-
3	AOR15166-2	**4.0**	**3.7**	3.4	3.1	4.6	4.3	-	-	-	-	-	-
4	A12305-2adg	**4.0**	**2.1**	4.8	1.8	4.0	1.8	3.8	3.1	3.3	1.4	4.2	2.4
5	A09086-1LB	**3.8**	**2.3**	2.9	1.6	3.4	2.7	4.3	2.8	4.7	2.1	-	-
6	AOR11217-3	**3.6**	**3.4**	2.8	3.1	4.0	3.6	3.3	4.0	3.6	2.8	4.5	3.4
7	Clearwater Russet	**3.6**	**3.0**	3.2	2.7	2.7	3.0	4.0	3.9	4.2	3.0	3.8	2.5
8	A13072-7	**3.3**	**3.3**	2.8	3.1	1.8	3.2	4.4	3.4	4.4	3.4	-	-
9	Ranger Russet	**3.1**	**2.9**	3.4	2.7	2.4	3.2	4.4	3.6	2.8	2.4	2.7	2.8
10	AOR13064-2	**3.0**	**4.2**	3.6	4.0	1.7	3.9	3.1	4.7	3.8	4.0	-	-
11	A09136-9LB	**2.6**	**3.6**	2.6	3.6	-	-	-	-	-	-	-	-
12	AFA5661-8	**2.4**	**2.7**	2.4	2.7	2.7	3.3	4.9	3.2	3.8	2.3	4.1	2.7
13	A13091-5	**2.3**	**3.9**	3.4	3.8	1.2	3.9	2.4	3.9	2.4	3.9	-	-
14	Russet Burbank	**1.6**	**1.6**	2.9	1.4	0.9	1.9	1.0	2.2	1.1	1.4	2.2	1.3

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

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.

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

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

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

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

Process Value - Methods

Early Harvest

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

Contract Assumptions:

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

Late Harvest

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

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

2024 Postharvest Procedures

Early Harvest

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

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

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

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

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

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

Late Harvest

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

Statistical Analysis

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

Evaluation of Rated Characteristics

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

5 = 1.083–1.088

4 = 1.081–1.082 and 1.089–1.091

3 = 1.080 and 1.092–1.093

2 = 1.078–1.079 and 1.094–1.095

1 = 1.076–1.077 and 1.096 or higher

0 = 1.075 or lower

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

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

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

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

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

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

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

Taste panels - were used to determine the consumer acceptance of French fries prepared from tubers of each clone. All of the clones evaluated by the taste panels were produced through classical breeding techniques. Slices (3/8" x 3/8" x length of tuber) from tubers stored at 48°F were fried in 375°F oil for 4.5 minutes. Approximately 12 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	
(Phase 2)	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**	
(Phase 2)	44°F fry color (0-5 ±1 uniformity)	6**	
	40°F fry color (0-5)	5	
	Postharvest rating =	38	(Phase 2)
		27	(Phase 1)

*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 (Phase 2 only) 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 27 points in Phase 1 or 38 points in Phase 2.

Evaluations of Non-Rated Characteristics

Reducing sugars - percent reducing sugars in tuber stem and bud ends were estimated via linear regression based on histrorical data for photovolt and reducing sugar correlations. Reducing sugars are estimated for fry color in tubers stored at 40°, 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

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.

Blanching potential - Blanching ability of tubers stored at 40°F for approximately 60 days was determined by placing center-cut potato strips into a water bath of 160°F for 10 min. Strips were then rinsed with fresh water and fried. The change in fry color from the non blanched sample shows the relative potential to leach sugars to recover fry color.

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 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.

2024 Early Harvest Tri-State Trial

Location: WSU Research Center – Othello, WA
Planting Date: March 28 Vine Kill Date: July 30
Harvest Date: August 5 Days Grown: 124

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 2024 trial compared 4 local reference varieties to 15 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): **A10020-3sto**
Process Market Standout(s): **A13072-5**

Yield and Economic Data

- **Total Yield and U.S. #1 Yield**
  Highest: A12308-3adg had the highest total yield (894 CWT/A) and the highest U.S. #1 yield (815 CWT/A). A12327-5VR had the second highest total yield (838 CWT/A) and A15053-17 had the second highest U.S. #1 yield (718 CWT/A).
  Lowest: AOR15194-2 had the lowest total yield (460 CWT/A) and the second lowest U.S. #1 yield (403 CWT/A). A13085-2 had the second lowest total yield (519 CWT/A). Shepody had the lowest U.S. #1 yield (334 CWT/A).

- **% U.S. #1's (greater than 4 oz)**
  Highest: A16051-3 and A15028-2TE (93%).
  Lowest: Shepody (57%), all others were above 79%.

- **Carton Yield (100 to 50 Count (7 to 18 oz U.S. #1 Tubers))**
  Highest: A12308-3adg (35.4 Tons/A), A16051-3 (28.2 Tons/A).
  Lowest: Shepody (9.3 Tons/A), A10020-3sto (12.6 Tons/A).

- **Gross Return ($/acre)**
  Fresh Market Highest: A12308-3adg, A15053-17, and OR11222-4.
  Fresh Market Lowest: Shepody, A10020-3sto, and AOR15194-2.
  Process Market Highest: A12308-3adg, A12327-5VR, and OR11222-4.
  Process Market Lowest: Shepody, AOR15194-2, and A10020-3sto.

2024 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	729	*ABCD*	36.5	79	15	5	57	20.6	84	30.3
Russet Burbank	760	*ABCD*	38.0	80	9	11	55	21.0	77	29.4
A10020-3sto	537	*BCD*	26.9	79	1	20	47	12.6	59	15.6
A12308-3adg	894	*A*	44.7	91	4	5	79	35.4	90	40.0
A12327-5VR	838	*A*	41.9	85	2	13	56	23.4	71	29.9
A13036-1	649	*ABCD*	32.4	87	1	11	49	16.1	64	20.7
A13072-5	768	*ABC*	38.4	87	2	10	69	26.4	83	31.9
A13085-2	519	*CD*	26.0	84	4	12	61	15.9	73	19.2
A13094-1	622	*ABCD*	31.1	88	3	9	59	18.2	75	23.6
A15028-2TE	726	*ABCD*	36.3	93	1	6	73	26.4	84	30.5
A15038-6	600	*ABCD*	30.0	85	5	10	59	17.8	81	24.3
A15053-17	821	*AB*	41.1	88	1	12	67	27.5	77	31.8
A15082-9	673	*ABCD*	33.6	90	4	6	70	23.6	88	29.5
A16051-3	730	*ABCD*	36.5	93	0	7	77	28.2	86	31.5
AOR15152-2	763	*ABC*	38.1	89	3	8	59	22.6	85	32.2
AOR15194-2	460	*D*	23.0	88	2	11	63	14.4	77	17.7
OR11222-4	819	*ABC*	40.9	86	4	11	67	27.4	82	33.5
Russet Norkotah 278	732	*ABCD*	36.6	88	2	10	58	21.1	72	26.5
Shepody	598	*ABCD*	29.9	57	14	29	31	9.3	51	15.4

ENTRY	US # 1 YIELD > 4 oz CWT/A	STATS**	> 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	569	*BCDEF*	28.4	20	57	23	1.068	0	0	0
Russet Burbank	607	*ABCDE*	30.4	25	62	13	1.070	0	3	0
A10020-3sto	423	*DEF*	21.2	39	57	3	1.059	0	0	0
A12308-3adg	815	*A*	40.8	11	73	16	1.070	0	0	0
A12327-5VR	712	*AB*	35.6	30	59	11	1.063	0	0	0
A13036-1	569	*CDEF*	28.4	44	53	4	1.073	0	0	0
A13072-5	676	*ABCD*	33.8	15	57	28	1.073	0	0	0
A13085-2	440	*CDEF*	22.0	25	53	23	1.064	0	0	0
A13094-1	546	*CDEF*	27.3	31	59	9	1.068	0	0	0
A15028-2TE	674	*ABCD*	33.7	19	67	14	1.070	0	0	0
A15038-6	513	*CDEF*	25.6	16	52	32	1.063	0	0	3
A15053-17	718	*AB*	35.9	20	58	22	1.059	0	0	3
A15082-9	604	*ABCD*	30.2	11	55	34	1.072	0	0	0
A16051-3	681	*ABCD*	34.0	14	68	17	1.062	0	0	0
AOR15152-2	682	*ABCD*	34.1	15	43	42	1.067	0	0	0
AOR15194-2	403	*EF*	20.1	22	57	21	1.069	0	0	0
OR11222-4	701	*ABC*	35.1	14	63	23	1.064	0	0	0
Russet Norkotah 278	644	*BCDEF*	32.2	33	57	10	1.066	0	0	0
Shepody	334	*F*	16.7	44	51	5	1.069	0	0	0

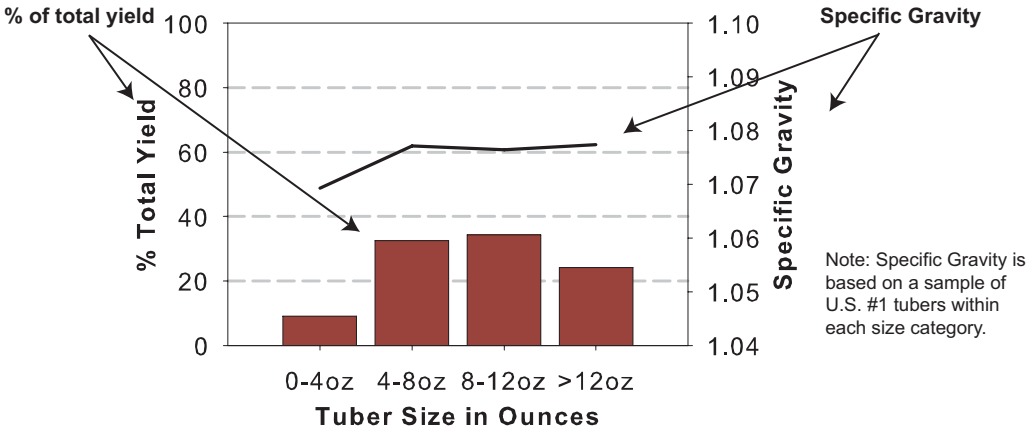
ENTRY	40 DAY STAND	60 DAY STAND	TUBER GREENING	STEMS PER PLANT	AVERAGE TUBER WEIGHT	AVERAGE TUBER NUMBER	SKIN SET	TUBER SHAPE	BRUISE (%) (8-12 oz tubers)	
	% Emerged	% Emerged	% Total Yield	Above Ground	Ounces	Tubers/Plant	1 = Poor 5 = Good	1 = Round 5 = Long	BLACKSPOT	SHATTER
Ranger Russet	42	76	0	3.1	8.6	8.4	3.0	4.0	0	0
Russet Burbank	33	89	2	2.3	7.4	10.1	3.0	4.0	3	7
A10020-3sto	0	82	0	3.1	5.5	9.7	2.3	4.0	0	10
A12308-3adg	0	93	1	2.5	9.0	9.7	3.0	3.0	0	7
A12327-5VR	40	93	0	3.8	6.5	12.6	3.0	2.3	0	40
A13036-1	9	98	0	2.2	6.1	10.4	3.3	3.0	0	57
A13072-5	7	82	4	2.5	8.2	9.1	3.0	4.0	0	20
A13085-2	0	76	1	1.1	6.9	7.3	3.0	3.0	0	27
A13094-1	18	80	1	2.5	6.9	8.8	3.0	1.7	0	10
A15028-2TE	2	96	0	2.2	7.8	9.2	3.0	3.0	3	0
A15038-6	2	73	2	1.4	8.9	6.8	2.0	3.0	0	7
A15053-17	11	89	1	2.3	7.7	10.4	3.0	2.0	0	17
A15082-9	47	87	1	2.4	9.3	7.1	3.0	3.0	0	40
A16051-3	27	91	1	1.9	8.5	8.4	4.0	3.0	0	13
AOR15152-2	11	84	3	2.6	9.3	8.2	3.0	3.0	0	0
AOR15194-2	0	84	0	2.2	7.2	6.3	3.0	3.0	0	27
OR11222-4	24	84	4	2.8	8.3	9.7	3.0	3.0	0	3
Russet Norkotah 278	40	93	0	2.5	6.8	10.5	3.3	3.0	0	0
Shepody	2	84	6	2.7	5.9	9.9	4.0	4.0	0	10

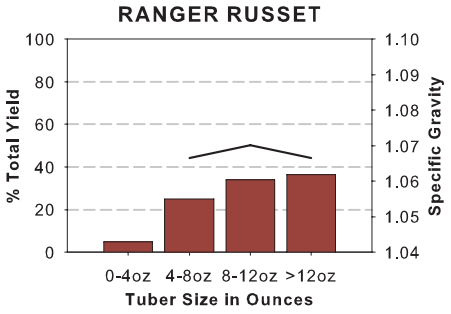
* Percent values may not total 100% due to rounding

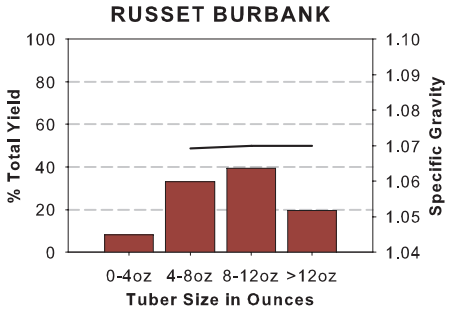
2024 Early Harvest Tri-State Trial

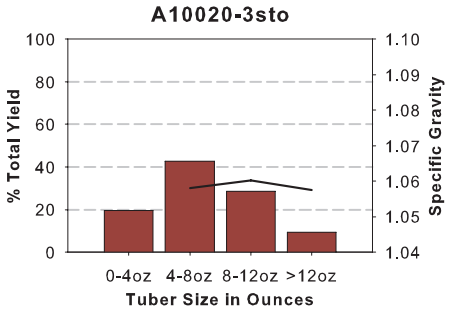
Tuber Yield and Specific Gravity Distributions

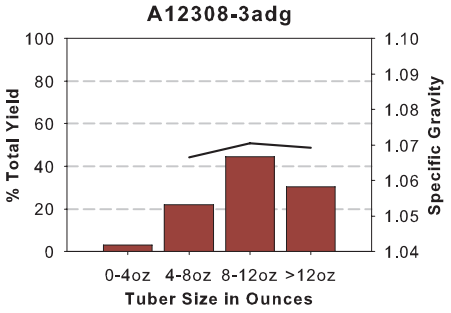
12 inch In-Row Spacing

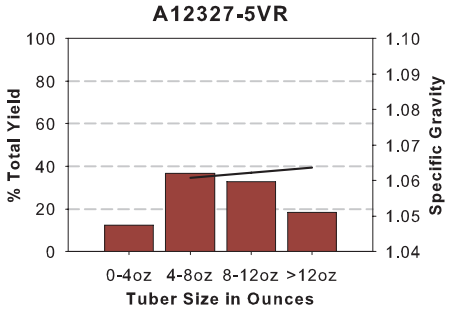


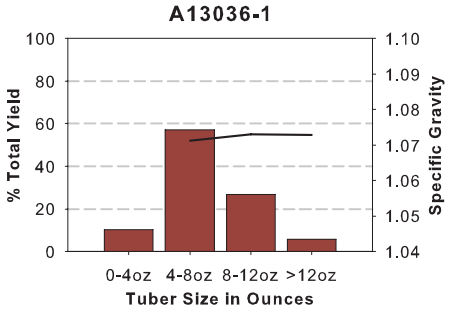


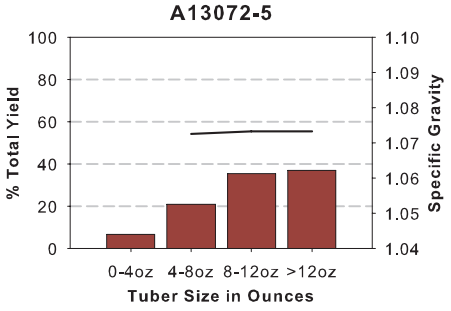


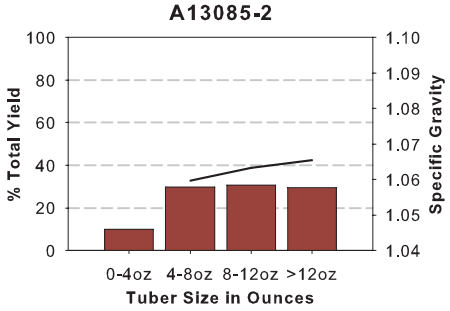


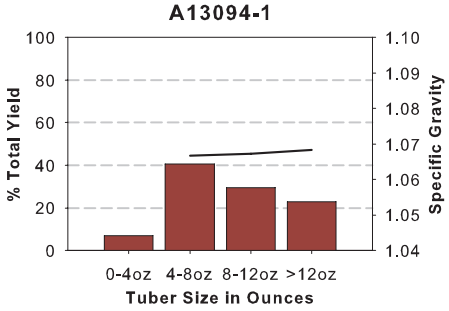


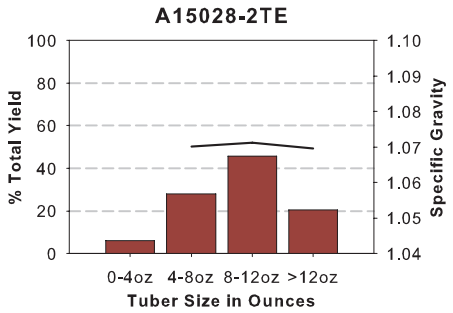


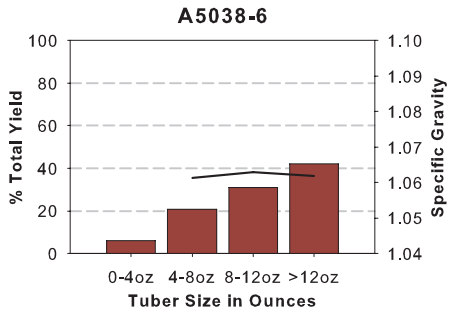


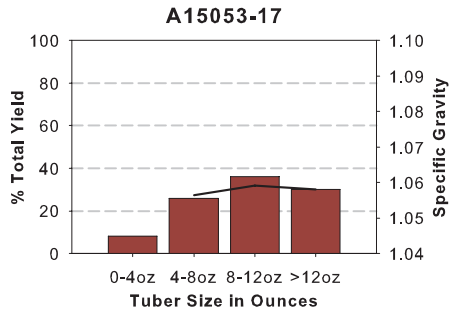


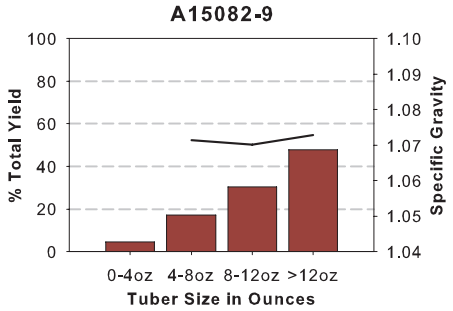


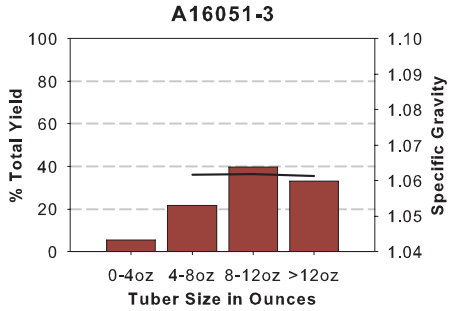


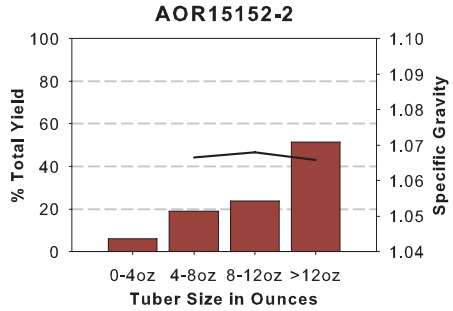

A15028-2TE
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

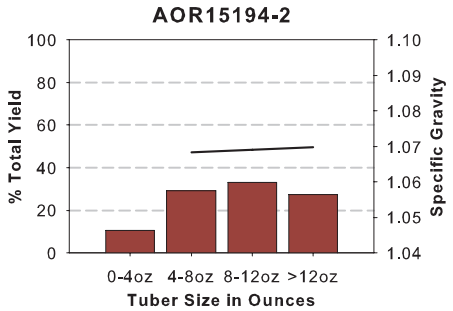

A5038-6
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

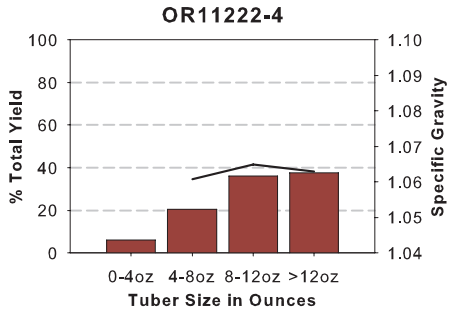

A15053-17
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

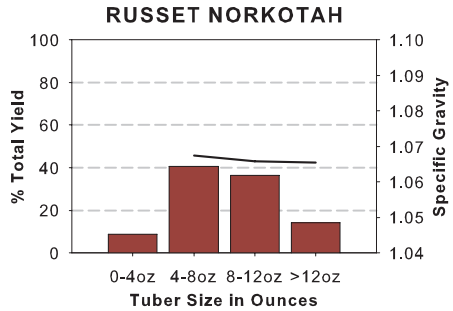

A15082-9
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

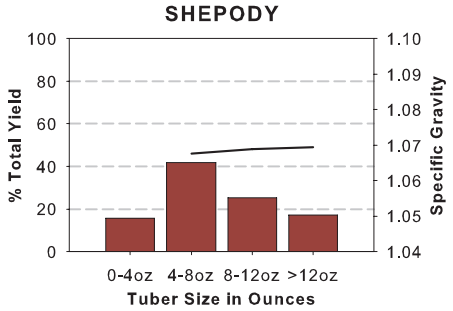

A16051-3
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

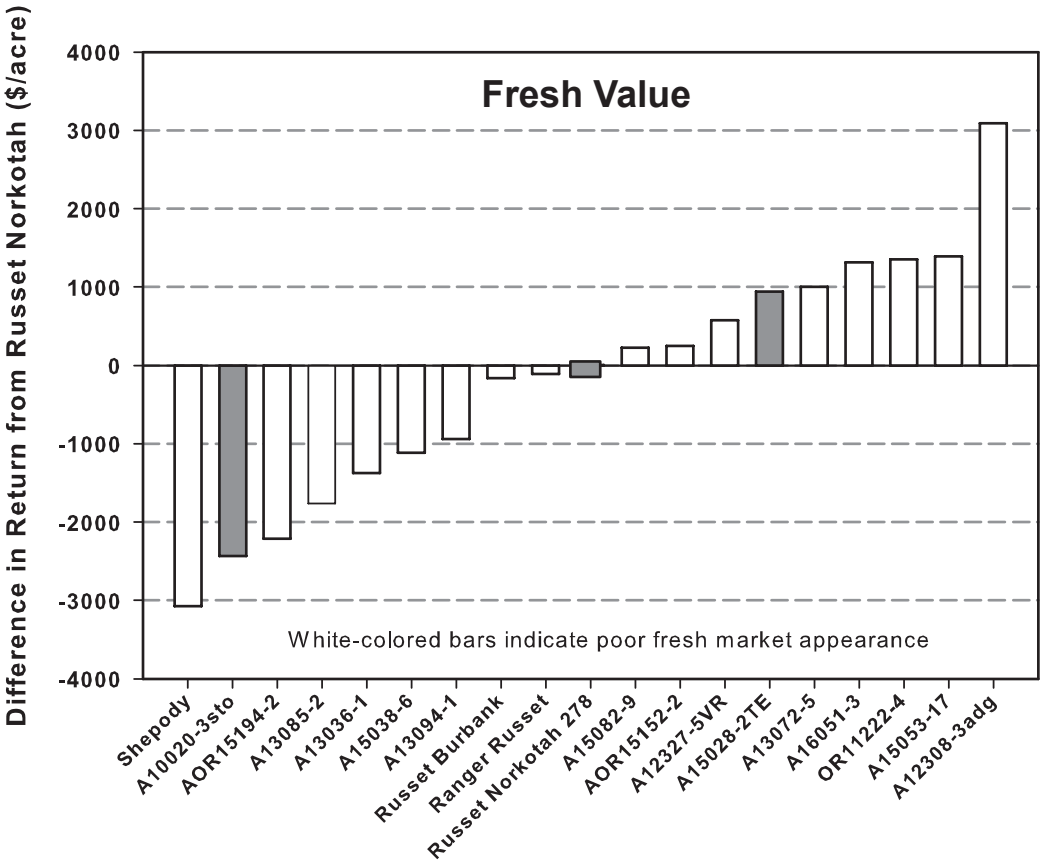

AOR15152-2
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


AOR15194-2
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


OR11222-4
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


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


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



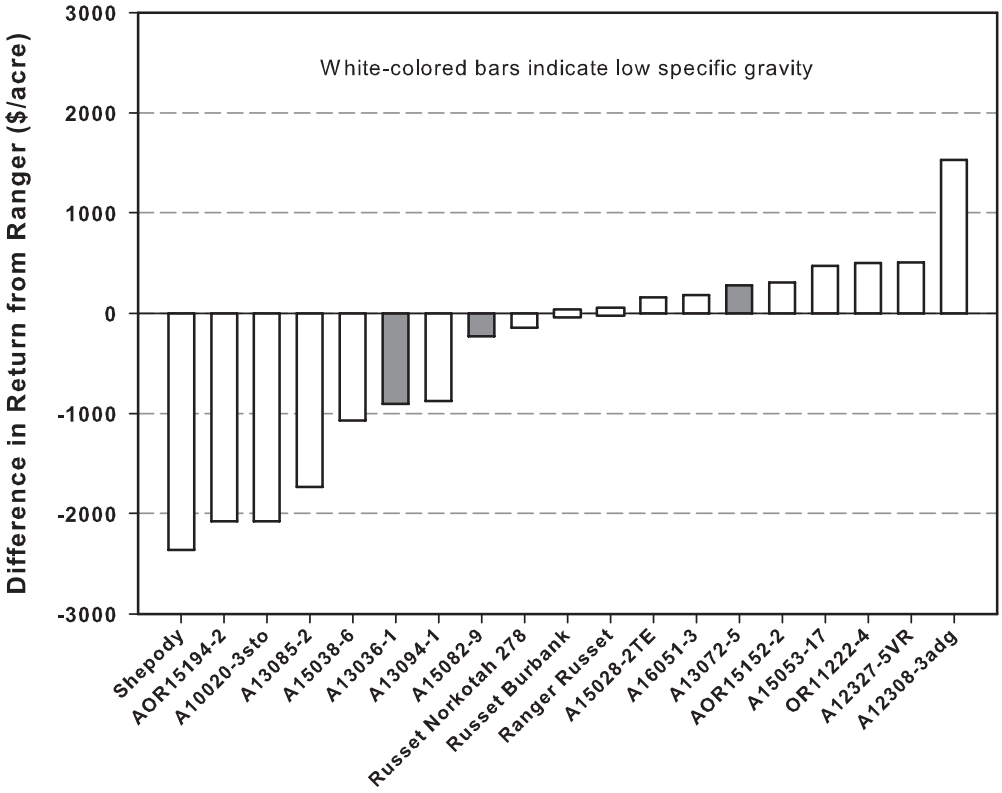
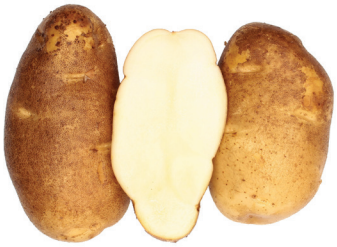


Figure 1 (top). Difference in gross return per acre (Fresh Market) from Russet Norkotah TX278 calculated by subtracting the gross return of Russet Norkotah TX278 from the gross return of the particular entry. **Figure 2 (bottom).** Difference in gross return per acre (Process Market) from Ranger Russet 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.

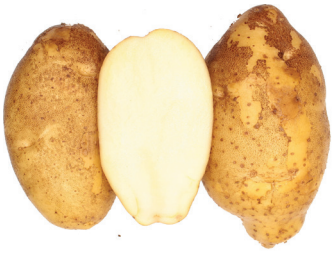
2024 Early Harvest Tri-State Trial

Tubers

Ranger Russet



Russet Burbank



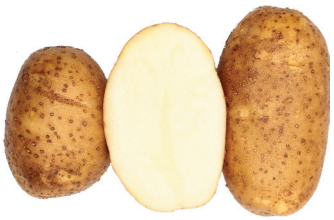
A10020-3sto

A12308-3adg

A12327-5VR

A13036-1

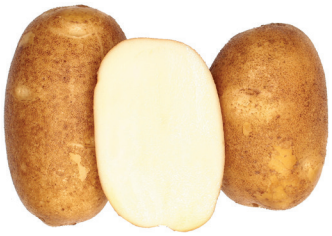
A13072-5



A13085-2

A13094-1

A15028-2TE



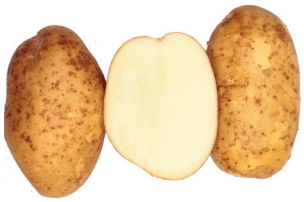
A15038-6

A15053-17

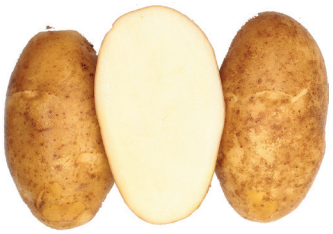
A15082-9

A16051-3

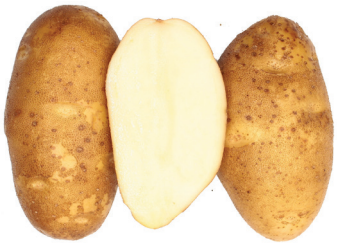
AOR15152-2



AOR15194-2

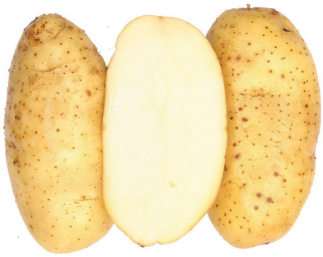


OR11222-4



Russet Norkotah TX278

Shepody



2024 Late Harvest Tri-State Trial

Location: WSU Research Center – Othello, WA
Planting Date: April 1 Vine Kill Date: September 3
Harvest Date: September 11 Days Grown: 155

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

Fresh Market Standout(s): **None**
Process Market Standout(s): **A12308-3adg and Clearwater Russet**

Yield and Economic Data

- **Total Yield and U.S. #1 Yield**
  Highest: AOR15152-2 had the highest total yield (1158 CWT/A) and A12327-5VR had the highest U.S. #1 yield (1008 CWT/A). A16051-3 had the second highest total yield (1156 CWT/A) and A12308-3adg had the second highest U.S. #1 yield (976 CWT/A).
  Lowest: AOR15194-2 had the lowest total yield (766 CWT/A) and the lowest U.S. #1 yield (639 CWT/A).

- **% U.S. #1's (greater than 4 oz)**
  Highest: A13094-1 (92%), A13036-1 (91%), and A15082-9 (90%).
  Lowest: Ranger Russet (74%).

- **Carton Yield (100 to 50 Count (7 to 18 oz U.S. #1 Tubers))**
  Highest: A12308-3adg (38.8 Tons/A), A12327-5VR (38.4 Tons/A).
  Lowest: AOR15194-2 and A15038-6 (20.2 Tons/A).

- **Gross Return ($/acre)**
  Fresh Market Highest: A12327-5VR and A12308-3adg.
  Fresh Market Lowest: AOR15194-2, A15038-6, and A15082-9.
  Process Market Highest: A12308-3adg and A12327-5VR.
  Process Market Lowest: AOR15194-2, A15038-6, and A15082-9.

2024 Phase 1 Testing
Late Harvest Tri-State Trial
Postharvest Information

Samples were obtained from the Washington, Idaho, and Oregon field adaptation trials for analysis in Pullman, WA. Seventeen numbered entries and three check cultivars were tested from ID, WA, and OR. Postharvest performance ratings of the clones compared with Clearwater Russet, Russet Burbank, and Ranger Russet appear in the tables on pages 31 and 44 with details summarized below. To increase the number of entries tested each year, the 44°F, Reconditioning, Blanched, and Taste Panel conditions were removed and the "Tri-State Postharvest" is now call "Phase 1" Postharvest Testing. The removed evaluations will remain in the now called "Phase 2" (previously known as the Late Regional Trials) and represent the most promising/advanced materials.An "*" in the summary below continues to indicate similar performance and/or ranking in trials from previous years.

- **Overall Postharvest Ratings**

  Highest scoring clones: A15082-9, Ranger Russet, AOR15194-2

  Lowest scoring clones: A15053-17, A16051-3, Russet Burbank*

- **Low Temperature Sweetening**

  Most resistant: A15082-9, A12327-5VR*, Clearwater Russet*

  Most susceptible: A15053-17, A12308-3adg, Russet Burbank*

- **Blackspot Bruise Susceptibility**

  Most resistant: A16051-3, OR11222-4, A15082-9, A15053-17

  Most susceptible: Ranger Russet*, A13072-5, A15028-2TE

- **Variability in Tuber Shape & Fry Yield (8- to 10-oz tubers)**

  Lowest L/W: A13085-2, A16051-3, A12327-5VR*

  Highest L/W: Ranger Russet*, AOR15194-2, OR11222-4

  Lowest W/Th: A12308-3adg, A13072-5, A15082-9

  Highest W/Th: Russet Burbank*, Ranger Russet, CO15016-1RUsto

  Least variable L/W Across States: AOR15194-2, A15082-9, A12308-3adg

  Most variable L/W Across States: AOR15152-2, A15053-17, A13094-1

Details

- A15082-9, Ranger Russet, and AOR15194-2 were the highest rated entries, scoring 19.7, 19.0, and 19.0 points, respectively.
- Five of the 20 evaluated clones ranked as resistant to cold sweetening with A15082-9, A12327-5VR*, Clearwater Russet*, A10020-3sto*, and COTX08063-2RU being the most resistant. At 40°F, stem end fry color was significantly darker than the prior to storage and the 48°F storage (60 days), but when averaged across the three states, 10 of the 20 entries produced fries lighter than USDA 2. Clearwater Russet* again identified as resistant to cold sweetening and two clones were numerically lighter than Clearwater Russet; A15082-9 and A12327-5VR.

- Of the five entries that were the most resistant to cold sweetening, estimated % reducing sugars after 60 days storage at either 48°F or 40°F ranged from 0.65-1.0% or 1.64-1.94%, respectively. Reducing sugars below 2% are estimated to correlate to a USDA color of 1 or lighter.

- For the WA trial, 15/20 entries stored at 48°F and 9/20 entries stored at 40°F produced non-uniform fry color (bud to stem end photovolt difference ≥9). For the OR trial, 0/20 entries stored at 48°F and 1/20 entries stored at 40°F produced non-uniform fry color. For the ID trial, 6/20 entries stored at 48°F and 3/15 entries stored at 40°F produced non-uniform fry color. All entries did not maintain color uniformity between states and storage temperatures, though A15082-9 and AOR15194-2 were the most consistent and only exhibiting non-uniformity after 60-days storage at 40°F in Washington grown samples (A15082-9) and at 48°F in the Idaho grown samples (AOR15194-2).

- Retention of process quality during storage of A12308-3adg, A13072-5, OR11222-4, Clearwater Russet*, Russet Burbank*, and Ranger Russet* at 40°F (60 days) was highly variable across production sites. By contrast, growing location had the least effect on the change in fry color of A13036-1 (best), A13085-2, and COTX08063-2RU following 60 days at 40°F.

- A15053-17, A16051-3, and Russet Burbank* received the lowest overall postharvest scores. Low specific gravity and/or poor fry color after 60-days storage at 40°F were reoccurring problems for these clones in all three states.

- Averaged (across states) specific gravity for Russet Burbank was the only entry which was too low for frozen process contracts (1.074). Alternatively, COTX08063-2Ru had very high gravities (1.103). The gravities of the other entries ranged from 1.075 to 1.093 when averaged across states. When averaged by state, across the 20 entries, gravities were 1.077 (WA), 1.085 (ID), and 1.084 (OR), higher for WA and ID compared to the 2023 season (1.076 and 1.080, respectively).

- In addition to rating overall bruise susceptibility, blackspot bruise severity was rated from 1 to 5 (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). Ranger Russet*, A13072-5, A15028-2TE, and AOR15194-2 were the most susceptible, scoring 94.4%, 90.3%, 65.3%, and 65.3% bruise (stem end), respectively, in the controlled impact study. These entries also had the highest bruise severity, averaging 2.6-3.6 out of 5. A16051-3, OR11222-4, A15082-9, and A15053-17 were the most resistant, averaging 18.1%, 23.6%, 27.8%, and 27.8% bruise (stem end), respectively, and averaging a 1.4-1.7 out of 5 severity rating.

- The 8- to 10-oz tubers of A13085-2, A16051-3, and A12327-5VR had the lowest length to width ratios (avg. L/W=1.50 across states), the same as the average for the roundest entries in last year's trial. The range in L/W was 1.32 (A13094-1 from WA) to 2.06 (Ranger Russet from ID). Averaged across states, yield of 3-inch or longer French fries ranged from 81% to 92% by tuber fresh weight. AOR15152-2, A15053-17, and A13094-1 had the greatest variation in L/W ratio; usable fry yields ranged from 83% to 85% across production sites for these entries. The average difference in W/Th was minimal (max. 0.06) among all entries and production sites (more consistent than the 2023 crop of 0.15). A15082-9, A12308-3adg, A13072-5, and A15038-6 had the most consistent width to thickness ratio (ca. 1.09) and Russet Burbank*, CO15016-1RUsto, and Ranger Russet were the least consistent (ca. 1.16). No entries passed the cut-off limit of 1.2.

- Following 60 days at 48°F (averaged across states), 90% of COTX08063-2RU tubers were sprouting with an average sprout length of 0.3-inches. The next most sprouted entries on average were, A10020-3sto (88%), A15053-17 (73%), and OR11222-4 (73%) with sprout lengths of 0.7, 0.7, and 0.5-inches, respectively. This compares to 0% of Russet Burbank tubers with no sprouts. OR samples were on average the most sprouted (68%), followed by WA (57%), then ID (10%); sprout lengths were 1.1, 0.5, and 0.1-inches, respectively.

Overall Phase 1 (LTS) Postharvest Merit Scores

	2024 Phase 1 (LTS) Postharvest Merit Scores				3 state
	Clone	WA	ID	OR	Average
14	A15082-9	2.6	4.6	3.7	3.6
2	Ranger Russet	2.8	3.7	4.1	3.5
17	AOR15194-2	2.6	3.5	4.4	3.5
1	Clearwater Russet	3.0	3.0	4.4	3.5
4	A10020-3sto	1.7	4.3	4.1	3.3
7	A13036-1	2.2	3.3	4.1	3.2
19	CO15016-1RUsto	2.0	3.5	3.9	3.1
5	A12308-3adg	2.0	3.5	3.7	3.1
6	A12327-5VR	2.0	3.5	3.5	3.0
10	A13094-1	2.2	3.7	3.1	3.0
20	COTX08063-2Ru	1.9	3.5	3.5	3.0
18	OR11222-4	2.0	2.8	3.7	2.8
9	A13085-2	1.5	3.9	2.8	2.7
11	A15028-2TE	1.9	3.7	2.4	2.7
16	AOR15152-2	1.7	2.2	4.1	2.7
12	A15038-6	1.9	2.8	3.1	2.6
8	A13072-5	1.9	2.0	3.5	2.5
13	A15053-17	0.7	3.0	2.8	2.2
15	A16051-3	1.1	2.2	3.1	2.2
3	Russet Burbank	1.7	1.9	2.6	2.0

Members of the Blauer group plant in early spring.

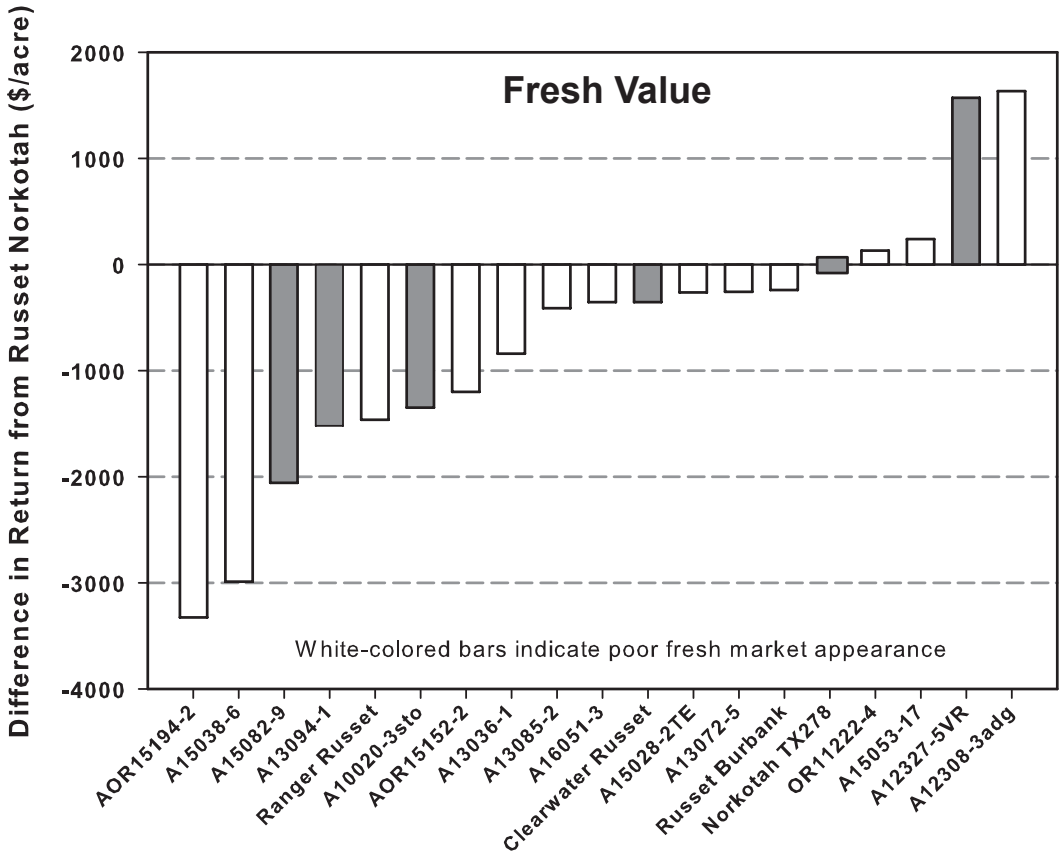
2024 Late Harvest Tri-State Trial Summaries

ENTRY	TOTAL YIELD			US # 1's* > 4 oz	US # 2's* > 4 oz	Culls* & < 4 oz	CARTON YIELD 100-50 count (US 1's 7-18 oz)		PROCESS YIELD US 1's and 2's > 6 oz	
	CWT/A	STATS**	Tons/A	% of Total Yield			% of Total Yield	Tons/A	% of Total Yield	Tons/A
Clearwater Russet	996	*ABCDE*	49.8	89	2	9	61	30.2	77	38.2
Ranger Russet	973	*BCDEF*	48.6	74	17	9	51	25.0	82	40.0
Russet Burbank	1111	*AB*	55.5	77	12	11	54	30.0	81	44.7
A10020-3sto	911	*CDEFG*	45.6	86	4	10	58	26.3	75	34.2
A12308-3adg	1110	*AB*	55.5	88	6	6	70	38.8	88	48.9
A12327-5VR	1142	*A*	57.1	88	3	9	67	38.4	82	46.7
A13036-1	864	*DEFG*	43.2	91	2	6	68	29.4	82	35.6
A13072-5	1068	*ABC*	53.4	84	4	13	58	30.9	82	43.9
A13085-2	931	*CDEFG*	46.6	88	2	10	68	31.5	80	37.3
A13094-1	798	*FG*	39.9	92	0	8	67	26.9	81	32.5
A15028-2TE	929	*CDEFG*	46.5	89	1	10	69	32.2	82	38.2
A15038-6	855	*DEFG*	42.8	88	5	7	47	20.2	87	37.3
A15053-17	1033	*ABCD*	51.6	88	2	10	63	32.6	79	40.7
A15082-9	827	*EFG*	41.4	90	2	7	59	24.4	89	36.8
A16051-3	1156	*A*	57.8	77	1	22	54	31.1	75	43.2
AOR15152-2	1158	*A*	57.9	77	6	17	47	27.2	77	44.6
AOR15194-2	766	*G*	38.3	83	2	15	53	20.2	78	29.9
OR11222-4	1075	*ABC*	53.8	79	4	17	61	32.7	77	41.3
Norkotah TX278	996	*ABCDE*	49.8	87	2	11	65	32.2	78	38.8

ENTRY	US # 1 YIELD > 4 oz		> 4 oz	4-7 oz*	7-14 oz*	> 14 oz*	> 4 oz SPECIFIC GRAVITY	INTERNAL DEFECTS (%) (8-12 oz tubers)		
	CWT/A	STATS**	Tons/A	%				% HH	% BC	% IBS
Clearwater Russet	889	*ABCD*	44.4	25	56	19	1.086	0	0	13
Ranger Russet	717	*DE*	35.8	20	54	27	1.081	0	0	0
Russet Burbank	859	*ABCD*	42.9	15	53	32	1.079	0	0	0
A10020-3sto	781	*BCDE*	39.1	28	56	17	1.079	0	0	5
A12308-3adg	976	*AB*	48.8	11	61	29	1.082	0	0	0
A12327-5VR	1008	*A*	50.4	19	65	16	1.076	0	0	0
A13036-1	790	*BCDE*	39.5	21	60	19	1.084	0	0	10
A13072-5	894	*ABCD*	44.7	9	49	41	1.088	0	0	0
A13085-2	818	*ABCDE*	40.9	20	64	16	1.069	0	0	0
A13094-1	734	*CDE*	36.7	18	59	23	1.076	0	0	3
A15028-2TE	829	*ABCDE*	41.5	15	64	20	1.076	0	0	0
A15038-6	753	*CDE*	37.6	11	36	53	1.069	3	0	0
A15053-17	914	*ABC*	45.7	20	51	29	1.064	0	0	0
A15082-9	751	*CDE*	37.5	7	37	56	1.074	0	0	0
A16051-3	886	*ABCD*	44.3	7	44	49	1.077	0	0	0
AOR15152-2	890	*ABCD*	44.5	13	43	44	1.085	0	0	10
AOR15194-2	639	*E*	32.0	13	45	42	1.087	0	0	0
OR11222-4	855	*ABCD*	42.7	14	55	31	1.079	0	0	0
Norkotah TX278	861	*ABCD*	43.1	20	61	18	1.079	0	0	0

ENTRY	40 DAY STAND	50 DAY STAND	STEMS PER PLANT	TUBER GREENING	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	Above Ground	% Total Yield	Ounces	Tubers/Plant			BLACKSPOT	SHATTER
Clearwater Russet	64	92	2.9	1	7.7	11.6	4.0	3.0	58	58
Ranger Russet	91	91	2.4	2	9.1	9.7	4.0	4.0	100	27
Russet Burbank	88	92	2.2	3	8.9	11.2	4.0	4.0	88	70
A10020-3sto	8	89	3.0	0	7.3	11.2	4.0	3.3	42	75
A12308-3adg	53	94	2.5	1	9.6	10.4	3.0	3.0	46	55
A12327-5VR	91	97	3.4	2	8.1	12.7	4.0	2.0	21	88
A13036-1	38	91	2.4	2	8.2	9.5	4.0	2.8	71	85
A13072-5	72	88	2.2	9	10.1	9.5	4.0	3.0	92	60
A13085-2	34	92	1.9	1	8.3	10.1	4.0	3.3	67	73
A13094-1	77	95	2.0	1	8.1	8.9	3.0	2.0	25	65
A15028-2TE	38	98	1.9	3	8.0	10.5	4.0	2.5	58	50
A15038-6	28	88	1.9	2	10.9	7.1	3.0	3.0	13	58
A15053-17	80	95	2.2	3	8.1	11.5	4.0	3.0	8	83
A15082-9	80	92	2.0	3	11.0	6.8	3.0	3.0	42	83
A16051-3	86	97	1.8	3	11.0	9.5	3.0	3.0	33	90
AOR15152-2	83	94	2.4	5	10.4	10.0	3.0	3.3	42	48
AOR15194-2	27	84	2.3	6	8.7	7.9	3.0	3.0	46	89
OR11222-4	81	91	2.2	8	8.7	11.1	3.0	3.3	0	20
Norkotah TX278	80	95	2.4	4	7.9	11.5	4.0	3.0	NA	25

* Percent values may not total 100% due to rounding



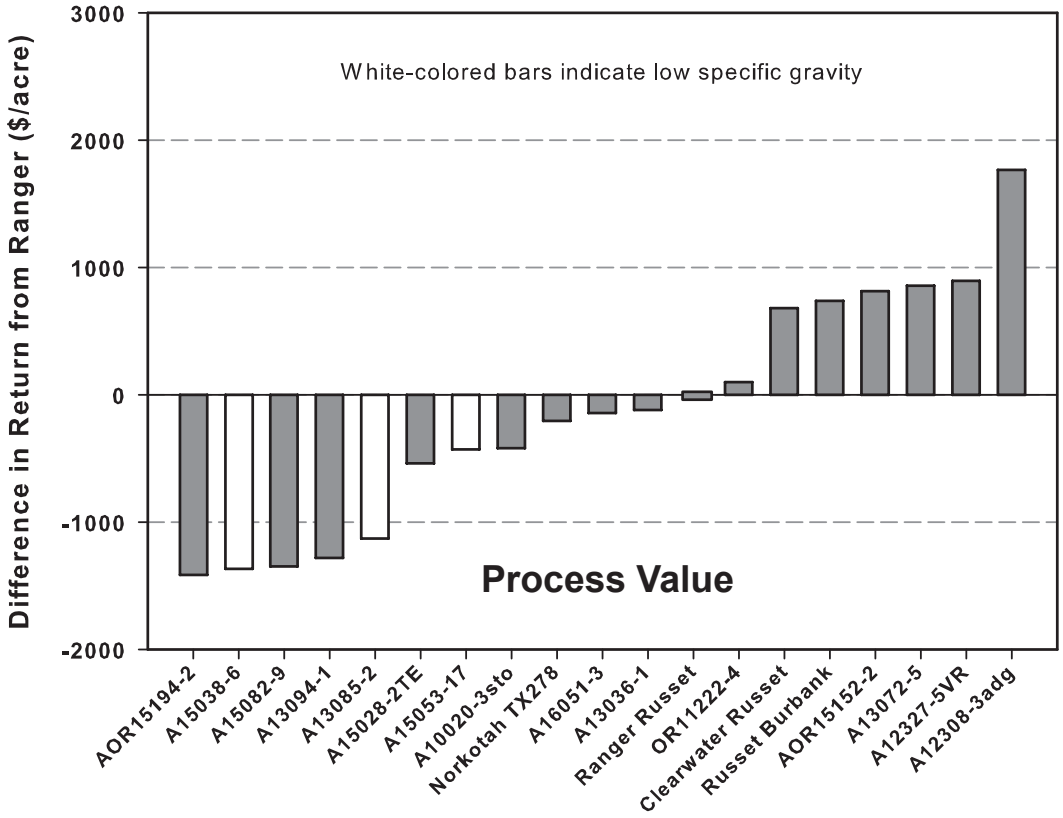
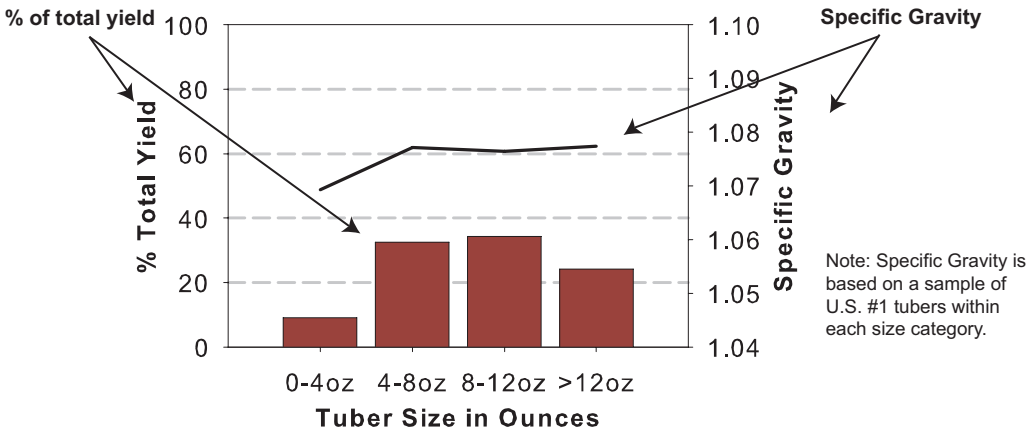


Figure 1 (top). Difference in gross return per acre (Fresh Market) from Russet Norkotah TX278 calculated by subtracting the gross return of Norkotah TX278 from the gross return of the particular entry. Entries with the white-colored bars may not appeal to fresh market consumers due to undesirable shape 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.

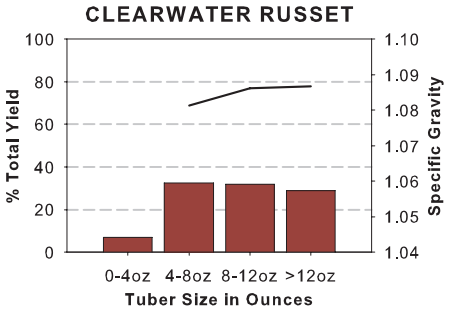
2024 Late Harvest Tri-State Trial

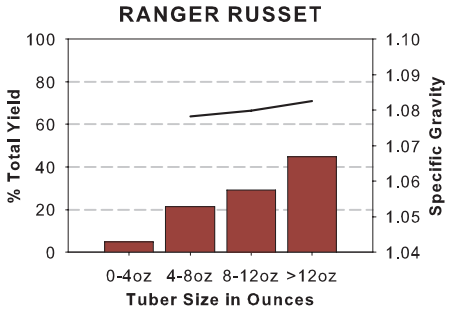
Tuber Yield and Specific Gravity Distributions

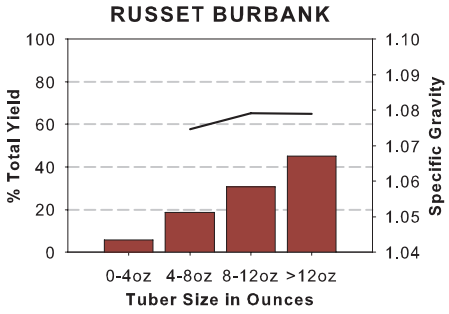
11 inch In-Row Spacing

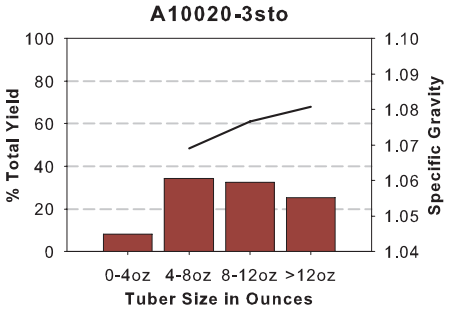


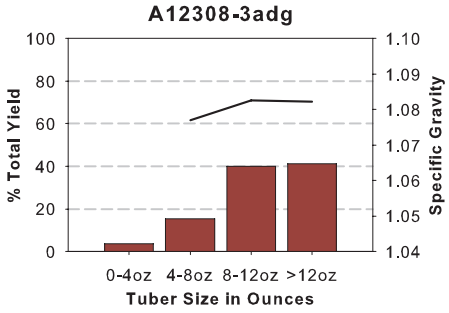
Note: Specific Gravity is based on a sample of U.S. #1 tubers within each size category.

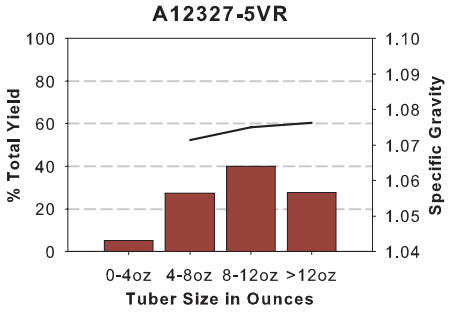


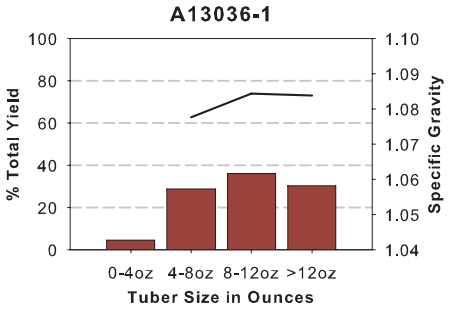


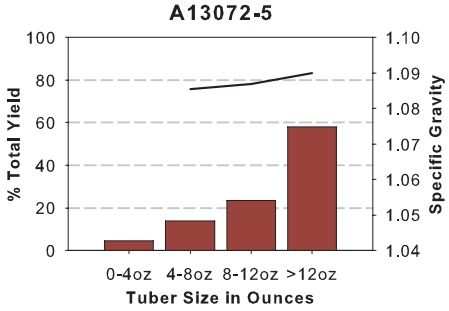


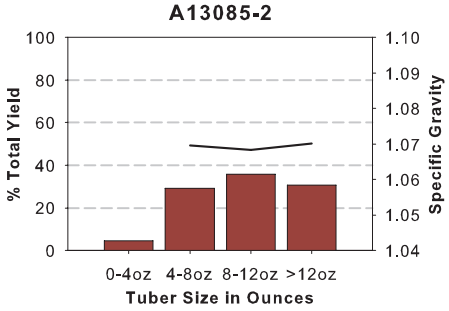


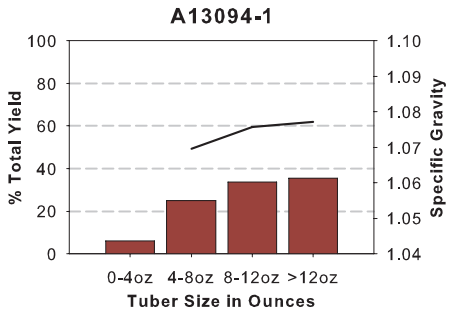


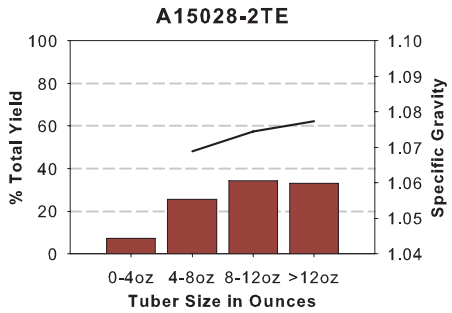


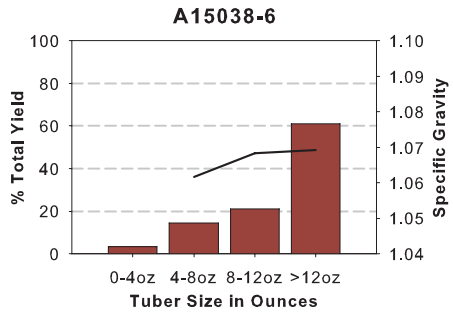


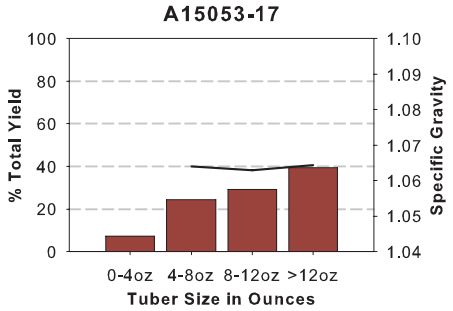


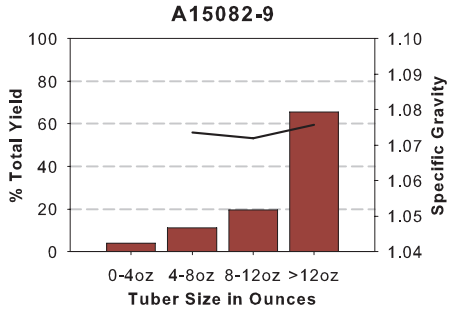


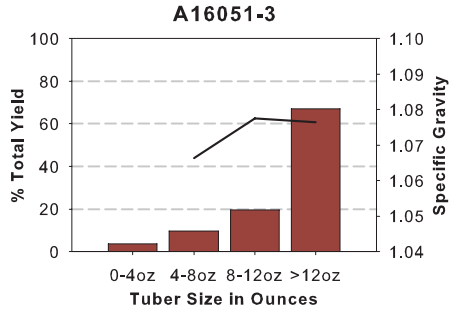

A13094-1
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

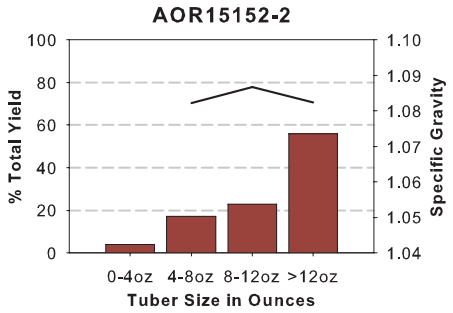

A15028-2TE
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

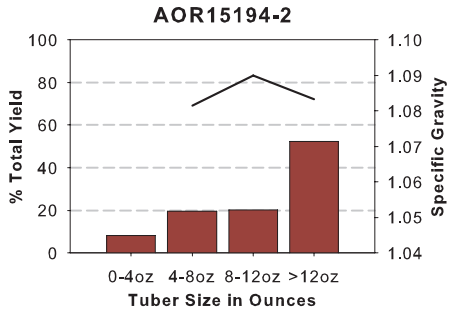

A15038-6
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

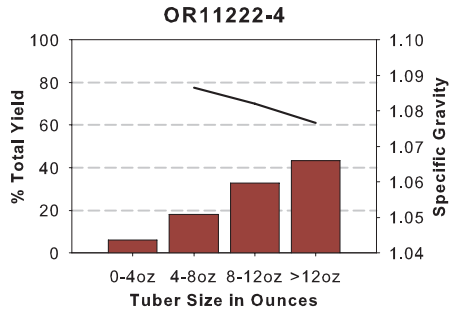

A15053-17
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

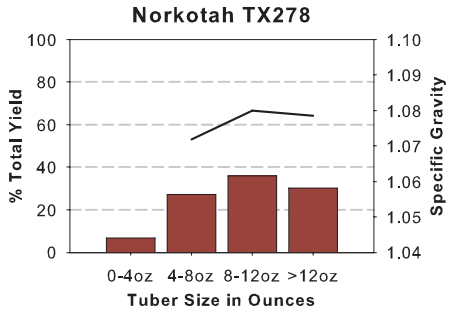

A15082-9
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

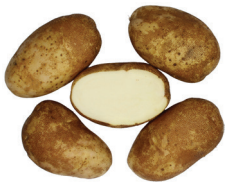
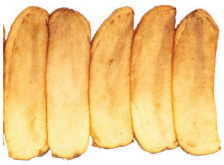
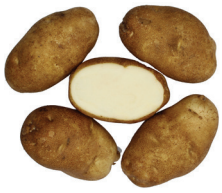
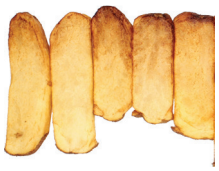
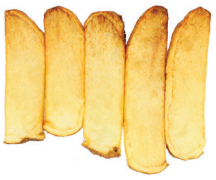
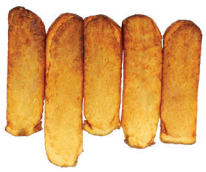
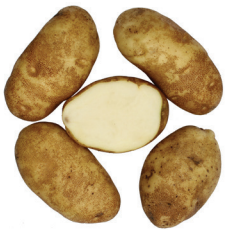
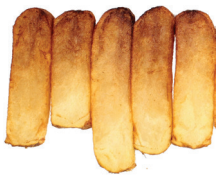
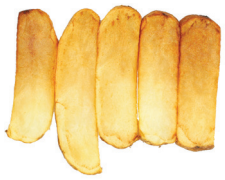
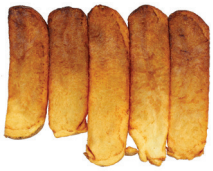
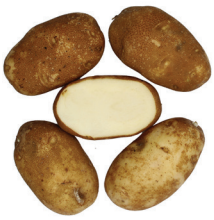
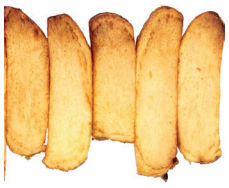
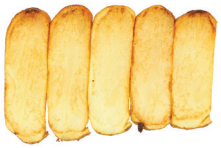
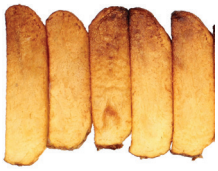
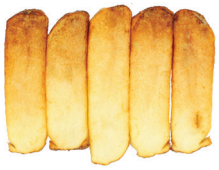
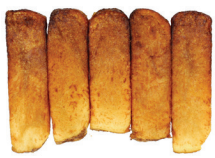

A16051-3
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

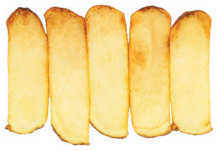
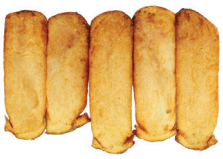
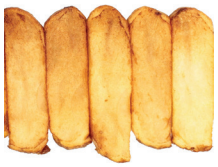
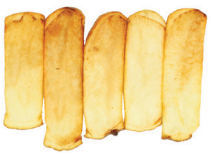
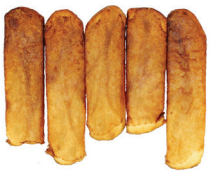
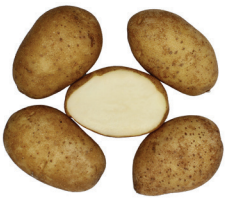
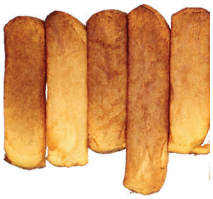
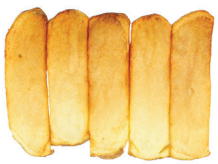
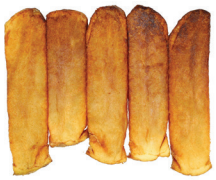
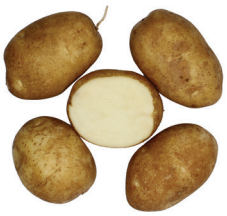
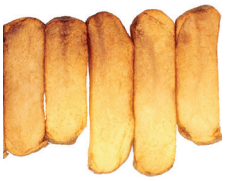
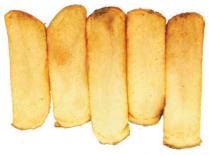
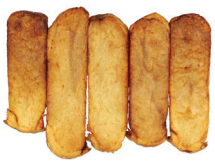
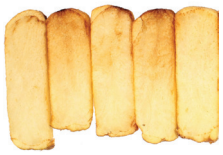
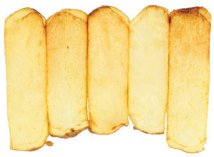
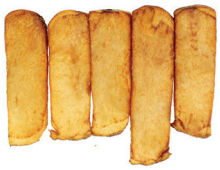

AOR15152-2
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

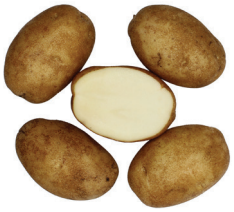
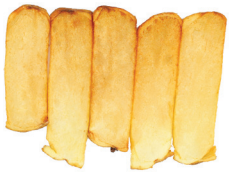
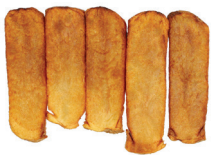
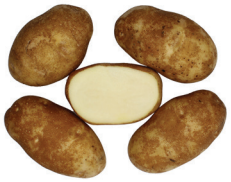
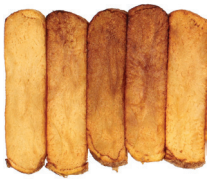
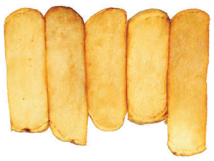
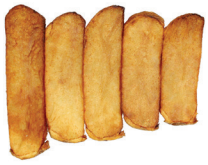
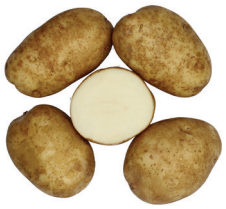
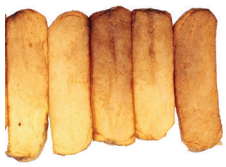
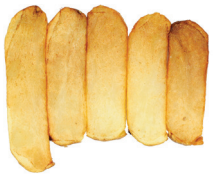
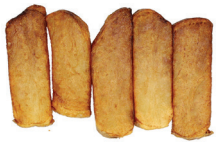
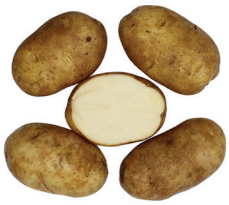
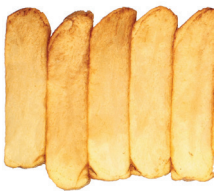
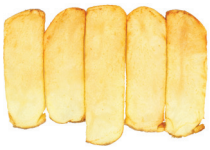
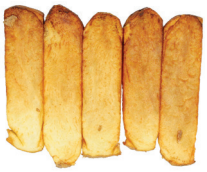
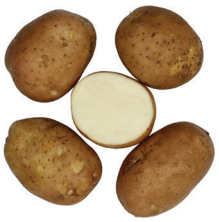
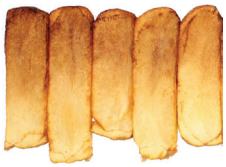
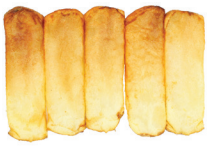

AOR15194-2
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

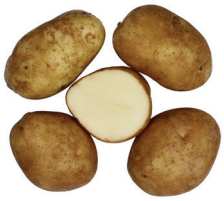
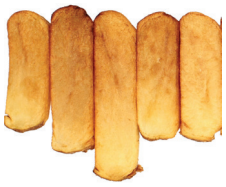
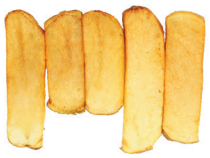
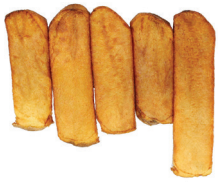
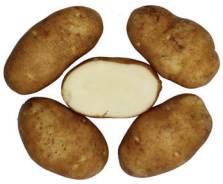
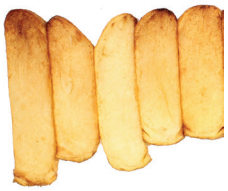
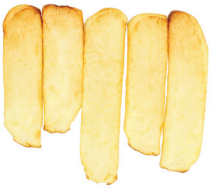
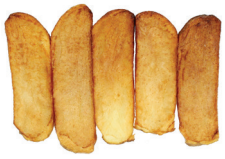
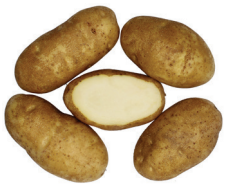
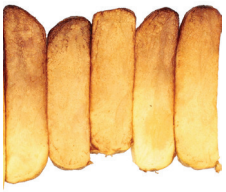
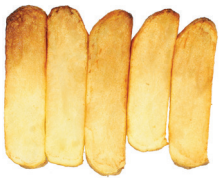
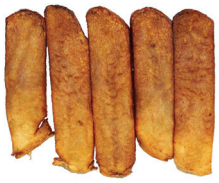
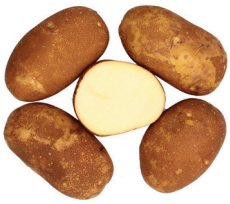
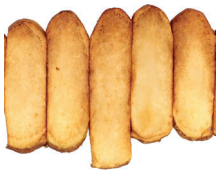
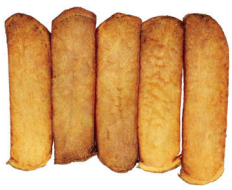
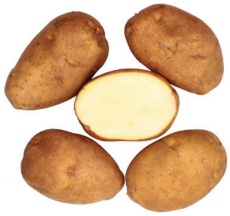
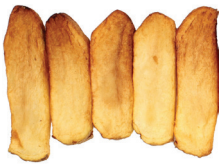
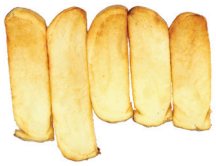
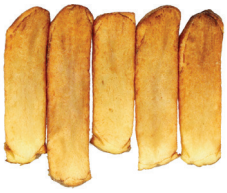

OR11222-4
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


Norkotah TX278
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

Tubers	Initial Fries	48º F Storage	40º F Storage	Phase 1 Comments
Clearwater Russet				
				**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = relatively dark, non-uniform; 40°F = unacceptably dark, non-uniform.
Ranger Russet				
				**Tubers:** Oblong to long tubers. Good skin set; moderate eye depth. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = relatively dark, non-uniform; 40°F = unacceptably dark, non-uniform.
Russet Burbank				
				**Tubers:** Oblong to long tubers. Good skin set; moderate eye depth. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = relatively dark, non-uniform; 40°F = unacceptably dark, non-uniform.
A10020-3sto				
				**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = light, non-uniform; 40°F = unacceptably dark, uniform.
A12308-3adg				
				**Tubers:** Oblong tubers. Fair skin set; shallow eyes. Fry color: At harvest= relatively dark, non-uniform; 48°F = relatively dark, non-uniform; 40°F = unacceptably dark, non-uniform.

Tubers	Initial Fries	48º F Storage	40º F Storage	Phase 1 Comments
A12327-5VR				
				**Tubers:** Round to oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = light, non-uniform; 40°F = relatively dark, non-uniform.
A13036-1				
				Tubers: Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = light, non-uniform; 40°F = unacceptably dark, non-uniform.
A13072-5				
				**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = relatively dark, non-uniform; 40°F = unacceptably dark, uniform.
A13085-2				
				**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = relatively dark, uniform; 40°F = unacceptably dark, uniform.
A13094-1				
				**Tubers:** Round to oblong tubers. Fair skin set; moderate eye depth. **Fry color:** At harvest= relatively dark, uniform; 48°F = light, non-uniform; 40°F = relatively dark, uniform.

Tubers	Initial Fries	48º F Storage	40º F Storage	Phase 1 Comments
A15028-2TE				
				**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= relatively dark, uniform; 48°F = relatively dark, uniform; 40°F = unacceptably dark, uniform.
A15038-6				
				**Tubers:** Oblong tubers. Fair skin set; shallow eyes. **Fry color:** At harvest= relatively dark, uniform; 48°F = relatively dark, uniform; 40°F = relatively dark, uniform.
A15053-17				
				**Tubers:** Oblong tubers. Good skin set; moderate eye depth. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = relatively dark, non-uniform; 40°F = unacceptably dark, uniform.
A15082-9				
				**Tubers:** Oblong tubers. Fair skin set; shallow eyes. Fry color: At harvest= relatively dark, uniform; 48°F = light, uniform; 40°F = unacceptably dark, non-uniform.
A16051-3				
				**Tubers:** Oblong tubers. Fair skin set; shallow eyes. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = relatively dark, non-uniform; 40°F = unacceptably dark, non-uniform.

Tubers	Initial Fries	48º F Storage	40º F Storage	Phase 1 Comments
AOR15152-2				
				**Tubers:** Oblong tubers. Fair skin set; moderate eye depth. **Fry color:** At harvest= relatively dark, uniform; 48°F = relatively dark, non-uniform; 40°F = unacceptably dark, uniform.
AOR15194-2				
				**Tubers:** Oblong tubers. Fair skin set; moderate eye depth. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = light, uniform; 40°F = unacceptably dark, uniform.
OR11222-4				
				**Tubers:** Oblong tubers. Fair skin set; moderate eye depth. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = relatively dark, non-uniform; 40°F = unacceptably dark, uniform.
CO15016-1RUsto				
				**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = light, non-uniform; 40°F = unacceptably dark, uniform.
COTX08063-2Ru				
				**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = light, non-uniform; 40°F = relatively dark, non-uniform.

2024 Phase 1 (LTS) Trial

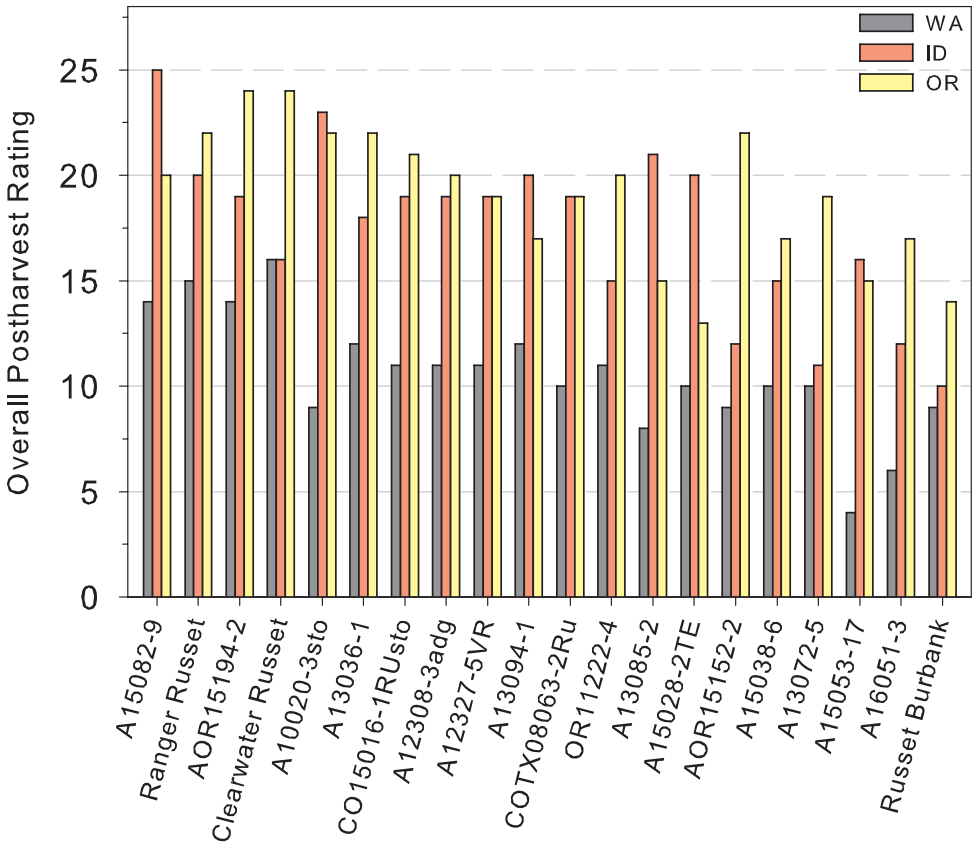
Accumulated Total Postharvest Rating of Clones

Clone	WA Rating Total §	WA Discard §§	ID Rating Total §	ID Discard §§	OR Rating Total §	OR Discard §§	3 State av. Rating Total
14 A15082-9	14.0	Sp. Gr.	25.0		20.0		19.7
2 Ranger Russet	15.0		20.0		22.0	40°F	19.0
17 AOR15194-2	14.0	Sp. Gr.	19.0		24.0		19.0
1 Clearwater Russet	16.0		16.0		24.0		18.7
4 A10020-3sto	9.0	Sp. Gr.	23.0		22.0		18.0
7 A13036-1	12.0	40°F	18.0		22.0		17.3
19 CO15016-1RUsto	11.0	40°F	19.0		21.0		17.0
5 A12308-3adg	11.0	40°F	19.0		20.0		16.7
6 A12327-5VR	11.0		19.0		19.0		16.3
10 A13094-1	12.0	Sp. Gr.	20.0		17.0	Sp. Gr.	16.3
20 COTX08063-2Ru	10.0	40°F	19.0		19.0		16.0
18 OR11222-4	11.0	Sp. Gr.	15.0		20.0		15.3
9 A13085-2	8.0	40°F,Sp. Gr.	21.0		15.0		14.7
11 A15028-2TE	10.0	40°F,Sp. Gr.	20.0		13.0	Sp. Gr.	14.3
16 AOR15152-2	9.0	40°F	12.0		22.0		14.3
12 A15038-6	10.0	Sp. Gr.	15.0	40°F	17.0		14.0
8 A13072-5	10.0	40°F	11.0		19.0		13.3
13 A15053-17	4.0	40°F,Sp. Gr.	16.0		15.0	Sp. Gr.	11.7
15 A16051-3	6.0	Sp. Gr.	12.0		17.0		11.7
3 Russet Burbank	9.0	40°F	10.0	Sp. Gr.	14.0	40°F,Sp. Gr.	11.0
Average	10.6		17.5		19.1		15.7

§ maximum rating possible = 27

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

Late Harvest Phase 1 (LTS) Postharvest Ratings



2024 Phase 1 (LTS) Trial

Entries Retained from the 2023 Trials Currently in Phase 1

Harvested fall of 2023
Held at 48° F until December 18, 2023
Stored at 44° F until analysis

Three clones were retained from the 2023 Tri-State Trial into the 2024 Phase 1 Trial (A10020-3sto, A12327-5VR, & A13036-1). When averaged across states, Clearwater produced the lightest fries (43.3 ref units) A13036-1 was the next lightest (38.2). The uniformity of fry color was unacceptable for Clearwater (ID), RR (WA & ID), RB (WA & ID), A10020-3sto (WA), & A13036-1 (ID). All entries and the check cultivars Clearwater, Ranger Russet and Russet Burbank had sprout lengths that averaged between 0.5 and 1.5 inches. RR & A12327-5VR had the longest sprouts at 1.5 inches (WA), 1.3 inches (ID), & 1.8 inches (OR).

	PHOTOVOLT READING				USDA	% REDUCING SUGAR			Sprouting	
Clone	stem	bud	avg	DIFF	COLOR	stem	bud	avg	percent	length (in.)
Washington										
1 Clearwater Russet	39.0	46.7	42.8	7.8	0	0.8	0.5	0.7	100	1.0
2 Ranger Russet	25.1	38.4	31.8	13.3	1	1.9	0.8	1.4	100	1.5
3 Russet Burbank	23.7	37.7	30.7	13.9	2	2.1	0.8	1.5	80	0.5
4 A10020-3sto	29.3	39.5	34.4	10.3	1	1.5	0.8	1.1	100	1.0
5 A12327-5VR	34.4	38.3	36.3	6.1	0	1.0	0.8	0.9	100	1.5
6 A13036-1	30.0	37.2	33.6	7.7	1	1.4	0.9	1.1	100	0.8
		$LSD_{0.05}$	*2.8*	*4.4*						
Average	30.2	39.6	34.9	9.8	0.8	1.5	0.8	1.1	97	1.0
Idaho										
1 Clearwater Russet	35.3	47.2	41.3	11.9	0	1.0	0.5	0.8	100	0.5
2 Ranger Russet	27.6	39.1	33.3	11.5	1	1.6	0.8	1.2	100	1.3
3 Russet Burbank	22.3	35.7	29.0	13.4	2	2.3	1.0	1.6	73	0.3
4 A10020-3sto	31.3	40.0	35.6	8.7	0	1.3	0.7	1.0	100	1.5
5 A12327-5VR	33.7	40.4	37.0	7.3	0	1.1	0.7	0.9	100	1.3
6 A13036-1	31.7	41.3	36.5	9.6	0	1.2	0.7	1.0	100	0.5
		$LSD_{0.05}$	*2.7*	*4.4*						
Average	30.3	40.6	35.5	10.4	0.5	1.4	0.7	1.1	96	
Oregon										
1 Clearwater Russet	44.0	47.7	45.9	4.6	0	0.6	0.5	0.6	100	0.8
2 Ranger Russet	25.9	34.8	30.3	8.9	1	1.8	1.0	1.4	100	1.8
3 Russet Burbank	33.1	37.3	35.2	4.8	0	1.1	0.9	1.0	93	0.8
4 A10020-3sto	38.5	43.8	41.2	5.3	0	0.8	0.6	0.7	100	1.8
5 A12327-5VR	34.1	35.1	34.6	4.6	0	1.1	1.0	1.0	87	1.8
6 A13036-1	43.2	46.0	44.6	3.6	0	0.6	0.5	0.6	100	0.8
		$LSD_{0.05}$	*4.1*	*2.2*						
Average	36.5	40.8	38.6	5.3	0.2	1.0	0.8	0.9	97	

Date test performed:

Washington	April 29
Idaho	April 29
Oregon	April 29

2024 Phase 1 (LTS) Trial
Prior to Storage

Clone	PHOTOVOLT READING stem	bud	ave.	rtg §	* DIFF	** USDA COLOR	*** SPECIFIC GRAVITY	rtg
Washington								
1 Clearwater Russet	27.9	45.2	36.6	**4-**	17.3	1	1.087	**5**
2 Ranger Russet	30.6	42.7	36.7	**4-**	12.2	1	1.083	**5**
3 Russet Burbank	20.6	42.4	31.5	**3-**	21.8	2	1.078	**2**
4 A10020-3sto	26.3	41.4	33.8	**3-**	15.1	1	1.071	**0**
5 A12308-3adg	17.5	41.2	29.4	**2-**	23.7	3	1.083	**5**
6 A12327-5VR	34.8	45.4	40.1	**4-**	11.1	0	1.076	**1**
7 A13036-1	26.0	38.6	32.3	**3-**	12.6	1	1.086	**5**
8 A13072-5	17.5	33.0	25.2	**2-**	15.5	3	1.088	**5**
9 A13085-2	27.6	37.2	32.4	**3-**	9.9	1	1.066	**0**
10 A13094-1	42.5	47.9	45.2	**5+**	6.5	0	1.073	**0**
11 A15028-2TE	28.2	33.0	30.6	**3+**	4.9	1	1.072	**0**
12 A15038-6	22.7	31.3	27.0	**2+**	8.8	2	1.069	**0**
13 A15053-17	19.5	32.5	26.0	**2-**	13.0	3	1.064	**0**
14 A15082-9	37.0	42.6	39.8	**4+**	5.7	0	1.074	**0**
15 A16051-3	21.2	39.5	30.3	**2-**	18.4	2	1.072	**0**
16 AOR15152-2	27.6	36.3	31.9	**3+**	8.7	1	1.076	**1**
17 AOR15194-2	29.7	43.9	36.8	**4-**	14.2	1	1.075	**0**
18 OR11222-4	22.2	41.4	31.8	**3-**	19.1	2	1.066	**0**
19 CO15016-1RUsto	29.1	40.2	34.7	**3-**	11.1	1	1.081	**4**
20 COTX08063-2Ru	25.2	41.2	33.2	**3-**	16.0	1	1.102	**1**
		$LSD_{0.05}$	*3.3*		*4.7*		*0.006*	
Average	26.7	39.8	33.3		13.3	1	1.077	
Idaho								
1 Clearwater Russet	24.3	34.8	29.6	**2-**	11.7	2	1.088	**5**
2 Ranger Russet	34.8	39.3	37.0	**4+**	4.7	0	1.091	**4**
3 Russet Burbank	25.8	33.7	29.7	**2-**	9.2	1	1.069	**0**
4 A10020-3sto	38.7	44.2	41.4	**5+**	5.6	0	1.092	**3**
5 A12308-3adg	32.1	32.8	32.4	**3+**	4.2	0	1.087	**5**
6 A12327-5VR	37.4	42.1	39.8	**4+**	5.9	0	1.079	**2**
7 A13036-1	30.4	41.2	35.8	**4-**	10.9	1	1.089	**4**
8 A13072-5	22.1	31.7	26.9	**2-**	9.7	2	1.094	**2**
9 A13085-2	36.8	40.3	38.5	**4+**	5.2	0	1.081	**4**
10 A13094-1	28.9	36.9	32.9	**3+**	7.9	1	1.090	**4**
11 A15028-2TE	34.8	34.6	34.7	**3+**	3.1	0	1.085	**5**
12 A15038-6	24.6	26.5	25.5	**2+**	4.9	2	1.081	**4**
13 A15053-17	32.3	37.1	34.7	**3+**	5.5	0	1.078	**2**
14 A15082-9	49.4	50.0	49.7	**5+**	2.8	0	1.081	**4**
15 A16051-3	25.0	35.1	30.1	**2-**	11.6	1	1.081	**4**
16 AOR15152-2	22.5	33.6	28.0	**2-**	11.2	2	1.087	**5**
17 AOR15194-2	31.1	34.9	33.0	**3+**	8.6	0	1.084	**5**
18 OR11222-4	24.3	34.2	29.2	**2-**	11.0	2	1.082	**4**
19 CO15016-1RUsto	36.6	42.2	39.4	**4+**	6.9	0	1.078	**2**
20 COTX08063-2Ru	37.2	49.0	43.1	**5-**	11.9	0	1.104	**1**
		$LSD_{0.05}$	*3.7*		*3.8*		*0.005*	
Average	31.5	37.7	34.6		7.6	1	1.085	
Oregon								
1 Clearwater Russet	52.2	47.5	49.9	**5+**	5.5	0	1.091	**4**
2 Ranger Russet	44.5	47.4	45.9	**5+**	4.6	0	1.088	**5**
3 Russet Burbank	42.0	42.9	42.4	**5+**	3.5	0	1.075	**0**
4 A10020-3sto	49.6	48.6	49.1	**5+**	4.7	0	1.089	**4**
5 A12308-3adg	44.9	47.1	46.0	**5+**	5.0	0	1.093	**3**
6 A12327-5VR	44.4	43.2	43.8	**5+**	6.0	0	1.078	**2**
7 A13036-1	48.1	47.2	47.6	**5+**	4.0	0	1.086	**5**
8 A13072-5	43.6	43.3	43.4	**5+**	4.2	0	1.098	**1**
9 A13085-2	35.9	38.7	37.3	**4+**	6.7	0	1.078	**2**
10 A13094-1	50.8	48.9	49.8	**5+**	3.4	0	1.075	**0**
11 A15028-2TE	39.8	36.6	38.2	**4+**	3.3	0	1.074	**0**
12 A15038-6	36.5	32.7	34.6	**3+**	4.2	0	1.082	**4**
13 A15053-17	38.4	36.9	37.7	**4+**	3.5	0	1.073	**0**
14 A15082-9	48.9	45.7	47.3	**5+**	3.8	0	1.078	**2**
15 A16051-3	40.9	35.2	38.0	**4-**	9.9	0	1.080	**3**
16 AOR15152-2	42.9	39.7	41.3	**5+**	4.4	0	1.087	**5**
17 AOR15194-2	52.7	48.3	50.5	**5+**	4.4	0	1.084	**5**
18 OR11222-4	41.9	42.7	42.3	**5+**	4.0	0	1.079	**2**
19 CO15016-1RUsto	49.3	45.9	47.6	**5+**	4.7	0	1.080	**3**
20 COTX08063-2Ru	49.2	49.5	49.3	**5+**	3.3	0	1.102	**1**
		$LSD_{0.05}$	*3.3*		*3.3*		*0.005*	
Average	44.8	43.4	44.1		4.7	0	1.084	

Date test performed:

Washington	Oct. 8	Sept. 30
Idaho	Oct. 9	Oct. 2
Oregon	Oct. 10	Oct. 7

§ 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.

2024 Phase 1 (LTS) Trial

Stored at 48°F after Arrival

	Clone	BRUISE POTENTIAL (percent) stem	[color 5=darkest] stem
	Washington		
1	Clearwater Russet	58	2.5
2	Ranger Russet	100	3.9
3	Russet Burbank	88	3.5
4	A10020-3sto	42	1.9
5	A12308-3adg	46	1.9
6	A12327-5VR	21	1.4
7	A13036-1	71	2.7
8	A13072-5	92	3.7
9	A13085-2	67	2.4
10	A13094-1	25	1.5
11	A15028-2TE	58	2.4
12	A15038-6	13	1.3
13	A15053-17	8	1.2
14	A15082-9	42	1.9
15	A16051-3	33	1.7
16	AOR15152-2	42	1.9
17	AOR15194-2	46	2.0
18	OR11222-4	0	1.0
19	CO15016-1RUsto	58	2.5
20	COTX08063-2Ru	71	2.7
	$LSD_{0.05}$	*28*	
	Average	49	2.2
	Idaho		
1	Clearwater Russet	46	2.2
2	Ranger Russet	88	3.5
3	Russet Burbank	29	1.7
4	A10020-3sto	75	3.0
5	A12308-3adg	50	2.1
6	A12327-5VR	54	2.3
7	A13036-1	71	3.0
8	A13072-5	92	3.9
9	A13085-2	50	2.2
10	A13094-1	50	2.3
11	A15028-2TE	79	3.2
12	A15038-6	54	2.5
13	A15053-17	63	2.6
14	A15082-9	38	2.0
15	A16051-3	0	1.0
16	AOR15152-2	42	2.0
17	AOR15194-2	71	3.0
18	OR11222-4	29	1.8
19	CO15016-1RUsto	4	1.1
20	COTX08063-2Ru	17	1.3
	$LSD_{0.05}$	*30*	
	Average	50	2.3
	Oregon		
1	Clearwater Russet	4	1.1
2	Ranger Russet	96	3.5
3	Russet Burbank	25	1.5
4	A10020-3sto	54	2.2
5	A12308-3adg	63	2.4
6	A12327-5VR	21	1.4
7	A13036-1	38	1.8
8	A13072-5	88	3.2
9	A13085-2	29	1.6
10	A13094-1	25	1.5
11	A15028-2TE	58	2.3
12	A15038-6	54	2.1
13	A15053-17	13	1.3
14	A15082-9	4	1.1
15	A16051-3	21	1.5
16	AOR15152-2	58	2.3
17	AOR15194-2	79	2.9
18	OR11222-4	42	1.8
19	CO15016-1RUsto	29	1.6
20	COTX08063-2Ru	21	1.5
	$LSD_{0.05}$	*28*	
	Average	41	1.9

Date test performed:

Washington	Nov. 14
Idaho	Nov. 15
Oregon	Nov. 19

2024 Phase 1 (LTS) Trial

Stored at 48°F for 60 Days

	PHOTOVOLT READING					USDA	% REDUCING SUGAR		SPROUTING	
Clone	stem	bud	ave	rtg §	DIFF	COLOR	stem	bud	(%)	length (in)
Washington										
1 Clearwater Russet	27.9	47.0	37.5	**4-**	19.1	1	1.6	0.5	93	0.25
2 Ranger Russet	29.7	40.6	35.2	**3-**	10.9	1	1.4	0.7	93	0.50
3 Russet Burbank	21.7	41.4	31.6	**3-**	19.7	2	2.4	0.7	0	0.00
4 A10020-3sto	31.4	42.0	36.7	**4-**	10.7	0	1.3	0.7	93	0.50
5 A12308-3adg	20.5	43.2	31.9	**3-**	22.7	2	2.6	0.6	0	0.00
6 A12327-5VR	33.1	42.0	37.6	**4-**	9.3	0	1.1	0.7	67	0.25
7 A13036-1	31.7	43.8	37.7	**4-**	12.2	0	1.2	0.6	93	0.25
8 A13072-5	21.1	36.5	28.8	**2-**	15.4	2	2.5	0.9	13	0.13
9 A13085-2	29.7	36.7	33.2	**3+**	8.6	1	1.4	0.9	100	0.75
10 A13094-1	36.7	47.4	42.1	**5-**	10.7	0	0.9	0.5	80	1.50
11 A15028-2TE	24.0	29.9	26.9	**2+**	6.6	2	2.1	1.4	60	0.50
12 A15038-6	29.3	34.0	31.6	**3+**	5.3	1	1.5	1.1	67	1.50
13 A15053-17	21.6	33.9	27.8	**2-**	12.3	2	2.4	1.1	100	1.50
14 A15082-9	37.2	43.1	40.1	**4+**	5.9	0	0.9	0.6	40	1.00
15 A16051-3	22.4	41.7	32.0	**3-**	19.3	2	2.3	0.7	40	0.25
16 AOR15152-2	27.1	37.3	32.2	**3-**	10.2	1	1.7	0.9	36	0.25
17 AOR15194-2	40.0	46.8	43.4	**5+**	6.8	0	0.7	0.5	0	0.00
18 OR11222-4	28.8	43.2	36.0	**4-**	14.5	1	1.5	0.6	73	0.50
19 CO15016-1RUsto	36.4	43.5	39.9	**4-**	9.8	0	0.9	0.6	7	0.13
20 COTX08063-2Ru	35.0	48.4	41.7	**5-**	13.4	0	1.0	0.5	93	0.25
		$LSD_{0.05}$	*3.2*		*4.6*				*21*	
Average	29.3	41.1	35.2		12.2	1	1.6	0.7	57	0.50
Idaho										
1 Clearwater Russet	37.1	42.9	40.0	**4-**	9.8	0	0.9	0.6	0	0.00
2 Ranger Russet	38.1	41.1	39.6	**4+**	4.4	0	0.8	0.7	0	0.00
3 Russet Burbank	30.5	40.4	35.5	**4-**	9.9	1	1.3	0.7	0	0.00
4 A10020-3sto	44.5	45.7	45.1	**5+**	3.5	0	0.6	0.6	100	0.50
5 A12308-3adg	38.0	40.9	39.5	**4+**	4.6	0	0.8	0.7	0	0.00
6 A12327-5VR	39.8	45.4	42.6	**5+**	5.5	0	0.7	0.6	7	0.13
7 A13036-1	40.0	46.3	43.2	**5+**	7.9	0	0.7	0.5	0	0.00
8 A13072-5	28.2	39.4	33.8	**3-**	12.5	1	1.6	0.8	0	0.00
9 A13085-2	39.5	44.1	41.8	**5+**	5.3	0	0.8	0.6	13	0.13
10 A13094-1	39.3	44.1	41.7	**5+**	5.4	0	0.8	0.6	0	0.00
11 A15028-2TE	33.1	34.7	33.9	**3+**	4.4	0	1.1	1.0	0	0.00
12 A15038-6	31.5	34.9	33.2	**3+**	5.0	0	1.3	1.0	7	0.50
13 A15053-17	35.5	40.5	38.0	**4+**	7.4	0	1.0	0.7	53	0.25
14 A15082-9	51.0	49.9	50.5	**5+**	4.4	0	0.5	0.5	0	0.00
15 A16051-3	31.8	39.7	35.7	**4-**	9.5	0	1.2	0.7	0	0.00
16 AOR15152-2	24.5	35.2	29.9	**2-**	11.0	2	2.0	1.0	27	0.13
17 AOR15194-2	38.6	42.9	40.7	**5-**	9.3	0	0.8	0.6	0	0.00
18 OR11222-4	35.2	42.6	38.9	**4+**	7.9	0	1.0	0.6	0	0.00
19 CO15016-1RUsto	45.5	45.5	45.5	**5+**	5.8	0	0.6	0.6	0	0.00
20 COTX08063-2Ru	50.1	53.2	51.7	**5+**	5.4	0	0.5	0.6	0	0.00
		$LSD_{0.05}$	*4*		*3.0*				13	
Average	37.6	42.5	40.0		6.9	0	0.9	0.7	10	0.08
Oregon										
1 Clearwater Russet	50.5	48.3	49.4	**5+**	3.8	0	0.5	0.5	87	0.25
2 Ranger Russet	39.6	41.9	40.8	**5+**	4.4	0	0.7	0.7	100	1.00
3 Russet Burbank	32.3	37.9	35.1	**3+**	6.2	0	1.2	0.8	0	0.00
4 A10020-3sto	46.1	43.9	45.0	**5+**	4.0	0	0.5	0.6	71	1.00
5 A12308-3adg	46.0	47.5	46.7	**5+**	4.3	0	0.5	0.5	20	0.50
6 A12327-5VR	45.8	43.3	44.5	**5+**	3.9	0	0.6	0.6	87	1.00
7 A13036-1	49.7	47.5	48.6	**5+**	3.5	0	0.5	0.5	100	0.50
8 A13072-5	42.6	45.2	43.9	**5+**	6.3	0	0.6	0.6	7	0.75
9 A13085-2	34.5	37.2	35.8	**4+**	7.9	0	1.0	0.9	93	1.00
10 A13094-1	42.9	40.2	41.6	**5+**	3.3	0	0.6	0.7	100	3
11 A15028-2TE	37.3	33.2	35.3	**3+**	4.6	0	0.9	1.1	50	0.25
12 A15038-6	38.4	34.7	36.5	**4+**	5.3	0	0.8	1.0	100	2.50
13 A15053-17	38.6	35.0	36.8	**4+**	4.4	0	0.8	1.0	100	2.00
14 A15082-9	45.4	43.4	44.4	**5+**	5.7	0	0.6	0.6	93	0.50
15 A16051-3	40.3	41.9	41.1	**5+**	3.2	0	0.7	0.7	67	0.25
16 AOR15152-2	37.6	39.0	38.3	**4+**	4.0	0	0.8	0.8	93	0.50
17 AOR15194-2	48.5	47.5	48.0	**5+**	2.6	0	0.5	0.5	0	0.00
18 OR11222-4	45.5	44.1	44.8	**5+**	3.0	0	0.6	0.6	93	1.00
19 CO15016-1RUsto	44.8	41.3	43.1	**5+**	4.6	0	0.6	0.7	20	0.25
20 COTX08063-2Ru	49.3	49.3	49.3	**5+**	2.3	0	0.5	0.5	87	1.25
		$LSD_{0.05}$	*3*		*2.3*				*17*	5.00
Average	42.8	42.1	42.4		4.4	0	0.7	0.7	68	1.07

Date test performed:

Washington	Dec. 11	Dec. 11	Dec. 17
Idaho	Dec. 13	Dec. 13	Dec. 18
Oregon	Dec. 15	Dec. 15	Dec. 18

§ 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.

Sprouting was rated after approximately 3 months in storage.

Phase 1 (LTS) Trial

Stored at 40°F for 60 Days

Clone	SPROUTING (%)	PHOTOVOLT READING (60 Days at 40°F) stem	bud	ave	rtg §	DIFF	USDA COLOR
Washington							
1 Clearwater Russet	0	18.9	30.0	24.5	**1**	15.3	3
2 Ranger Russet	0	15.5	26.8	21.2	**1**	11.3	3
3 Russet Burbank	0	11.1	25.5	18.3	**0**	14.5	4
4 A10020-3sto	0	18.0	26.4	22.2	**1**	8.4	3
5 A12308-3adg	0	12.1	24.9	18.5	**0**	12.8	4
6 A12327-5VR	0	22.1	34.0	28.0	**2**	11.9	2
7 A13036-1	27	13.1	22.8	18.0	**0**	9.7	4
8 A13072-5	0	13.4	21.9	17.7	**0**	8.6	4
9 A13085-2	0	15.3	23.5	19.4	**0**	8.2	3
10 A13094-1	20	19.5	27.9	23.7	**1**	8.5	3
11 A15028-2TE	0	14.9	18.1	16.5	**0**	3.7	4
12 A15038-6	0	19.1	22.6	20.8	**1**	4.7	3
13 A15053-17	0	12.5	18.6	15.6	**0**	6.0	4
14 A15082-9	0	18.7	28.3	23.5	**1**	9.6	3
15 A16051-3	0	12.5	28.1	20.3	**1**	15.6	4
16 AOR15152-2	0	17.0	20.8	18.9	**0**	3.8	3
17 AOR15194-2	0	18.7	27.1	22.9	**1**	8.4	3
18 OR11222-4	0	12.5	17.4	14.9	**0**	4.9	4
19 CO15016-1RUsto	0	17.7	22.4	20.1	**1**	6.3	3
20 COTX08063-2Ru	0	19.2	31.2	25.2	**2**	12.0	3
$LSD_{0.05}$	*ns*			*2.6*		*4.0*	
Average	2	16.1	24.9	20.5		9.2	3
Idaho							
1 Clearwater Russet	0	27.5	30.8	29.2	**2**	6.9	1
2 Ranger Russet	0	21.5	23.6	22.6	**1**	4.0	2
3 Russet Burbank	0	18.4	24.4	21.4	**1**	6.5	3
4 A10020-3sto	0	32.1	35.5	33.8	**3**	4.6	0
5 A12308-3adg	0	18.8	21.1	20.0	**1**	2.9	3
6 A12327-5VR	0	30.3	33.8	32.1	**3**	5.0	1
7 A13036-1	0	16.3	28.0	22.1	**1**	11.7	3
8 A13072-5	0	18.7	27.4	23.1	**1**	8.6	3
9 A13085-2	0	24.5	26.7	25.6	**2**	5.3	2
10 A13094-1	0	18.9	29.9	24.4	**1**	11.0	3
11 A15028-2TE	0	24.6	26.0	25.3	**2**	3.1	2
12 A15038-6	0	17.4	20.6	19.0	**0**	4.3	3
13 A15053-17	0	19.8	23.1	21.5	**1**	5.0	3
14 A15082-9	0	35.6	44.5	40.1	**4**	8.9	0
15 A16051-3	0	19.9	27.2	23.6	**1**	7.4	3
16 AOR15152-2	0	18.6	25.3	22.0	**1**	7.5	3
17 AOR15194-2	0	20.7	26.7	23.7	**1**	6.6	2
18 OR11222-4	0	22.4	25.1	23.7	**1**	5.0	2
19 CO15016-1RUsto	0	18.8	25.4	22.1	**1**	6.8	3
20 COTX08063-2Ru	0	26.9	39.3	33.1	**3**	12.4	1
$LSD_{0.05}$	*ns*			*2.7*		*3.5*	
Average	0	22.6	28.2	25.4		6.7	2.2
Oregon							
1 Clearwater Russet	60	37.2	37.6	37.4	**4**	7.2	0
2 Ranger Russet	20	16.4	20.4	18.4	**0**	5.3	3
3 Russet Burbank	0	16.5	20.6	18.6	**0**	5.4	3
4 A10020-3sto	0	29.3	30.1	29.7	**2**	4.8	1
5 A12308-3adg	0	18.2	28.8	23.5	**1**	10.6	3
6 A12327-5VR	0	32.3	33.9	33.1	**3**	4.0	0
7 A13036-1	80	26.1	28.4	27.3	**2**	6.6	1
8 A13072-5	0	22.2	26.7	24.5	**1**	6.3	2
9 A13085-2	0	20.4	24.6	22.5	**1**	4.5	2
10 A13094-1	73	25.8	25.4	25.6	**2**	4.1	1
11 A15028-2TE	0	20.6	20.5	20.5	**1**	2.2	2
12 A15038-6	7	24.1	23.6	23.9	**1**	5.7	2
13 A15053-17	27	19.1	20.4	19.8	**1**	2.8	3
14 A15082-9	7	31.0	33.7	32.4	**3**	5.0	0
15 A16051-3	7	24.7	29.1	26.9	**2**	4.8	2
16 AOR15152-2	27	27.1	22.5	24.8	**2**	4.7	1
17 AOR15194-2	0	27.0	32.1	29.6	**2**	7.7	1
18 OR11222-4	0	21.7	23.0	22.3	**1**	3.1	2
19 CO15016-1RUsto	0	32.1	36.3	34.2	**3**	7.3	0
20 COTX08063-2Ru	0	31.1	36.9	34.0	**3**	7.0	0
$LSD_{0.05}$	*ns*			*3.6*		*3.2*	
Average	15	25.1	27.7	26.4		5.5	1

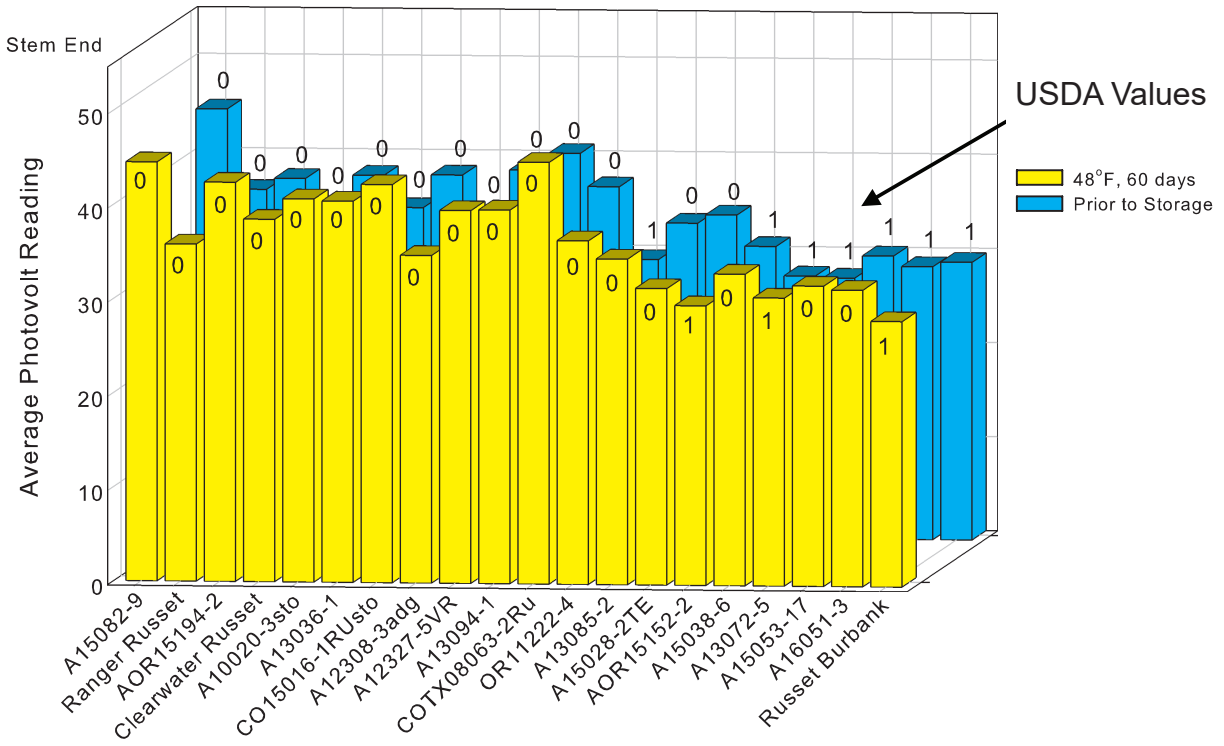
Date test performed:

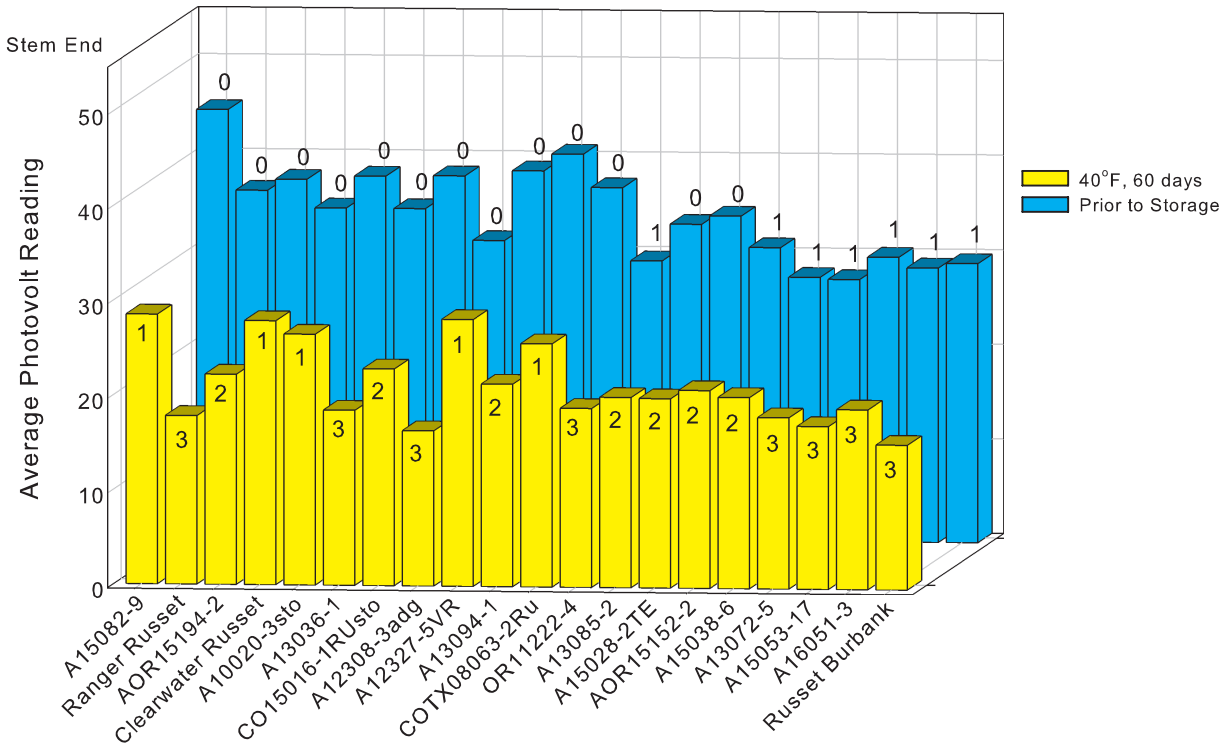
Washington	Dec. 18	Dec. 12
Idaho	Dec. 18	Dec. 14
Oregon	Dec. 18	Dec. 16

Diff = Absolute difference between stem and bud Photovolt reading.
Sprouting was rated after approximatly 3 months of storage

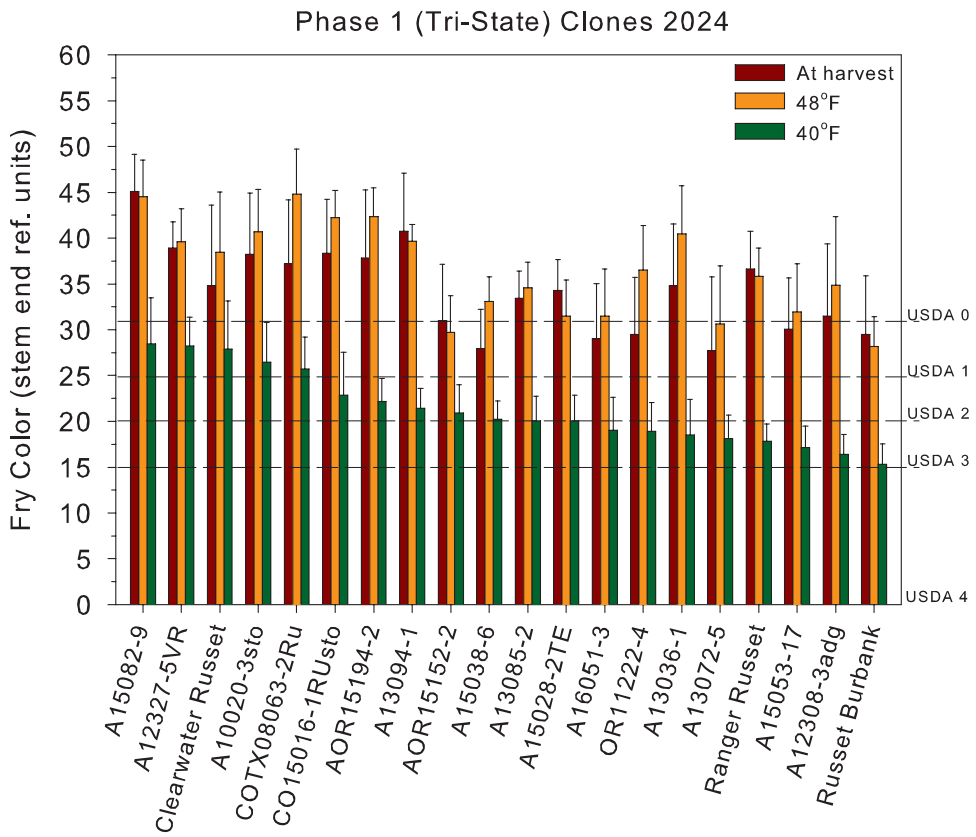
Phase 1 (LTS) Trial

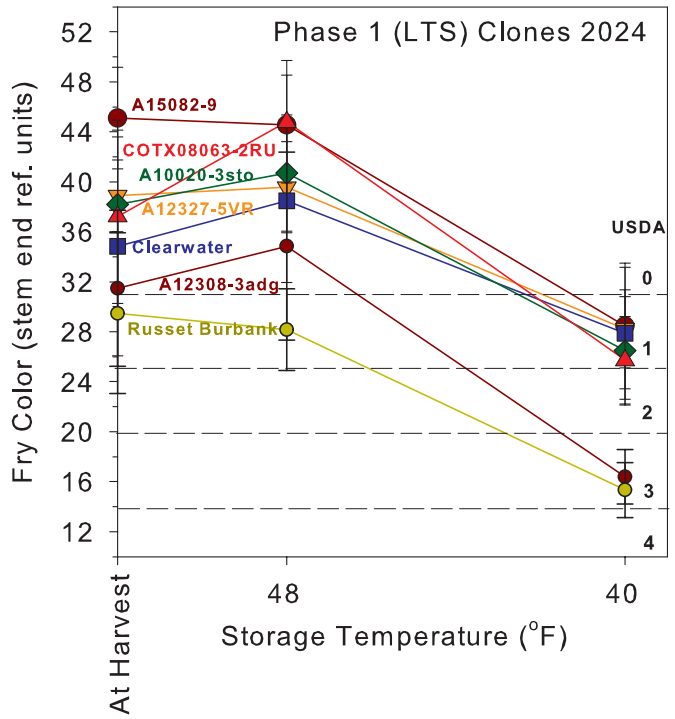
Phase 1 - 3 state Average of Stem End





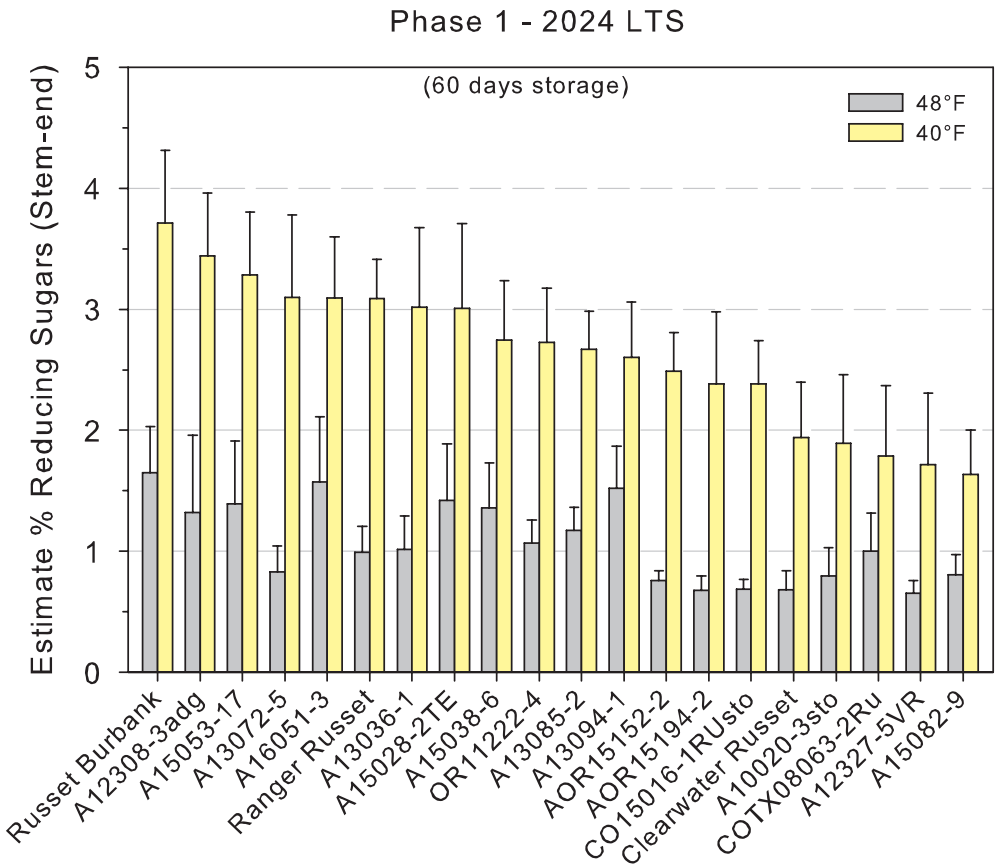
Phase 1 (LTS) Trial





Top: At-harvest and after-storage French fry colors (stem end) of clones in Phase 1. Tubers were stored for 60 days at 48 and 40°F. The clones are ranked from best to worst on fry color of the 40°F-stored tubers. High reflectance values indicate light colored fries.

Bottom: Line graph depicting the effects of storage temperature on change in French fry processing quality (stem end fry color) of the most cold sweetening resistant (A15082-9, COTX08063-2RU, A10020-3sto, A12327-5VR*, and Clearwater Russet*) and susceptible (A12308-3adg and Russet Burbank*) clones in Phase 1. *Indicates similar performance of the clones last year.



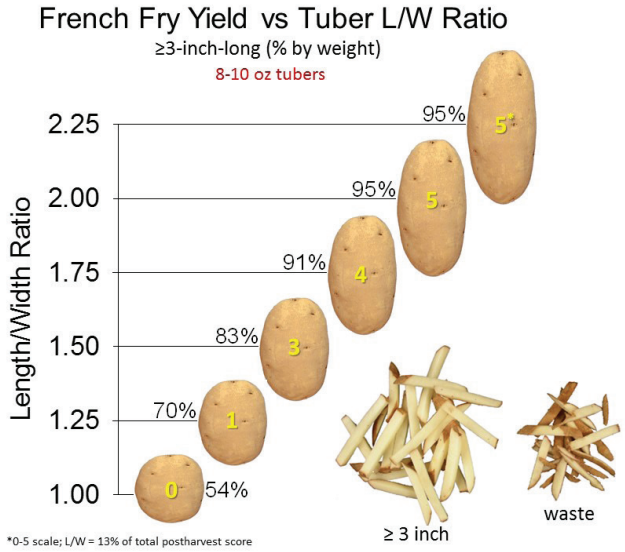
Stem end estimated percent reducing sugars based on photovolt observations from the 2024 crop for Phase 1 entries. Values are average estimates for entries grown in each state then stored for 60-days at either 48°F or 40°F before frying.

Phase 1 (LTS) Trial

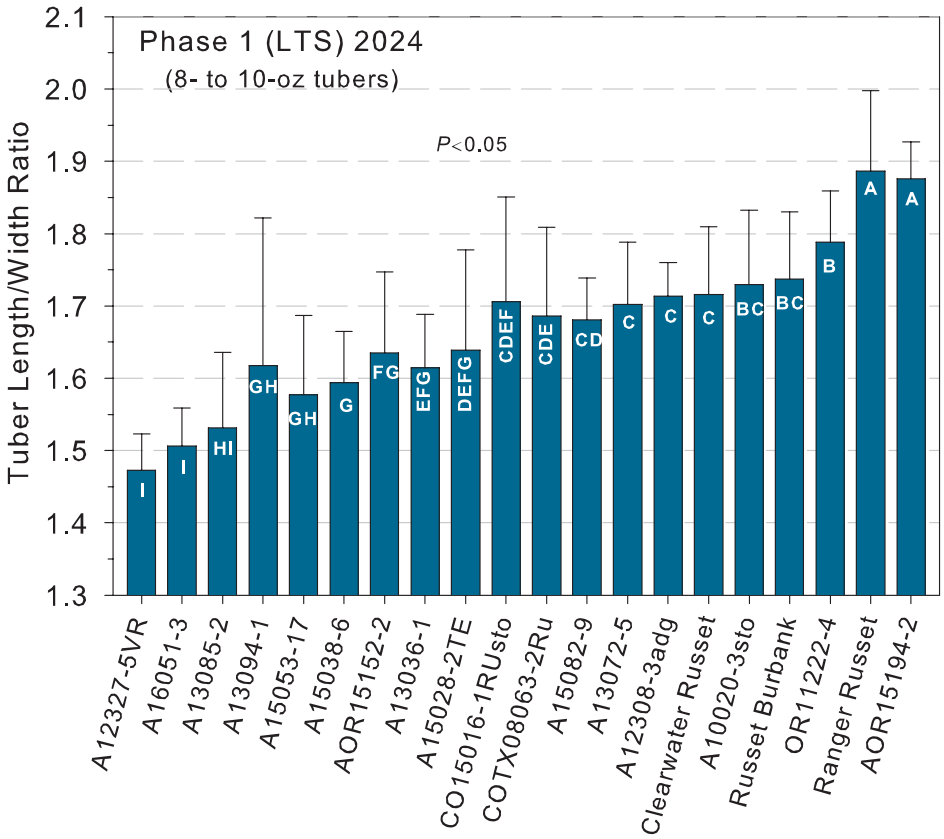
Length to Width Ratios of 8-10 oz Tubers

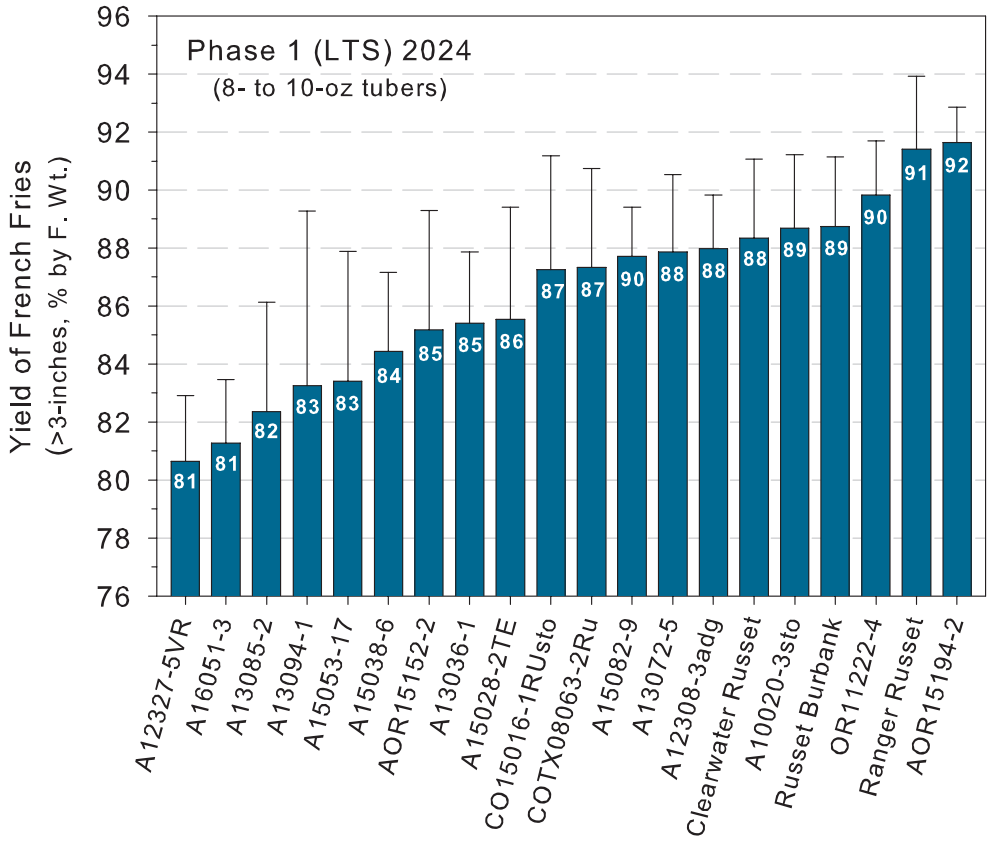
Clone	WA	rtg §	ID	rtg §	OR	rtg §	3 State Avg.
	Phase 1 (LTS) Length to width ratio						
1 Clearwater Russet	1.56	3	1.88	5	1.70	4	1.72
2 Ranger Russet	1.68	4	2.06	5	1.92	5	1.89
3 Russet Burbank	1.59	3	1.91	5	1.71	4	1.74
4 A10020-3sto	1.60	3	1.93	5	1.66	4	1.73
5 A12308-3adg	1.62	3	1.77	4	1.75	4	1.71
6 A12327-5VR	1.38	2	1.55	3	1.49	2	1.47
7 A13036-1	1.49	2	1.74	4	1.61	3	1.61
8 A13072-5	1.53	3	1.82	5	1.75	4	1.70
9 A13085-2	1.40	2	1.74	4	1.46	2	1.53
10 A13094-1	1.32	1	2.01	5	1.52	3	1.62
11 A15028-2TE	1.50	3	1.92	5	1.50	3	1.64
12 A15038-6	1.47	2	1.71	4	1.61	3	1.59
13 A15053-17	1.36	2	1.69	4	1.68	4	1.58
14 A15082-9	1.64	3	1.80	5	1.61	3	1.68
15 A16051-3	1.40	2	1.55	3	1.57	3	1.51
16 AOR15152-2	1.42	2	1.79	4	1.69	4	1.64
17 AOR15194-2	1.79	4	1.88	5	1.97	5	1.88
18 OR11222-4	1.71	4	1.73	4	1.93	5	1.79
19 CO15016-1RUsto	1.49	2	1.98	5	1.64	3	1.71
20 COTX08063-2Ru	1.50	3	1.92	5	1.64	3	1.69
Average	1.52		1.82		1.67		1.67

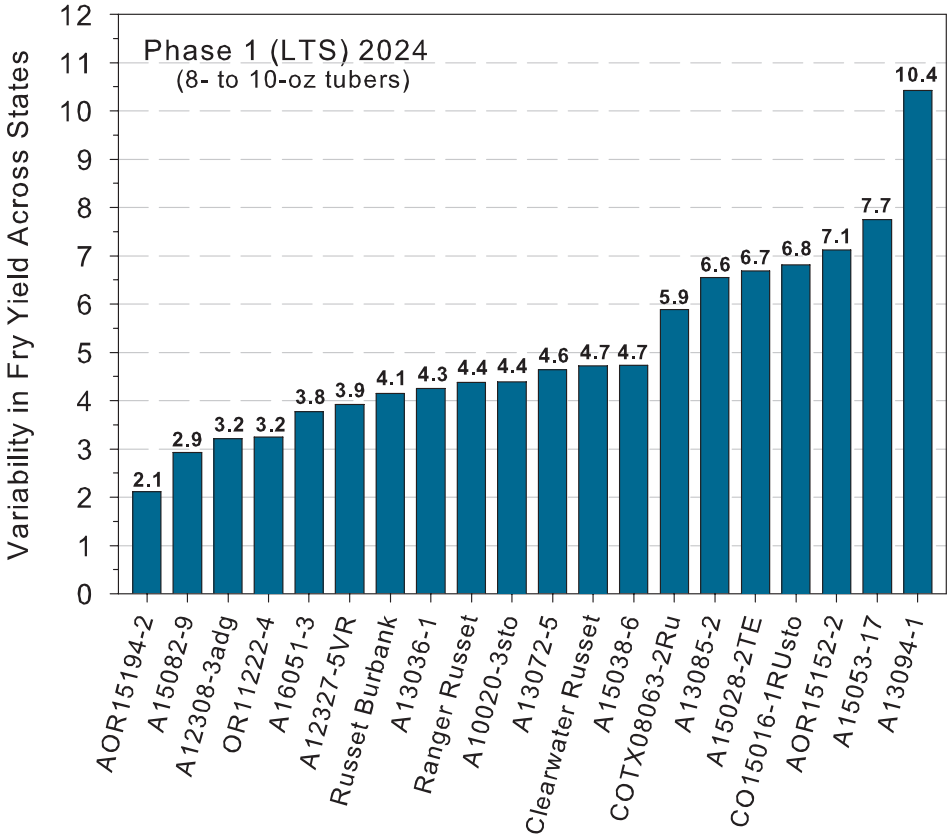
Clone	WA	ID	OR	3 State Avg.
	Phase 1 (LTS) Width to thickness ratio			
1 Clearwater Russet	1.20	1.13	1.14	1.16
2 Ranger Russet	1.19	1.12	1.16	1.16
3 Russet Burbank	1.21	1.11	1.18	1.17
4 A10020-3sto	1.10	1.14	1.14	1.13
5 A12308-3adg	1.10	1.08	1.10	1.09
6 A12327-5VR	1.15	1.11	1.10	1.12
7 A13036-1	1.13	1.12	1.13	1.13
8 A13072-5	1.15	1.02	1.11	1.09
9 A13085-2	1.20	1.11	1.15	1.15
10 A13094-1	1.15	1.12	1.16	1.14
11 A15028-2TE	1.12	1.15	1.12	1.13
12 A15038-6	1.14	1.06	1.09	1.09
13 A15053-17	1.17	1.11	1.18	1.15
14 A15082-9	1.12	1.07	1.08	1.09
15 A16051-3	1.14	1.06	1.13	1.11
16 AOR15152-2	1.17	1.06	1.17	1.13
17 AOR15194-2	1.15	1.14	1.12	1.14
18 OR11222-4	1.14	1.16	1.09	1.13
19 CO15016-1RUsto	1.17	1.17	1.15	1.16
20 COTX08063-2Ru	1.16	1.09	1.13	1.13
Average	1.15	1.11	1.13	1.13



Phase 1 (LTS) Trial







Relative ranking of clones in Phase 1 for variability in yield of French fries prepared from 8- to 10-oz tubers. Variability is expressed as the standard deviation (calculated across ID, WA and OR production sites) for the yield of fries ≥3 inches in length (% by fresh weight) from 8- to 10-oz tubers. High values reflect more variation in tuber shape and thus fry yield from state to state. For example, A13094-1 had a length to width ratio of 1.62, resulting in 83% of the tuber producing usable French fries ≥3 inches in length (page 50). However, tuber shape of this entry also varied the most across production sites (see above), resulting in fry yields ranging from 73 to 93% (83±10.4%).

Pages 50-51: Tuber length to width ratios and the associated percentage yield of fries. Bars with same letter are not significantly different (P≤0.05).

2024 Early Harvest Regional Trial

Location: WSU Research Center – Othello, WA
Planting Date: March 28 Vine Kill Date: July 30
Harvest Date: August 5 Days Grown: 124

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 2024 early harvest trial compared 4 local reference varieties to 14 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): **None**
Process Market Standout(s): **A13072-7**

Yield and Economic Data

- **Total Yield and U.S. #1 Yield**
  Highest: A13072-7 had the highest total yield (941 CWT/A) and the highest U.S. #1 yield (856 CWT/A). A09086-1LB had the second highest total yield (824 CWT/A) and A12305-2adg had the second highest U.S. #1 yield (721 CWT/A).
  Lowest: CO15016-1RUsto and CO13003-1RU had the lowest total yield (465 CWT/A) and CO15016-1RUsto had the lowest U.S. #1 yield (315 CWT/A).

- **% U.S. #1's (greater than 4 oz)**
  Highest: A13072-7 (91%), five other clones had (89%).
  Lowest: Shepody (59%) and CO15016-1RUsto (68%).

- **Carton Yield (100 to 50 Count (7 to 18 oz U.S. #1 Tubers))**
  Highest: A13072-7 (30.4 Tons/A) and A12305-2adg (29.5 Tons/A).
  Lowest: CO15016-1RUsto (6.5 Tons/A) and CO13003-1RU (7.7 Tons/A).

- **Gross Return ($/acre)**
  Fresh Market Highest: A13072-7, A12305-2adg, and A09136-9LB.
  Fresh Market Lowest: Shepody, CO13003-1RU, and CO15016-1RUsto.
  Process Market Highest: A13072-7, A12305-2adg, and A09136-9LB.
  Process Market Lowest: CO15016-1RUsto, CO13003-1RU, and AFA5661-8.

2024 Early Harvest Regional Trial Summaries

ENTRY	TOTAL YIELD			US # 1's* > 4 oz	US # 2's* > 4 oz	Culls* & < 4 oz	CARTON YIELD 100-50 count (US 1's 7-18 oz)		PROCESS YIELD US 1's and 2's > 6 oz	
	CWT/A		Tons/A	% of Total Yield			% of Total Yield	Tons/A	% of Total Yield	Tons/A
Ranger Russet	792	*AB*	39.6	75	16	9	53	20.9	77	30.6
Russet Burbank	756	*AB*	37.8	78	7	14	53	20.0	69	26.4
A09086-1LB	824	*AB*	41.2	85	1	14	51	21.0	65	27.1
A09136-9LB	755	*AB*	37.8	89	4	6	69	26.1	83	31.4
A12305-2adg	808	*AB*	40.4	89	6	5	73	29.5	89	35.9
A13072-7	941	*A*	47.0	91	4	5	65	30.4	89	41.9
A13091-5	656	*BCD*	32.8	87	1	11	64	20.8	74	24.3
AFA5661-8	546	*CD*	27.3	81	5	15	59	16.1	79	21.4
AOR11217-3	727	*BC*	36.3	89	2	10	60	21.7	73	26.4
AOR13064-2	711	*BC*	35.6	89	3	8	63	22.4	80	28.5
AOR15166-2	698	*BC*	34.9	88	3	9	60	20.8	74	26.0
AOR15227-2	704	*BC*	35.2	89	5	5	73	25.7	86	30.2
Russet Norkotah 278	695	*BC*	34.7	88	2	10	66	22.9	78	27.2
Shepody	742	*AB*	37.1	59	14	28	37	13.6	58	21.4
CO13003-1RU	465	*D*	23.3	74	1	25	33	7.7	48	11.2
CO15016-1RUsto	465	*D*	23.3	68	2	30	28	6.5	43	10.0
COTX08063-2Ru	685	*BC*	34.3	87	2	12	51	17.6	66	22.5
COTX10080-2Ru	675	*BC*	33.7	83	0	17	47	15.7	59	20.1

ENTRY	US # 1 YIELD > 4 oz		> 4 oz	4-7 oz*	7-14 oz*	> 14 oz*	> 4 oz SPECIFIC GRAVITY	INTERNAL DEFECTS (%) (8-12 oz tubers)		
	CWT/A	STATS**	Tons/A	%				% HH	% BC	% IBS
Ranger Russet	596	*BC*	29.8	29	63	8	1.071	0	0	0
Russet Burbank	599	*BC*	29.9	35	60	5	1.070	0	0	0
A09086-1LB	704	*AB*	35.2	40	53	7	1.077	0	0	0
A09136-9LB	676	*AB*	33.8	19	66	15	1.073	0	0	0
A12305-2adg	721	*AB*	36.0	13	67	20	1.070	0	0	0
A13072-7	856	*A*	42.8	11	50	39	1.067	0	0	0
A13091-5	573	*BC*	28.6	26	58	15	1.077	0	0	0
AFA5661-8	437	*CD*	21.9	16	58	26	1.071	0	0	0
AOR11217-3	645	*ABC*	32.2	31	63	6	1.073	0	0	0
AOR13064-2	632	*BC*	31.6	22	59	20	1.072	0	0	0
AOR15166-2	614	*BC*	30.7	27	58	15	1.078	0	0	0
AOR15227-2	628	*BC*	31.4	16	67	17	1.078	0	0	0
Russet Norkotah 278	611	*BC*	30.6	22	69	9	1.066	0	0	0
Shepody	436	*CD*	21.8	37	55	8	1.067	0	0	0
CO13003-1RU	344	*D*	17.2	55	41	4	1.068	0	0	3
CO15016-1RUsto	315	*D*	15.8	59	38	3	1.068	0	0	0
COTX08063-2Ru	595	*BC*	29.7	41	57	3	1.087	0	0	0
COTX10080-2Ru	561	*BC*	28.0	44	54	2	1.064	0	0	0

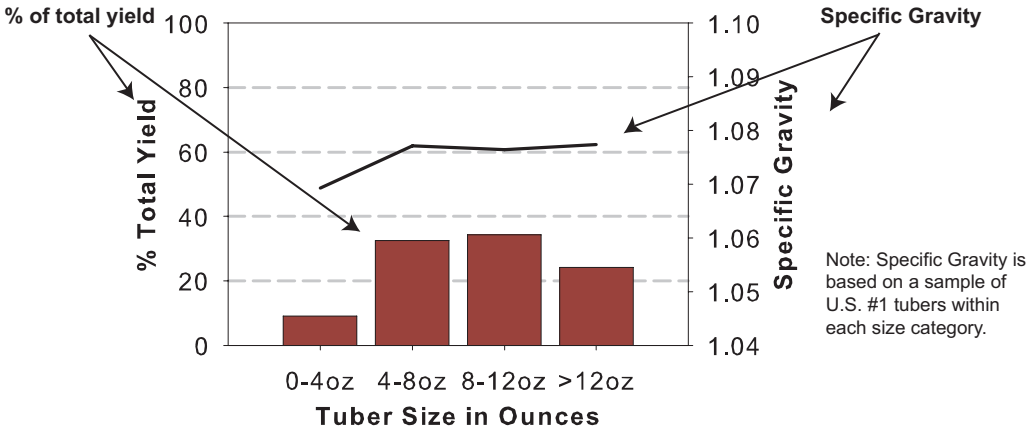
ENTRY	40 DAY STAND	60 DAY STAND	TUBER GREENING	STEMS PER PLANT	AVERAGE TUBER WEIGHT	AVERAGE TUBER NUMBER	SKIN SET 1 = Poor 5 = Good	TUBER SHAPE 1 = Round 5 = Long	BRUISE (%) (8-12 oz tubers)	
	% Emerged	% Emerged	% Total Yield	Above Ground	Ounces	Tubers/Plant			BLACKSPOT	SHATTER
Ranger Russet	62	100	1	2.8	7.4	10.6	3.3	4.0	0	0
Russet Burbank	56	93	2	2.3	6.6	11.3	3.0	3.0	0	0
A09086-1LB	4	96	1	2.9	6.0	13.4	1.7	2.7	0	7
A09136-9LB	47	98	1	3.3	8.2	9.1	2.3	2.0	0	3
A12305-2adg	2	100	0	1.8	8.9	9.0	2.3	2.3	0	21
A13072-7	20	98	1	2.0	9.6	9.6	3.0	3.0	0	17
A13091-5	16	89	0	2.3	7.0	9.3	3.0	2.3	0	13
AFA5661-8	0	98	2	1.5	9.3	5.8	2.7	3.0	0	3
AOR11217-3	7	87	1	3.0	6.8	10.5	3.0	3.0	0	0
AOR13064-2	33	89	1	2.5	7.7	9.0	3.0	2.7	0	0
AOR15166-2	0	96	1	2.0	7.1	9.7	2.3	2.3	0	7
AOR15227-2	7	87	1	2.0	8.2	8.4	2.0	2.0	0	7
Russet Norkotah 278	42	73	1	2.8	7.3	9.3	3.0	3.0	0	13
Shepody	11	98	4	2.5	6.3	11.6	3.0	4.0	0	0
CO13003-1RU	0	93	0	3.4	4.9	9.3	3.3	3.0	0	13
CO15016-1RUsto	0	84	0	3.3	4.5	10.2	3.3	4.0	0	0
COTX08063-2Ru	42	91	0	3.2	6.1	11.0	3.0	2.7	0	13
COTX10080-2Ru	18	84	1	3.4	5.9	11.3	3.3	3.0	0	3

* Percent values may not total 100% due to rounding

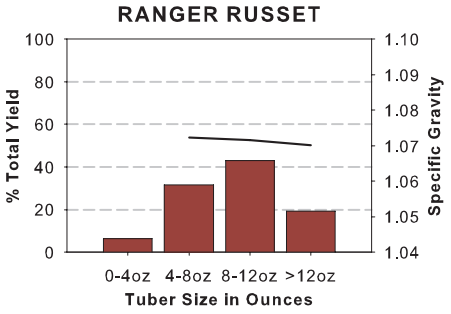
2024 Early Harvest Regional Trial

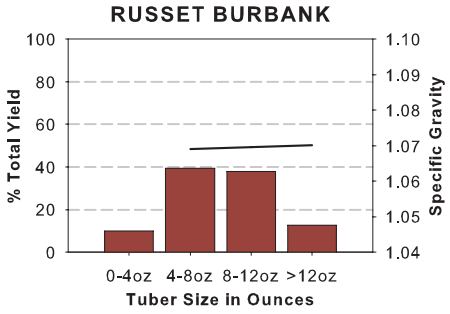
Tuber Yield and Specific Gravity Distributions

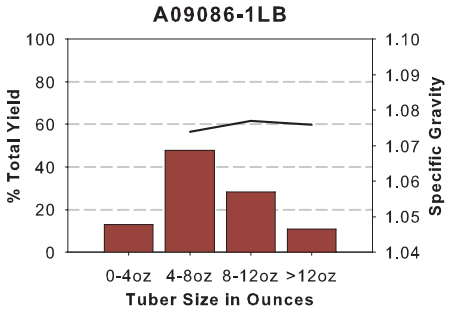
12 inch In-Row Spacing

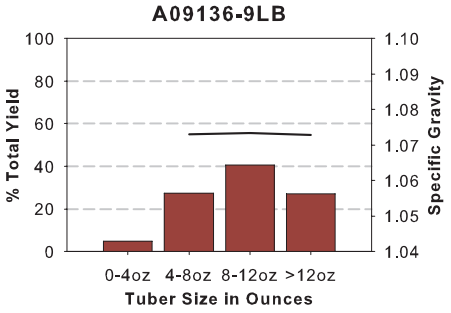


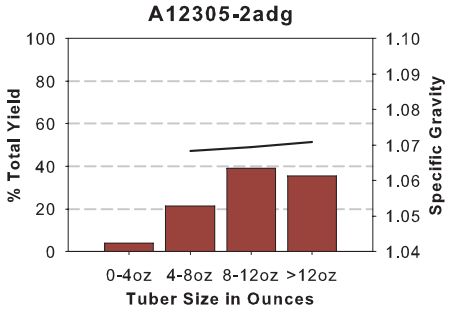
Note: Specific Gravity is based on a sample of U.S. #1 tubers within each size category.

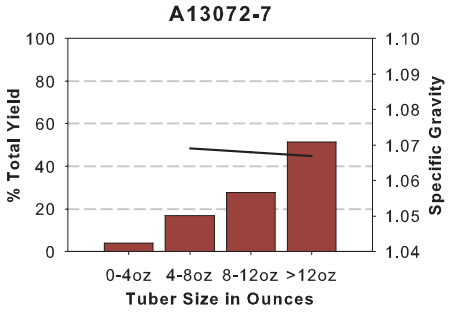


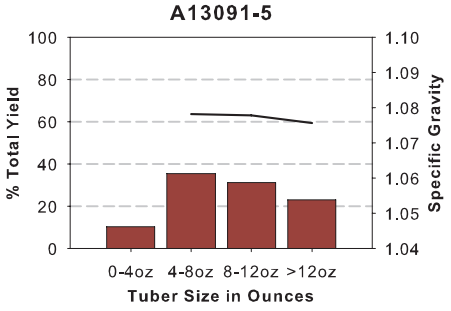


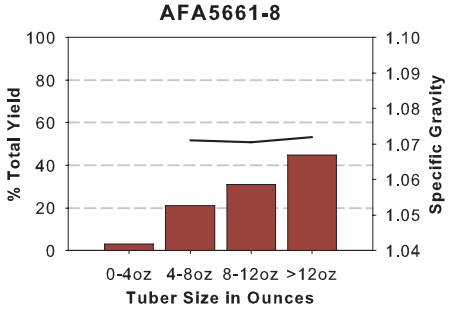


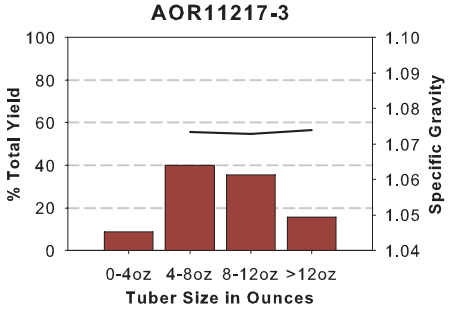


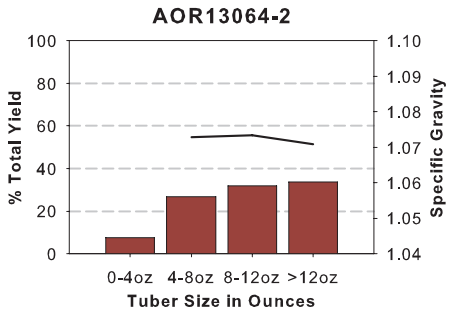


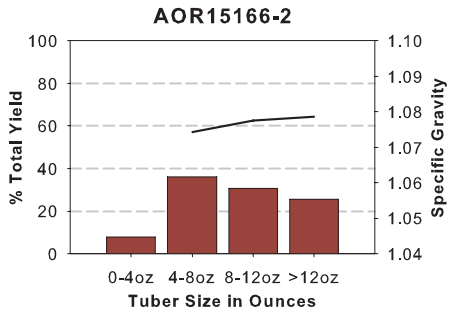


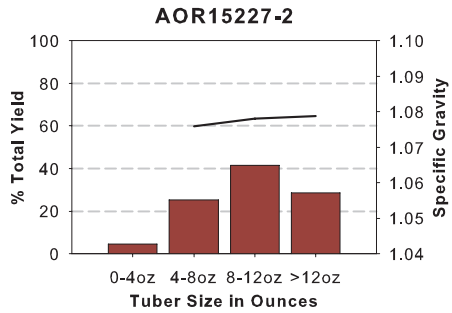


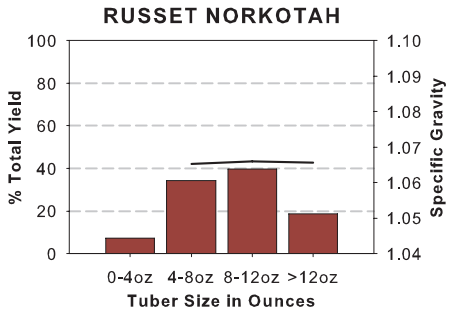


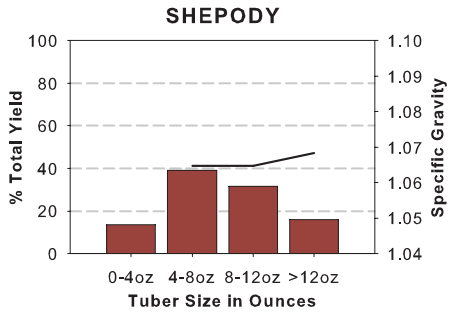


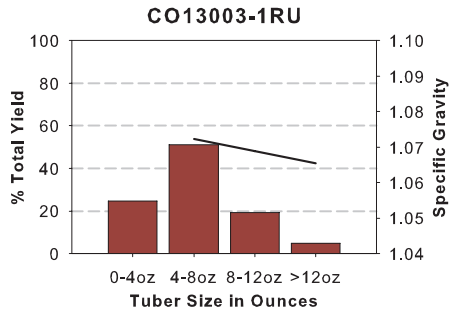

AOR13064-2
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

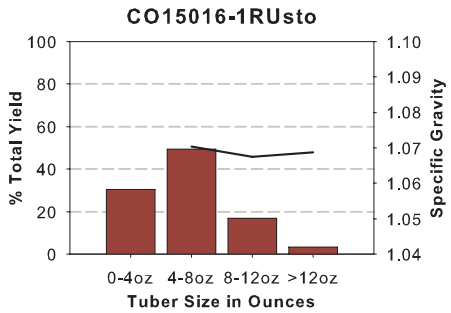

AOR15166-2
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

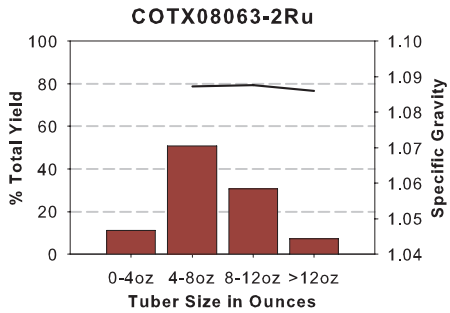

AOR15227-2
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

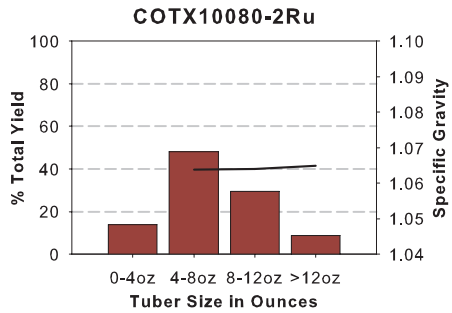

RUSSET NORKOTAH
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


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


CO13003-1RU
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


CO15016-1RUsto
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


COTX08063-2Ru
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

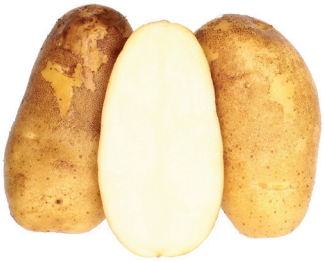

COTX10080-2Ru
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces

2024 Early Harvest Regional Trial

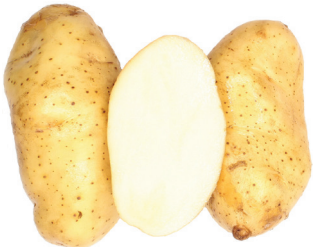
Tubers

Ranger Russet

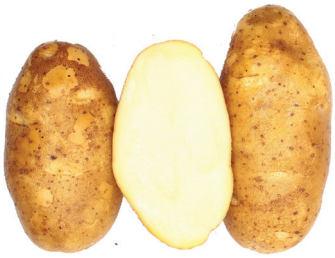
Russet Burbank



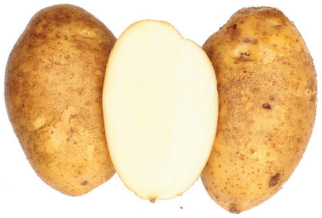
Shepody



Russet Norkotah TX278

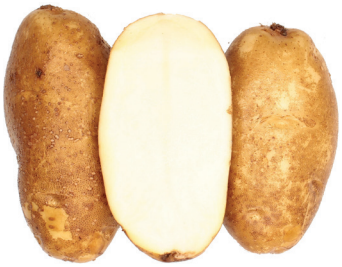


A09086-1LB

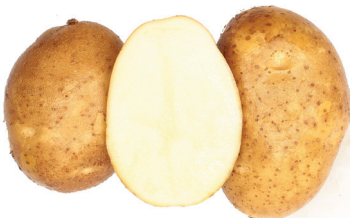


A09136-9LB

A12305-2adg

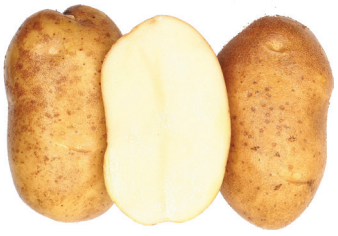


A13072-7



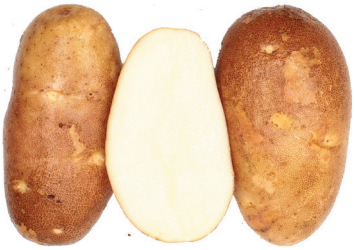
A13091-5

AFA5661-8



AOR11217-3

AOR13064-2



AOR15166-2

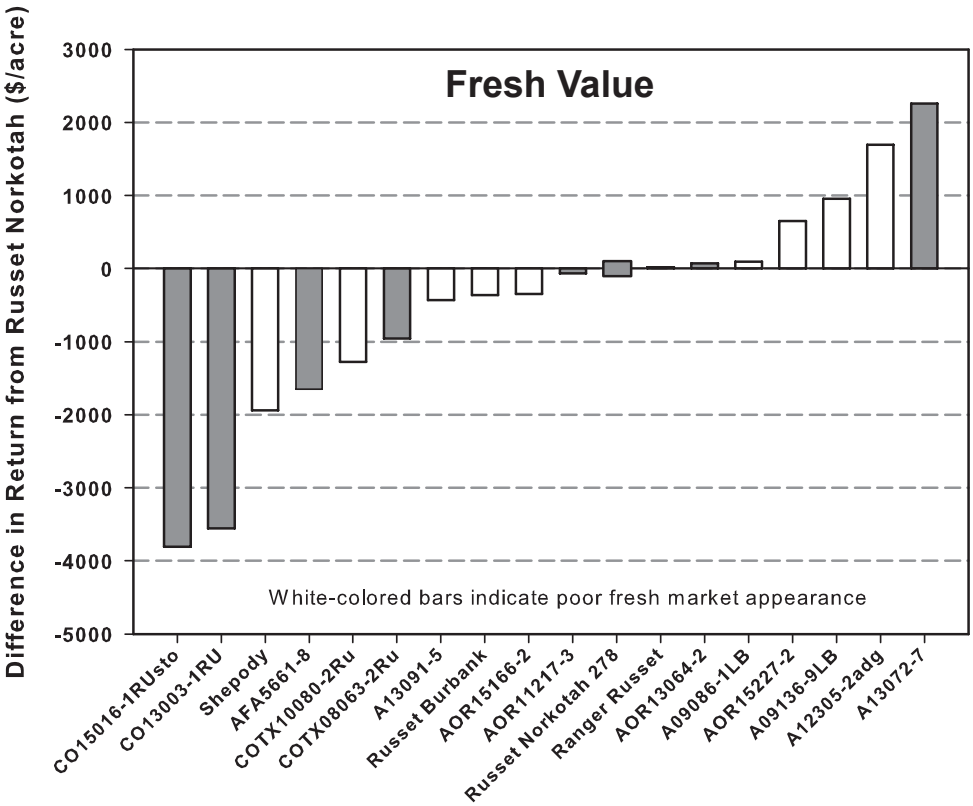
AOR15227-2

CO13003-1RU

CO15016-1RUsto

COTX08063-2Ru

COTX10080-2Ru



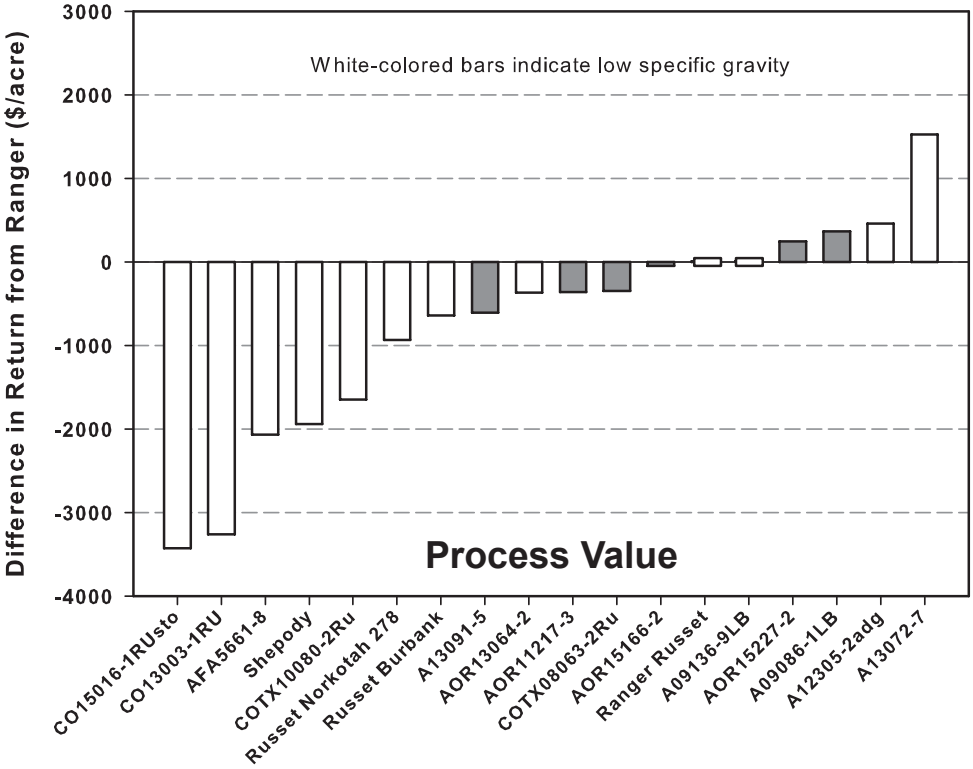


Figure 1 (top). Difference in gross return per acre (Fresh Market) from Russet Norkotah calculated by subtracting the gross return of Russet Norkotah TX278 from the gross return of the particular entry. Entries with the white-colored bars may not appeal to fresh market consumers due to the undesirable 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.

2024 Late Harvest Regional Trial

Location: WSU Research Center – Othello, WA
Planting Date: April 2 Vine Kill Date: September 3
Harvest Date: September 9 Days Grown: 154

Regional trials are conducted throughout the western region of the United States, including Washington. Entries in the Regional Trial are chosen by a coordinating committee and are grown for both early (Early Regional) and full (Late Regional) season harvest. This year's trial included 4 local reference varieties and 15 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 the book.

***Fresh Market Standout(s):* AOR1566-2 and A12304-1sto**
***Process Market Standout(s):* A12305-2adg and AOR15227-2**

Yield and Economic Data

- **Total Yield and U.S. #1 Yield**
  Highest: A09136-9LB had the highest total yield (1,222 CWT/A) and the highest U.S. #1 yield (1,118 CWT/A). A12304-1sto had the second highest total yield (1,187 CWT/A) and the second highest U.S. #1 yield (1,019 CWT/A).
  Lowest: AOR11217-3 had the lowest total yield (808 CWT/A). AFA5661-8 had the lowest U.S. #1 yield (611 CWT/A).

- **% U.S. #1's (greater than 4 oz)**
  Highest: A13091-5 and AOR15166-2 (94%).
  Lowest: AFA5661-8 (67%) and Ranger Russet (74%).

- **Carton Yield (100 to 50 Count (7 to 18 oz U.S. #1 Tubers))**
  Highest: AOR15166-2 (37.7 Tons/A) and A12305-2adg (35.3 Tons/A).
  Lowest: AOR11217-3 (18.8 Tons/A) and CO15016-1RUsto (21.0 Tons/A).

- **Gross Return ($/acre)**
  Fresh Market Highest: AOR15166-2, A12305-2adg, and A12304-1sto.
  Fresh Market Lowest: AOR11217-3, CO15016-1RUsto, and COTX10080-2Ru.
  Process Market Highest: A09136-9LB, A12305-2adg, and A12304-1sto.
  Process Market Lowest: COTX10080-2Ru, CO15016-1RUsto, AOR11217-3.

2024 Phase 2 Testing
(Late Harvest Regional Trial)
Postharvest Information

The 2024 trial evaluated 11 clones along with Clearwater Russet, Russet Burbank, and Ranger Russet as check cultivars from each growing location (WA, ID, & OR). When averaged across states, all entries received higher overall postharvest scores than Russet Burbank. To improve for result reporting clarity, the "Regional Postharvest Trial" will be now named "Phase 2" postharvest testing with the same general data collection as prior years. An "*" in the summary below indicates similar performance and/or ranking in trials from previous years. A "†" indicates a clone was a top performer in the Phase 1 (Late Tri-State) Trial the previous year.

- **Overall Postharvest Ratings**

  Highest scoring clones: AOR13064-2*, A13091-5†, A09136-9LB

  Lowest scoring clones: A12305-2adg*, A09086-1LB, Russet Burbank*

- **Low Temperature Sweetening**

  Most resistant: AOR13064-2*, A13091-5†, A09136-9LB

  Most susceptible: Russet Burbank*, A09086-1LB*, A12305-2adg

- **French Fry Taste Panel**

  Highest rated: A13091-5†, AOR13064-2*, AOR15166-2†, AOR15227-2†

  Lowest rated: Russet Burbank*, A12304-1sto, Ranger Russet

- **Blackspot Bruise Susceptibility**

  Most resistant: A13091-5, AOR15227-2, A13072-7

  Most susceptible: A13091-5, AOR15227-2, A13072-7

- **Variability in Tuber Shape & Fry Yield (8- to 10-oz tubers)**

  Lowest L/W: AFA5661-8*, A09086-1LB, A09136-9LB

  Highest L/W: AOR11217-3, Ranger Russet*, AOR15166-2

  Lowest W/Th: AFA5661-8*, AOR13064-2, A12305-2adg*

  Highest W/Th: A09086-1LB, A09136-9LB, Clearwater Russet

  Least variable L/W Across States: A12305-2adg, AOR13064-2*, AFA5661-8

  Most variable L/W Across States: Ranger Russet*, AOR15227-2†, Russet Burbank*

Details

- AOR13064-2*, A13091-5†, and A09136-9LB were the highest rated entries, scoring 34.0, 32.2, and 28.9 points of 38 possible points, respectively. Overall scores (range and average across clones) were on par with last year.

- A12305-2adg*, A09086-1LB, and Russet Burbank*scored the lowest on the overall postharvest performance with 22.2, 18.6, and 15.4 of 38 possible points.

- AOR13064-2*, AOR15227-2, and A09136-9LB were all rated resistant to cold sweetening with AOR13064-2* having the best fry color. AOR13064-2* produced USDA 0 fries (stem end) when stored for 60 days at 40°F (averaged across locations) and AOR15227-2 and A09136-9LB produced USDA 1 fries under the same conditions. Russet Burbank*, A09086-1LB, and A12305-2adg* were the most susceptible to LTS, producing USDA 4, 3, and 3 fries, respectively, after 60 days at 40°F.

- Average (across states) gravities of Russet Burbank* were the lowest, 1.074, to low for frozen process contracts. The gravities of the other entries ranged from 1.083 to 1.096 when averaged across states. When averaged across the entries, gravities were 1.083 (WA), 1.088 (ID), and 1.090 (OR), higher than the 2023 season. Gravities from WA were the lowest and ranged from 1.07 (Russet Burbank) to 1.092 (AOR15166-2). Over all locations, AOR15227-2†, A09086-1LB*, and AFA5661-8* had the highest gravities (1.096, 1.095, & 1.093; span= 1.074-1.111, 1.086-1.099 & 1.088-1.099). Specific gravity span was estimated by 3 reps of 4 tubers weighed in the air and in water.

- A13091-5†, AOR13064-2*, AOR15166-2†, and AOR15227-2† were the favorites in the taste panels, scoring 3.7/5 on average across growing locations (5 is best). Russet Burbank*, A12304-1sto, and Ranger Russet received the lowest taste panel score of 2.9 on average.

- On average, tubers grown in OR produced the lightest fry colors at harvest and post-storage regardless of the storage temperature. The Regional entries from all locations averaged 84% and 62% of their at-harvest process quality (stem end fry color) when stored at 44°F and 40°F for 60 days, respectively. Storage at 48°F saw no reduction in storage color during the 2024 season, similar to the 2024 results.

- Non-uniformity of color was observed in all states and storage treatments to varying degrees. Of the eleven experimental entries at harvest, 9 entries from WA, 1 from ID, and 0 from OR; 7 (WA); 1 (ID), & 0 (OR) at 48°F; 10 (WA), 0 (ID), and 1 (OR) at 44°F; and 8 (WA), 2 (ID), and 1 (OR) at 40°F were non-uniform in fry color (bud to stem end photovolt unit difference ≥9). The top-rated entries, AOR13064-2* only had non-uniformity after 60-days (40°F) in the WA samples, A13091-5† had non-uniformity in the WA 44°F & 40°F and the ID 44°F samples, finally, A09136-9LB maintained fry color regardless of production site (WA, ID, OR) and storage temperature (48, 44, 40°F) after 60 days. In contrast, the commercial controls, Russet Burbank, Ranger Russet, and Clearwater Russet exhibited a range of non-uniformity with the WA samples consistently producing non-uniform fry color.

- Retention of process quality during storage of Ranger Russet, AFA5661-8*, and AOR15166-2 at 44°F (60 days) was highly variable across production sites. By contrast, growing location had the least effect on the change in fry color of A09086-1LB*,A09136-9LB, and A13072-7 following 60 days at 44°F.

- Ranger Russet, A09086-1LB*, and AOR11217-3 showed the greatest percent photovolt improvement in stem end fry color (40%, 37% & 32%) when reconditioned at 60°F following storage for 60 days at 40°F. Reconditioning tubers of A12305-2adg*, AOR13064-2, and Clearwater Russet had the least effect on percent change in stem end fry color (11%, 12%, & 13%, respectively). A12305-2adg*, A09136-9LB, and AOR11217-3 appeared more susceptible to sugar end development based on attenuated reconditioning of the stem versus bud end of tubers following storage at 40°F.

- Fry color recovery was also assessed by blanching potato strips prior to frying after storage at 40°F for 60 days. Russet Burbank, A12305-2adg, and A09086-1LB* benefited the most and improved percent stem fry color 60%, 53%, and 47% compared to stem end fry color at 40°F storage. Blanching had the least effect on AOR15227-2, A13072-7, and AOR13064-2* (26%, 22%, and 17%). When averaged for location and entry, average fry color (bud+stem) percent recovery from 40°F storage was equivalent in blanched samples (ca. 27%) to reconditioned samples (ca. 24%) for the 2024 crop, though reconditioning resulted in an average non-uniform fry color (ca. 9.0) and blanching preserved fry color uniformity (ca. 4.3).

- In 2021 through 2023, blanching improved stem end fry color more than reconditioning (32% vs 29%, respectively), but reconditioning improved bud end fry color more than blanching (38% vs 35%).

- A13091-5, AOR15227-2, and A13072-7 were the most resistant to blackspot bruise and averaged 13-21% bruise (stem end) in the controlled impact study (3-state average). These entries also scored lowest in bruise severity, averaging 1.4/5 (1 = no bruise; 5 = 100% of impact area is dark). A13091-5, AOR15227-2, and A13072-7 were highly susceptible to bruise, averaging 85% bruise. Bruise severity was also greatest in these three entries (ca. 3.4/5).

- ID grown tubers (8-10 oz) had the highest L/W ratios (1.80) compared to those grown in OR (1.70) and WA (1.54). AFA5661-8*, A09086-1LB, and A09136-9LB had the lowest L/W ratios (avg. 1.55), reflecting a rounder tuber shape phenotype. AOR11217-3, Ranger Russet*, and AOR15166-2 had the highest L/W ratios (1.77-1.87). Ranger Russet*, AOR15227-2†, and Russet Burbank* showed the greatest variation in L/W ratio 8- to 10-oz tubers across production sites. By contrast, the L/W ratios of A12305-2adg, AOR13064-2*, and AFA5661-8 were the least affected by the growing region. Width to thickness (W/Th) ratios were measured for the 2024 crop. The average difference in W/Th was minimal (max. 0.06; less

variation than 2023 [0.11]) among all entries and production sites. AOR13064-2, AFA5661-8*, and A12305-2adg* had the most consistent diameter (1.11, 1.11 & 1.09, respectively) and A09086-1LB, A09136-9LB, and Clearwater Russet were the least consistent (1.15, 1.15 & 1.14, respectively).

- Following 60 days at 48°F, 93% of A09086-1LB* tubers were sprouting with an average sprout length of 0.4-inches, indicating a relatively short dormancy (Ranger = 66% with 0.5-inch sprouts). By contrast, 13% of A12305-2adg had sprouted with only 0.1-inches of sprout length. Average percent sprouting and sprout lengths were greatest in the OR samples (85%; 0.6-inches) followed by WA (50%; 0.3-inches long) and then by ID (15%, ca. 0.05-inches long).

- After 7-months of storage (3 months at 48°F + 4 months at 44°F) of the 2023 crop, sprout lengths ranged from 0.7 to 2.1-inches depending on the clone and state. A13072-7 and AOR15227-2 produced the longest sprouts (avg. 2.1 & 1.9-inches), indicating a shorter dormancy than the other clones. By contrast, Clearwater Russet and Russet Burbank each averaged 0.7-inch sprouts which indicates a longer dormancy than the other tested entries.

Overall Phase 2 (LRT) Postharvest Merit Scores

	2024 Phase 2 (LRT) Postharvest Merit Scores				3 state
	Clone	WA	ID	OR	Average
12	AOR13064-2	4.0	4.7	4.7	4.5
9	A13091-5	3.8	4.4	4.5	4.2
5	A09136-9LB	3.6	4.1	3.7	3.8
13	AOR15166-2	3.1	3.9	4.3	3.8
11	AOR11217-3	3.1	4.0	4.0	3.7
8	A13072-7	3.1	4.2	3.7	3.7
1	Clearwater	2.7	3.7	4.5	3.6
14	AOR15227-2	2.9	3.3	4.1	3.4
2	Ranger Russet	2.7	3.7	3.7	3.4
10	AFA5661-8	2.7	3.7	3.6	3.3
6	A12304-1sto	2.1	3.3	3.7	3.0
7	A12305-2adg	1.8	3.1	3.9	2.9
4	A09086-1LB	1.6	3.0	2.7	2.5
3	Russet Burbank	1.4	2.0	2.7	2.0

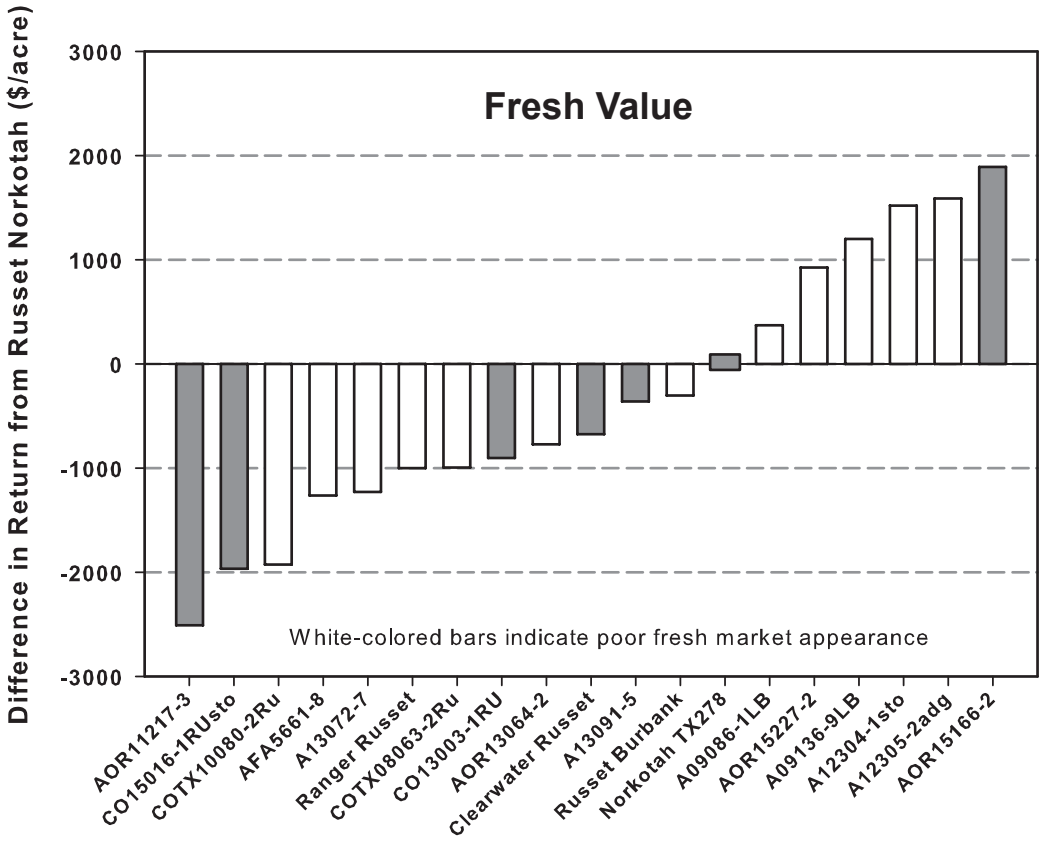
2024 Late Harvest Regional Trial Summaries

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
Clearwater Russet	928	*CDE*	46.4	89	4	8	59	27.3	81	37.8
Ranger Russet	993	*ABCDE*	49.6	74	14	12	51	25.1	81	40.1
Russet Burbank	973	*BCDE*	48.6	86	4	10	58	28.3	82	39.9
A09086-1LB	1084	*ABC*	54.2	83	1	16	55	29.9	69	37.2
A09136-9LB	1222	*A*	61.1	91	1	7	57	34.7	88	54.1
A12304-1sto	1187	*AB*	59.4	86	1	13	59	35.3	75	44.7
A12305-2adg	1107	*ABC*	55.3	91	4	5	64	35.3	90	49.9
A13072-7	1050	*ABCD*	52.5	82	9	9	47	24.5	87	45.4
A13091-5	835	*DE*	41.7	94	0	5	70	29.1	85	35.5
AFA5661-8	923	*CDE*	46.1	67	20	14	51	23.4	82	37.6
AOR11217-3	808	*E*	40.4	83	5	12	46	18.8	71	28.8
AOR13064-2	900	*CDE*	45.0	90	4	6	60	26.9	88	39.5
AOR15166-2	1064	*ABCD*	53.2	94	2	4	71	37.7	89	47.6
AOR15227-2	995	*ABCDE*	49.7	91	5	4	68	33.7	90	44.9
Norkotah TX 278	1060	*ABCD*	53.0	86	5	9	54	28.8	82	43.8
CO13003-1RU	957	*BCDE*	47.9	89	0	11	51	24.5	69	33.1
CO15016-1RUsto	842	*DE*	42.1	82	1	17	50	21.0	61	26.0
COTX08063-2Ru	886	*CDE*	44.3	84	3	13	57	25.2	73	32.3
COTX10080-2Ru	808	*CDE*	40.4	83	2	14	55	22.1	70	28.4

ENTRY	US # 1 YIELD > 4 oz		> 4 oz	4-7 oz*	7-14 oz*	> 14 oz*	> 4 oz SPECIFIC GRAVITY	INTERNAL DEFECTS (%) (8-12 oz tubers)		
	CWT/A	STATS**	Tons/A	%				% HH	% BC	% IBS
Clearwater Russet	823	*BCD*	41.1	20	54	25	1.088	3	0	0
Ranger Russet	738	*CD*	36.9	18	59	23	1.085	0	0	0
Russet Burbank	836	*BCD*	41.8	16	54	30	1.080	0	0	8
A09086-1LB	903	*ABC*	45.2	30	57	13	1.091	0	0	0
A09136-9LB	1118	*A*	55.9	9	41	50	1.094	3	0	3
A12304-1sto	1019	*AB*	51.0	22	58	20	1.085	0	0	35
A12305-2adg	1003	*AB*	50.1	9	49	43	1.086	0	0	0
A13072-7	858	*BC*	42.9	7	36	57	1.083	0	0	10
A13091-5	787	*BCD*	39.3	19	59	21	1.084	0	3	0
AFA5661-8	611	*D*	30.6	10	54	36	1.092	0	0	3
AOR11217-3	673	*CD*	33.6	33	47	20	1.086	0	0	0
AOR13064-2	813	*BCD*	40.6	12	51	37	1.084	0	0	0
AOR15166-2	998	*AB*	49.9	12	64	24	1.097	0	0	0
AOR15227-2	908	*ABC*	45.4	11	56	33	1.092	0	0	3
Norkotah TX 278	905	*ABC*	45.3	16	47	37	1.077	0	0	3
CO13003-1RU	848	*BCD*	42.4	35	49	16	1.084	0	0	21
CO15016-1RUsto	695	*CD*	34.7	37	55	8	1.080	8	0	3
COTX08063-2Ru	748	*CD*	37.4	25	54	20	1.105	0	0	0
COTX10080-2Ru	674	*CD*	33.7	32	57	11	1.071	0	0	0

ENTRY	40 DAY STAND	50 DAY STAND	STEMS PER PLANT	TUBER GREENING	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	Above Ground	% Total Yield	Ounces	Tubers/Plant			BLACKSPOT	SHATTER
Clearwater Russet	52	97	2.1	1	8.3	10.1	3.0	3.0	67	55
Ranger Russet	91	97	2.6	1	8.9	10.1	3.0	4.0	79	25
Russet Burbank	83	91	2.1	3	9.0	9.7	4.0	3.0	92	58
A09086-1LB	78	98	2.9	5	6.9	14.1	2.8	3.0	83	78
A09136-9LB	88	98	2.9	2	11.3	9.7	4.0	2.0	88	75
A12304-1sto	72	94	3.1	7	7.9	13.6	3.8	3.0	96	68
A12305-2adg	45	92	2.1	1	10.6	9.4	2.0	3.5	29	48
A13072-7	84	98	2.1	5	11.6	8.2	3.0	3.0	29	83
A13091-5	78	92	2.2	1	8.3	9.1	4.0	3.0	8	80
AFA5661-8	39	94	1.8	3	10.9	7.6	3.0	3.0	63	63
AOR11217-3	75	94	2.4	1	6.9	10.5	4.0	3.3	71	68
AOR13064-2	70	94	2.1	3	8.4	10.8	4.0	3.7	33	50
AOR15166-2	80	95	2.2	1	9.7	10.0	4.0	3.0	46	50
AOR15227-2	83	92	1.5	1	10.0	9.0	4.0	3.0	25	20
Norkotah TX 278	75	84	2.2	3	9.1	10.4	4.0	3.3	NA	34
CO13003-1RU	56	94	3.7	1	6.8	12.7	4.0	3.0	NA	47
CO15016-1RUsto	25	88	3.2	2	6.0	12.7	4.0	3.0	58	53
COTX08063-2Ru	78	94	3.0	4	7.7	10.4	4.0	3.0	71	88
COTX10080-2Ru	66	91	2.7	5	5.6	14.4	4.0	3.0	NA	41

* Percent values may not total 100% due to rounding



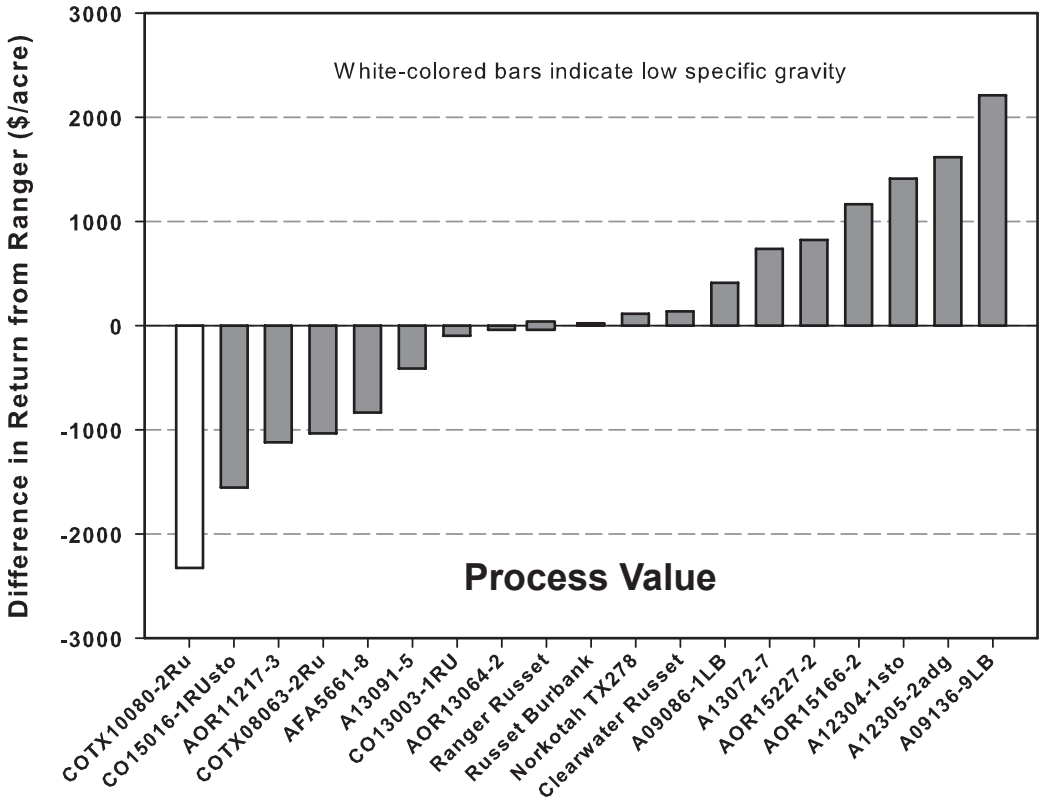
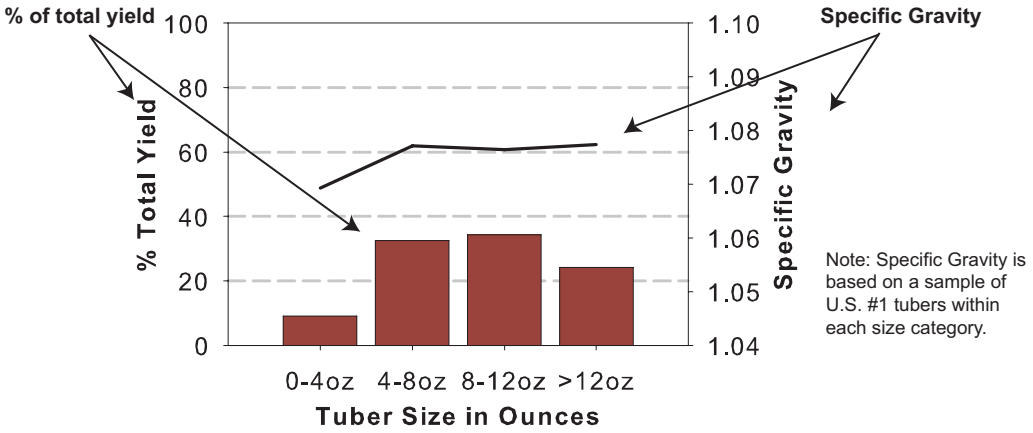


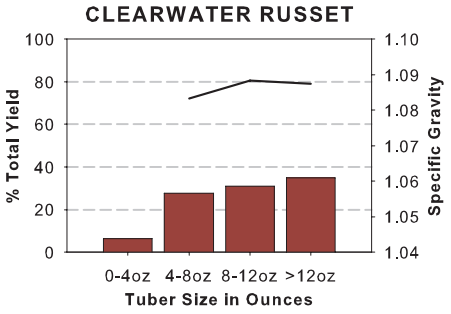
Figure 1 (top). Difference in gross return per acre (Fresh Market) from Russet Norkotah calculated by subtracting the gross return of Norkotah TX278 from the gross return of the particular entry. Entries with the white-colored bars may not appeal to fresh market consumers due to the undesirable shape 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.

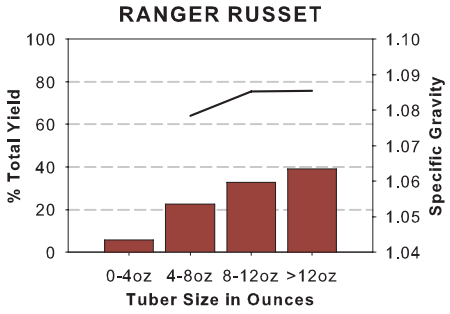
2024 Late Harvest Regional Trial

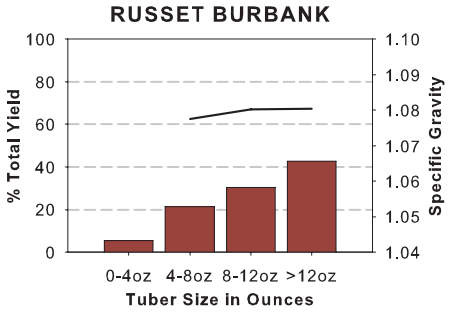
Tuber Yield and Specific Gravity Distributions

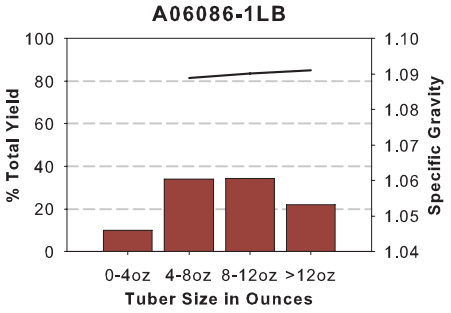
11 inch In-Row Spacing

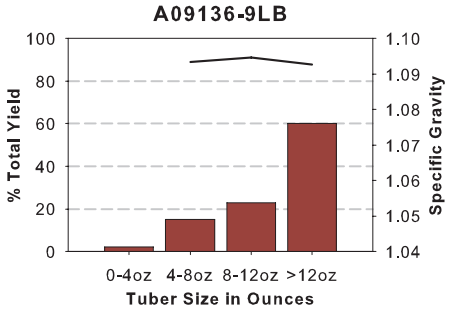


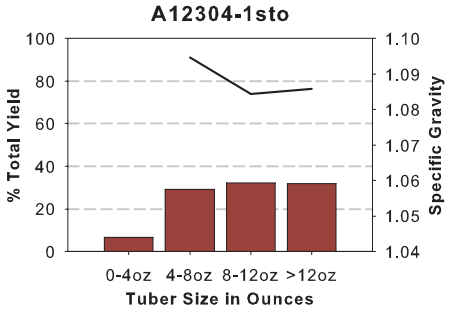


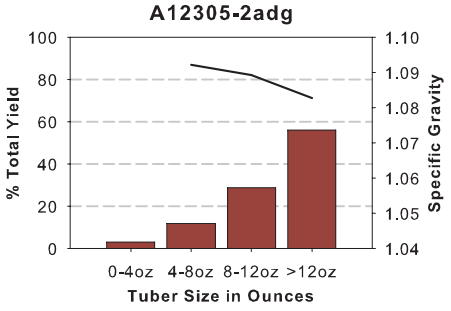


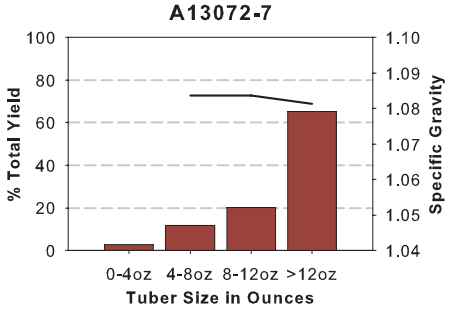


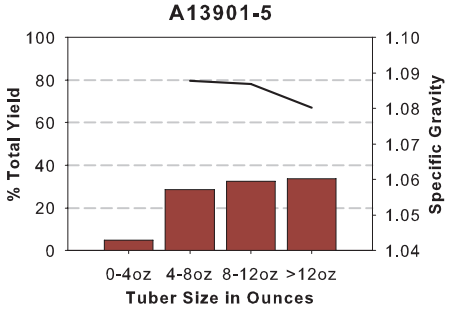


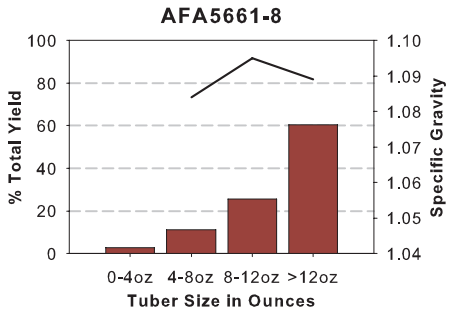


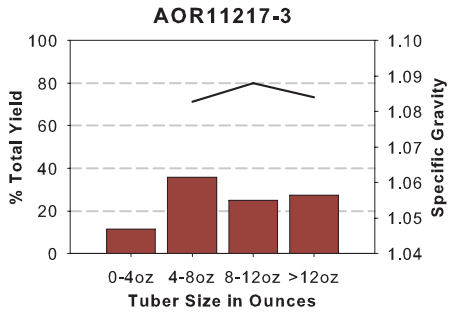


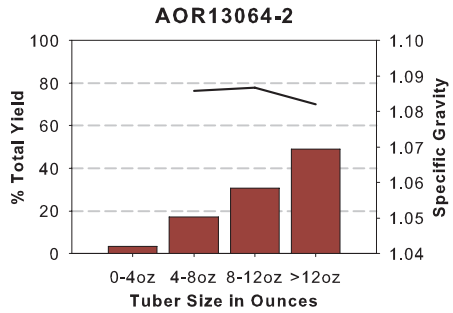







AFA5661-8
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


AOR11217-3
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


AOR13064-2
% Total Yield
Specific Gravity
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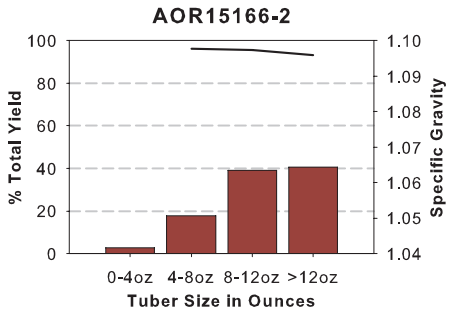
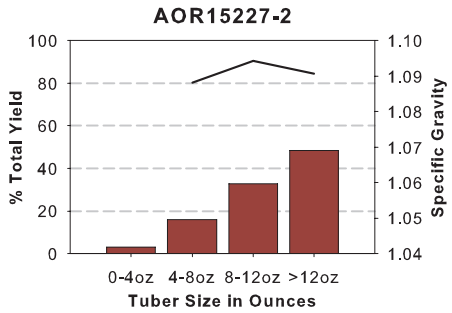
Tuber Size in Ounces


AOR15166-2
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


AOR15227-2
% Total Yield
Specific Gravity
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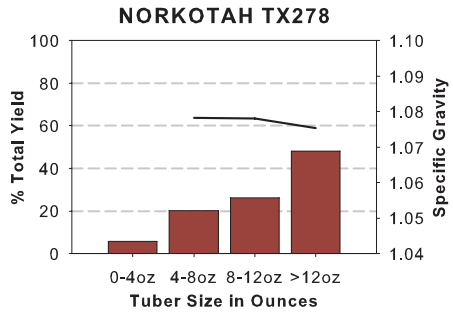
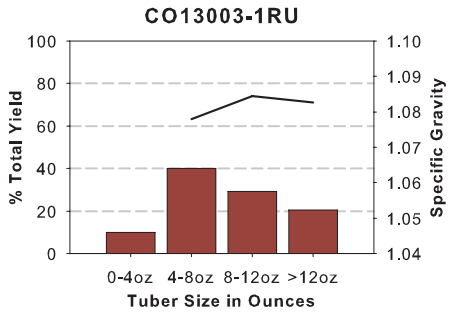
Tuber Size in Ounces


NORKOTAH TX278
% Total Yield
Specific Gravity
0-4oz 4-8oz 8-12oz >12oz
Tuber Size in Ounces


CO13003-1RU
% Total Yield
Specific Gravity
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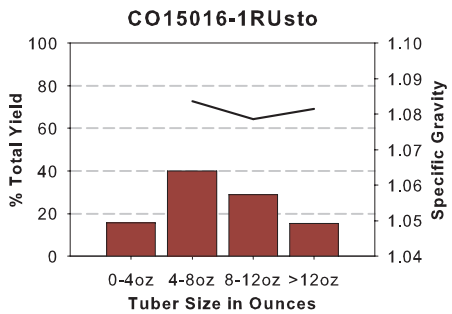
Tuber Size in Ounces


CO15016-1RUsto
% Total Yield
Specific Gravity
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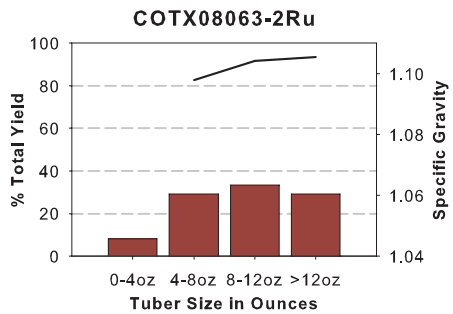
Tuber Size in Ounces


COTX08063-2Ru
% Total Yield
Specific Gravity
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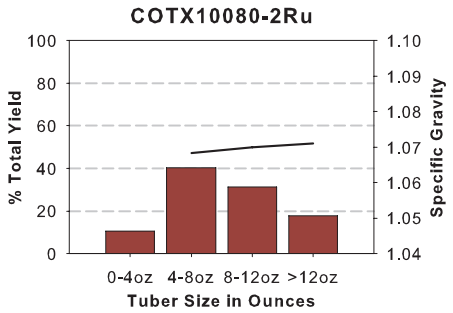
Tuber Size in Ounces


COTX10080-2Ru
% Total Yield
Specific Gravity
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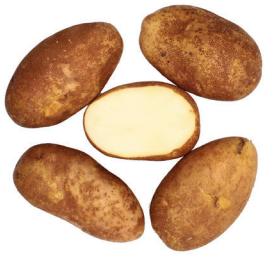
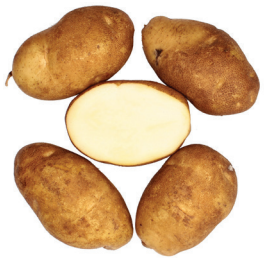
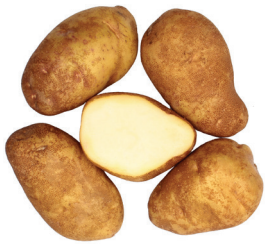
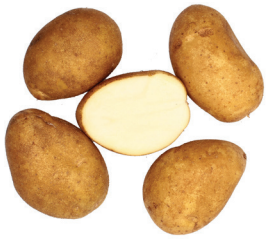
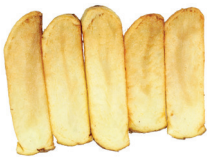
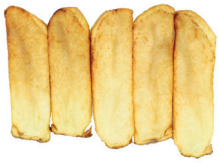
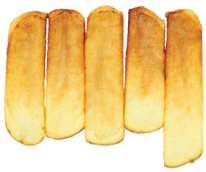
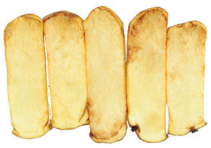
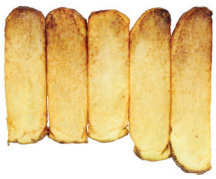
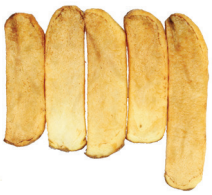
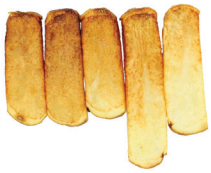
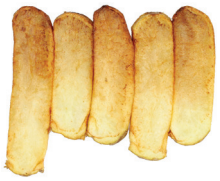
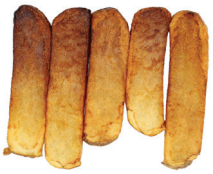
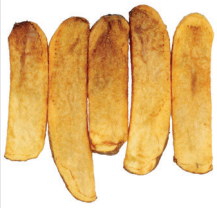
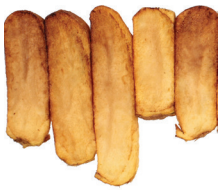
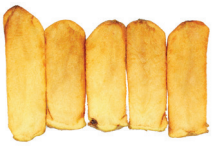
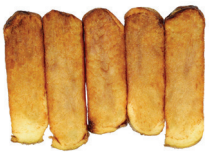
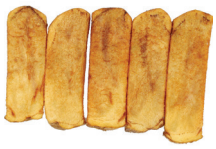
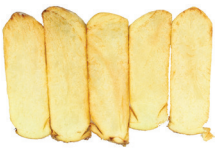
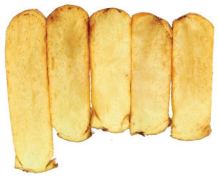
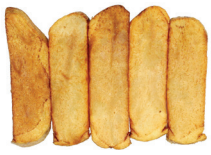
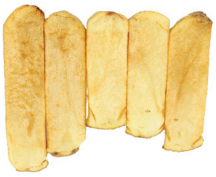
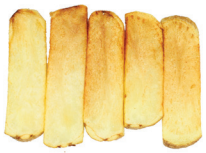
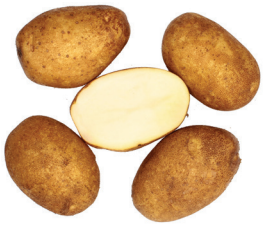
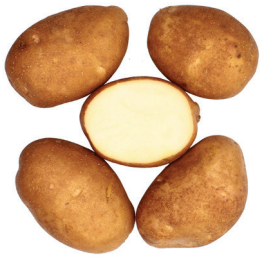
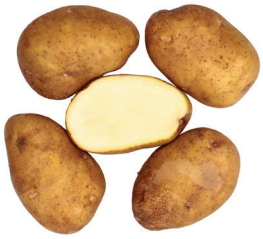
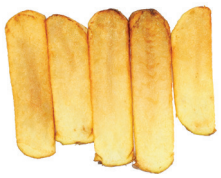
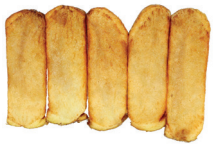
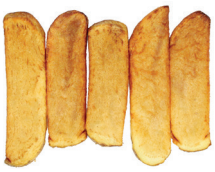
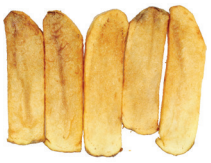
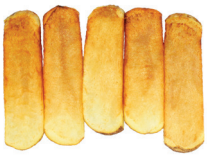
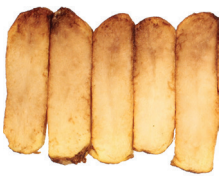
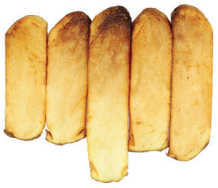
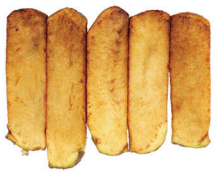
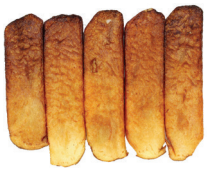
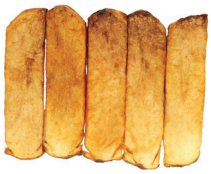
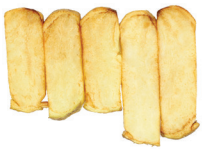
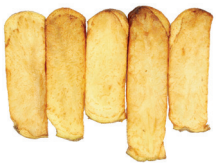
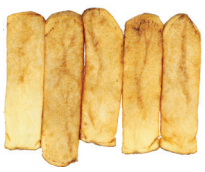
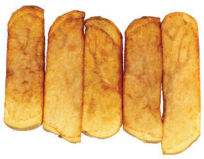
Tuber Size in Ounces

Tubers	WA Phase 2 (LRT) Comments
Clearwater Russet	
	**Tubers:** Oblong tubers. Fair skin set; shallow eyes. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = relatively dark, non-uniform; 44°F = relatively dark,non-uniform; 40°F = unacceptably dark, non-uniform; Reconditioned = relatively dark, non-uniform.
Ranger Russet	
	**Tubers:** Oblong to long tubers. Fair skin set; moderate eye depth. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = light, uniform; 44°F = relatively dark,non-uniform; 40°F = unacceptably dark, non-uniform; Reconditioned = relatively dark, non-uniform.
Russet Burbank	
	**Tubers:** Oblong tubers. Good skin set; moderate eye depth. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = relatively dark, non-uniform; 44°F = unacceptably dark,non-uniform; 40°F = unacceptably dark, non-uniform; Reconditioned = unacceptably dark, non-uniform.
A09086-1LB	
	Tubers: Oblong tubers. Fair skin set; shallow eyes. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = relatively dark, non-uniform; 44°F = unacceptably dark,non-uniform; 40°F = unacceptably dark, uniform; Reconditioned = unacceptably dark, non-uniform.
A09136-9LB	
	**Tubers:** Round to oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= relatively dark, uniform; 48°F = light, uniform; 44°F = light,uniform; 40°F = relatively dark, uniform; Reconditioned = light, non-uniform.

Initial Fries	48º F Storage	44º F Storage	40º F Storage	40º F Blanching	40º F Recon.
Clearwater Russet					
					
Ranger Russet					
					
Russet Burbank					
					
A09086-1LB					
					
A09136-9LB					
					

Tubers	WA Phase 2 (LRT) Comments
A12304-1sto	
	**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = relatively dark, non-uniform; 44°F = relatively dark,non-uniform; 40°F = unacceptably dark, uniform; Reconditioned = relatively dark, non-uniform.
A12305-2adg	
	Tubers: Oblong to long tubers. Poor skin set; shallow eyes. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = relatively dark, non-uniform; 44°F = unacceptably dark,non-uniform; 40°F = unacceptably dark, non-uniform; Reconditioned = unacceptably dark, non-uniform.
A13072-7	
	Tubers: Oblong tubers. Fair skin set; moderate eye depth. **Fry color:** At harvest= relatively dark, uniform; 48°F = light, uniform; 44°F = relatively dark,uniform; 40°F = relatively dark, uniform; Reconditioned = relatively dark, uniform.
A13091-5	
	**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= relatively dark, uniform; 48°F = light, uniform; 44°F = light,non-uniform; 40°F = relatively dark, non-uniform; Reconditioned = relatively dark, non-uniform.
AFA5661-8	
	**Tubers:** Oblong tubers. Fair skin set; shallow eyes. **Fry color:** At harvest= relatively dark, uniform; 48°F = relatively dark, non-uniform; 44°F = relatively dark,uniform; 40°F = relatively dark, uniform; Reconditioned = relatively dark, non-uniform.

Initial Fries	48º F Storage	44º F Storage	40º F Storage	40º F Blanching	40º F Recon.
A12304-1sto					
					
A12305-2adg					
					
A13072-7					
					
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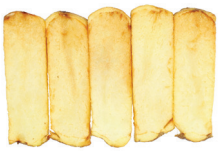
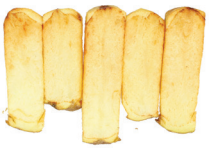
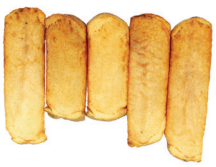
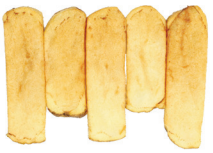
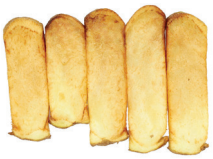
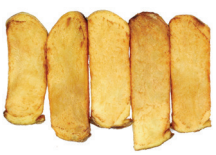
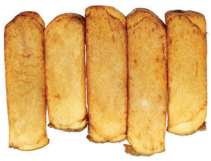
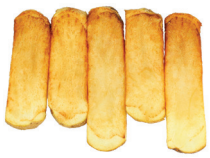
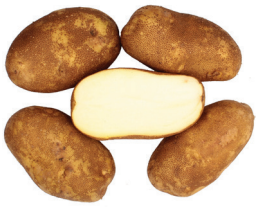
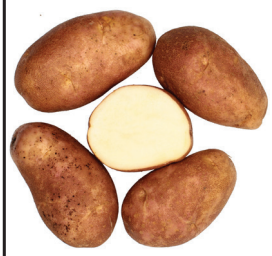
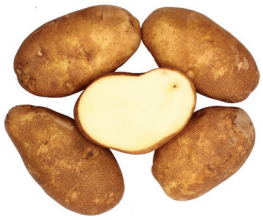
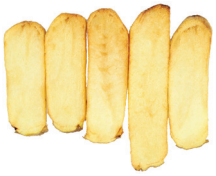
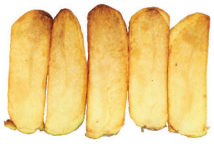
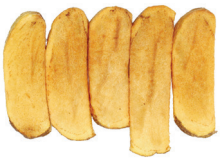
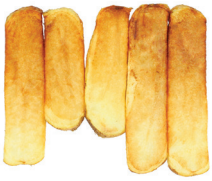
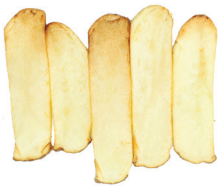
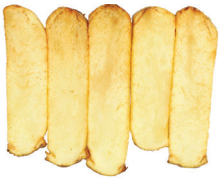
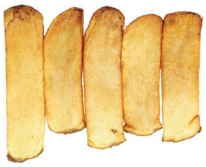
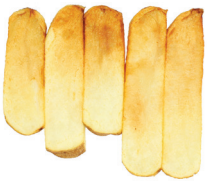
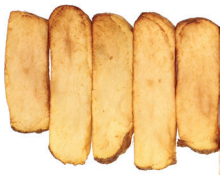
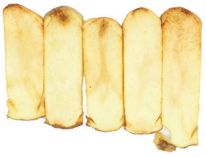
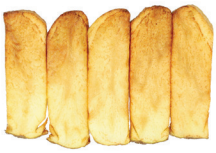
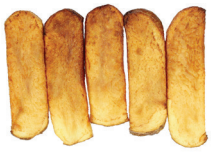
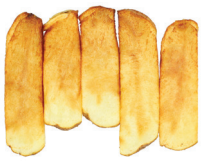
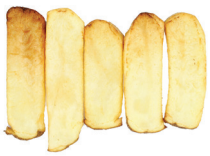
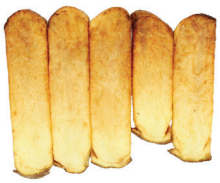
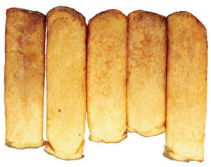
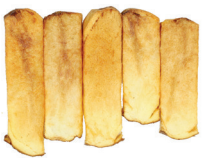
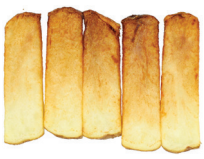
					
AFA5661-8					
					

Tubers	WA Phase 2 (LRT) Comments
AOR11217-3	
	**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = light, uniform; 44°F = relatively dark,non-uniform; 40°F = unacceptably dark, uniform; Reconditioned = relatively dark, non-uniform.
AOR13064-2	
	**Tubers:** Oblong to long tubers. Good skin set; shallow eyes. **Fry color:** At harvest= relatively dark, uniform; 48°F = light, uniform; 44°F = light,uniform; 40°F = relatively dark, non-uniform; Reconditioned = light, non-uniform.
AOR15166-2	
	**Tubers:** Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = light, uniform; 44°F = relatively dark,non-uniform; 40°F = relatively dark, non-uniform; Reconditioned = relatively dark, non-uniform.
AOR15227-2	
	Tubers: Oblong tubers. Good skin set; shallow eyes. **Fry color:** At harvest= relatively dark, non-uniform; 48°F = light, non-uniform; 44°F = relatively dark,non-uniform; 40°F = relatively dark, non-uniform; Reconditioned = relatively dark, non-uniform.

Initial Fries	48º F Storage	44º F Storage	40º F Storage	40º F Blanching	40º F Recon.
AOR11217-3					
					
AOR13064-2					
					
AOR15166-2					
					
AOR15227-2					
					

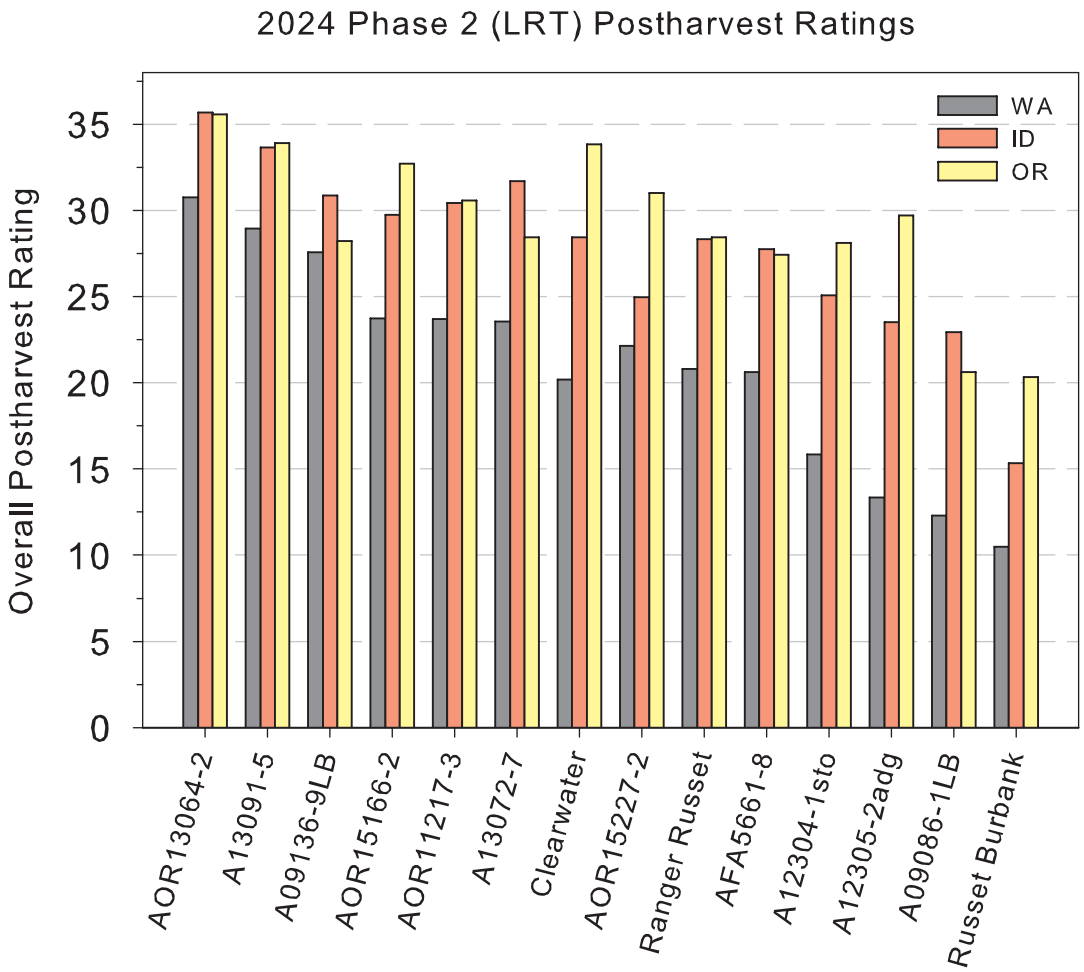
2024 Phase 2 (LRT) Trial

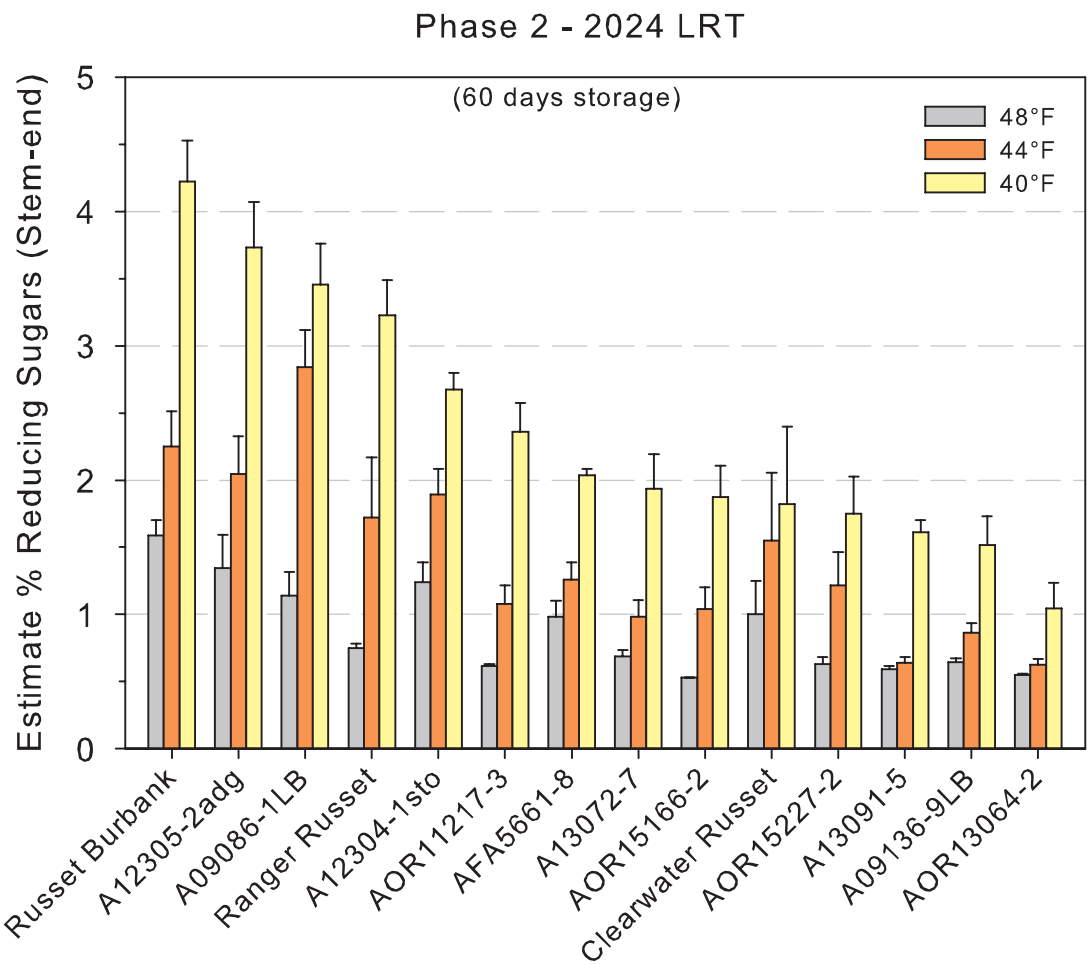
Accumulated Total Postharvest Ratings of Clones

	WA		ID		OR		3 State av.
Clone	Rating Total §	Discard §§	Rating Total §	Discard §§	Rating Total §	Discard §§	Rating Total
12 AOR13064-2	30.8		35.7		35.6		34.0
9 A13091-5	29.0		33.7		33.9		32.2
5 A09136-9LB	27.6		30.9		28.2		28.9
13 AOR15166-2	23.8		29.8		32.7		28.7
11 AOR11217-3	23.7		30.4		30.6		28.2
8 A13072-7	23.6		31.7		28.5		27.9
1 Clearwater	20.2		28.4		33.8		27.5
14 AOR15227-2	22.2		25.0		31.0		26.1
2 Ranger Russet	20.8		28.3		28.5	40°F	25.9
10 AFA5661-8	20.6		27.8		27.4		25.3
6 A12304-1sto	15.9		25.1		28.1		23.0
7 A12305-2adg	13.4	40°F,44°F	23.5	40°F	29.7		22.2
4 A09086-1LB	12.3	40°F,44°F	23.0		20.6		18.6
3 Russet Burbank	10.5	40°F	15.3	40°F,Sp. Gr.	20.3	40°F,Sp. Gr.	15.4
	21.0		27.7		29.2		26.0

§ maximum rating possible = 38

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





Stem end estimated percent reducing sugars based on photovolt observations from the 2024 crop for Phase 2 entries. Values are average %RS estimates for entries grown in each state after storage for 60-days at 40°F, 44°F, or 48°F.

The 2024 Field Day attendees looked at the PVY Demo and Seed Lot trials.

2024 Phase 2 (LRT) Trial

Prior to Storage

Clone	PHOTOVOLT READING stem	bud	ave.	rtg §	DIFF	USDA COLOR	SPECIFIC GRAVITY	rtg	Range
				*	**	***			
Washington									
1 Clearwater Russet	29.1	48.0	38.5	**4-**	18.8	1	1.081	**4**	1.077 - 1.085
2 Ranger Russet	32.9	43.0	38.0	**4-**	10.2	0	1.082	**4**	1.077 - 1.087
3 Russet Burbank	26.9	43.1	35.0	**3-**	16.2	1	1.076	**1**	1.073 - 1.079
4 A09086-1LB	24.3	36.2	30.2	**2-**	11.8	2	1.088	**5**	1.086 - 1.090
5 A09136-9LB	37.8	43.4	40.6	**5+**	6.0	0	1.089	**4**	1.086 - 0.092
6 A12304-1sto	28.0	37.1	32.6	**3-**	9.7	1	1.082	**4**	1.079 - 1.088
7 A12305-2adg	22.5	43.7	33.1	**3-**	21.2	2	1.078	**2**	1.071 - 1.084
8 A13072-7	39.5	42.3	40.9	**5+**	5.0	0	1.079	**2**	1.077 - 1.083
9 A13091-5	43.0	51.2	47.1	**5+**	8.2	0	1.081	**4**	1.079 - 1.083
10 AFA5661-8	27.6	32.0	29.8	**2+**	5.5	1	1.090	**4**	1.088 - 1.093
11 AOR11217-3	30.0	41.9	36.0	**4-**	11.9	1	1.081	**4**	1.079 - 1.085
12 AOR13064-2	37.1	43.2	40.1	**4+**	7.1	0	1.081	**4**	1.069 - 1.088
13 AOR15166-2	38.6	45.7	42.2	**5-**	9.1	0	1.092	**3**	1.089 - 1.097
14 AOR15227-2	32.9	48.5	40.7	**5-**	16.4	0	1.088	**5**	1.074 - 1.094
		LSD 0.05	*3.5*		*4.8*		*0.007*		
Average	32.2	42.8	37.5		11.2	1	1.083		
Idaho									
1 Clearwater Russet	32.3	39.0	35.7	**4+**	6.7	0	1.087	**5**	1.083 - 1.091
2 Ranger Russet	35.3	38.9	37.1	**4+**	6.1	0	1.082	**4**	1.079 - 1.085
3 Russet Burbank	25.9	37.2	31.5	**3-**	11.3	1	1.071	**0**	1.068 - 1.075
4 A09086-1LB	35.9	42.9	39.4	**4+**	7.0	0	1.098	**1**	1.091 - 1.106
5 A09136-9LB	47.9	46.6	47.2	**5+**	4.1	0	1.095	**2**	1.094 - 1.099
6 A12304-1sto	30.5	38.3	34.4	**3+**	7.9	1	1.086	**5**	1.081 - 1.090
7 A12305-2adg	29.8	35.7	32.7	**3+**	6.0	1	1.086	**5**	1.083 - 1.089
8 A13072-7	50.5	46.1	48.3	**5+**	4.6	0	1.087	**5**	1.078 - 1.092
9 A13091-5	50.1	53.9	52.0	**5+**	4.6	0	1.088	**5**	1.081 - 1.091
10 AFA5661-8	32.3	37.3	34.8	**3+**	5.3	0	1.094	**2**	1.092 - 1.099
11 AOR11217-3	35.4	40.2	37.8	**4+**	6.5	0	1.086	**5**	1.083 - 1.088
12 AOR13064-2	41.4	46.0	43.7	**5+**	7.1	0	1.088	**5**	1.086 - 1.091
13 AOR15166-2	38.1	41.2	39.6	**4+**	6.0	0	1.093	**3**	1.091 - 1.094
14 AOR15227-2	43.0	44.9	0.0	**0+**	3.6	0	1.095	**2**	1.094 - 1.096
		LSD 0.05	*4.0*		*3.8*		*0.005*		
Average	37.7	42.0	36.7		6.2	0	1.088		
Oregon									
1 Clearwater Russet	52.2	47.5	49.9	**5+**	5.5	0	1.091	**4**	1.084 - 1.095
2 Ranger Russet	44.5	47.4	45.9	**5+**	4.6	0	1.088	**5**	1.084 - 1.092
3 Russet Burbank	42.0	42.9	42.4	**5+**	3.5	0	1.075	**0**	1.073 - 1.076
4 A09086-1LB	40.6	45.4	43.0	**5+**	5.5	0	1.100	**1**	1.097 - 1.103
5 A09136-9LB	46.5	46.1	46.3	**5+**	3.7	0	1.092	**3**	1.088 - 1.096
6 A12304-1sto	37.7	40.8	39.2	**4+**	4.5	0	1.083	**5**	1.080 - 1.087
7 A12305-2adg	48.4	49.4	48.9	**5+**	3.2	0	1.092	**3**	1.086 - 1.095
8 A13072-7	47.9	45.1	46.5	**5+**	4.8	0	1.084	**5**	1.080 - 1.089
9 A13091-5	57.5	56.8	57.2	**5+**	3.1	0	1.084	**5**	1.074 - 1.091
10 AFA5661-8	41.2	46.0	43.6	**5+**	6.4	0	1.094	**2**	1.089 - 1.098
11 AOR11217-3	54.8	51.4	53.1	**5+**	4.6	0	1.095	**2**	1.090 - 1.098
12 AOR13064-2	57.2	53.6	55.4	**5+**	4.4	0	1.090	**4**	1.085 - 1.094
13 AOR15166-2	53.6	54.6	54.1	**5+**	2.0	0	1.092	**3**	1.090 - 1.094
14 AOR15227-2	54.8	53.7	54.2	**5+**	2.5	0	1.106	**1**	1.102 - 1.111
		LSD 0.05	*2.6*		*2.7*		*0.006*		
Average	48.5	48.6	48.6		4.2	0	1.090		

Date test performed:

Washington	Oct. 1	Sept. 24
Idaho	Oct. 3	Sept. 26
Oregon	Oct. 4	Sept. 27

§ 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.

Specific Gravity done by weight in air weight in water method.

2024 Phase 2 (LRT) Trial

Stored at 48°F after Arrival

Clone	FRENCH FRY TASTE PANEL rating	BRUISE POTENTIAL (percent) stem	(percent) bud	[color 5=darkest] stem	[color 5=darkest] bud
Washington					
1 Clearwater Russet	**3.2**	67	42	2.8	2.0
2 Ranger Russet	**2.8**	79	50	3.3	2.3
3 Russet Burbank	**2.5**	92	17	3.8	1.4
4 A09086-1LB	**3.3**	83	71	3.3	2.7
5 A09136-9LB	**3.6**	88	50	3.8	2.2
6 A12304-1sto	**2.9**	96	67	4.1	2.6
7 A12305-2adg	**3.4**	29	25	1.6	1.5
8 A13072-7	**3.6**	29	8	1.8	1.2
9 A13091-5	**4.0**	8	4	1.2	1.1
10 AFA5661-8	**3.6**	63	25	2.5	1.5
11 AOR11217-3	**3.7**	71	42	2.9	2.0
12 AOR13064-2	**3.8**	33	0	1.9	1.1
13 AOR15166-2	**3.8**	46	4	2.1	1.2
14 AOR15227-2	**3.2**	25	8	1.8	1.3
LSD 0.05	*0.5*	*29*	*26*		
Average	3.4	58	29	2.6	1.7
Idaho					
1 Clearwater Russet	**3.4**	21	4	1.5	1.1
2 Ranger Russet	**3.3**	63	8	2.7	1.3
3 Russet Burbank	**2.3**	17	4	1.4	1.1
4 A09086-1LB	**4.0**	83	38	3.3	1.9
5 A09136-9LB	**3.9**	88	25	3.5	1.7
6 A12304-1sto	**3.1**	88	25	3.3	1.6
7 A12305-2adg	**3.5**	46	13	2.2	1.3
8 A13072-7	**3.7**	21	0	1.5	1.0
9 A13091-5	**3.7**	29	13	1.6	1.3
10 AFA5661-8	**3.8**	71	17	2.9	1.4
11 AOR11217-3	**3.4**	25	4	1.5	1.1
12 AOR13064-2	**3.7**	33	0	1.8	1.0
13 AOR15166-2	**3.8**	63	0	2.5	1.0
14 AOR15227-2	**4.0**	8	21	1.2	1.4
LSD 0.05	*0.4*	*29*	*20*		
Average	3.5	47	12	2.2	1.3
Oregon					
1 Clearwater Russet	**3.8**	4	0	1.1	1.0
2 Ranger Russet	**3.5**	96	0	3.5	1.0
3 Russet Burbank	**2.3**	25	0	1.5	1.0
4 A09086-1LB	**3.6**	54	0	2.2	1.0
5 A09136-9LB	**3.2**	75	4	3.1	1.1
6 A12304-1sto	**3.1**	96	13	3.7	1.3
7 A12305-2adg	**3.7**	29	4	1.6	1.1
8 A13072-7	**3.5**	13	0	1.3	1.0
9 A13091-5	**3.9**	0	0	1.0	1.0
10 AFA5661-8	**3.4**	83	0	3.1	1.0
11 AOR11217-3	**3.6**	17	0	1.4	1.0
12 AOR13064-2	**3.6**	25	0	1.5	1.0
13 AOR15166-2	**3.7**	21	0	1.4	1.0
14 AOR15227-2	**4.0**	13	0	1.3	1.0
LSD 0.05	*0.5*	*24*	*8.1*		
Average	3.5	39	1	2.0	1.0

Date test performed:

Washington	Oct. 29	Nov. 6
Idaho	Oct. 30	Nov. 7
Oregon	Oct. 31	Nov. 8

2024 Phase 2 (LRT) Trial

Stored at 48°F for 60 Days

Clone	PHOTOVOLT READING stem	bud	ave	rtg §	DIFF	USDA COLOR	% REDUCING SUGAR stem	bud	SPROUTING (%)	length (in)
Washington										
1 Clearwater Russet	30.4	47.1	38.8	**4-**	16.9	1	1.3	0.5	80	0.25
2 Ranger Russet	38.3	44.6	41.4	**5+**	6.3	0	0.8	0.6	87	0.50
3 Russet Burbank	24.7	39.6	32.1	**3-**	14.9	2	2.0	0.7	0	0.00
4 A09086-1LB	25.8	36.4	31.1	**3-**	10.6	1	1.8	0.9	93	0.25
5 A09136-9LB	39.3	42.0	40.6	**5+**	4.1	0	0.8	0.7	100	1.00
6 A12304-1sto	26.0	36.2	31.1	**3-**	11.4	1	1.8	0.9	0	0.00
7 A12305-2adg	22.5	41.3	31.9	**3-**	18.8	2	2.3	0.7	7	0.13
8 A13072-7	37.1	40.8	38.9	**4+**	4.4	0	0.9	0.7	33	0.13
9 A13091-5	40.9	48.6	44.8	**5+**	8.6	0	0.7	0.5	47	0.25
10 AFA5661-8	29.3	40.1	34.7	**3-**	10.9	1	1.5	0.7	100	0.25
11 AOR11217-3	41.8	46.8	44.3	**5+**	6.3	0	0.7	0.5	80	0.50
12 AOR13064-2	44.6	47.8	46.2	**5+**	7.3	0	0.6	0.5	53	0.50
13 AOR15166-2	49.4	51.5	50.5	**5+**	4.6	0	0.5	0.5	7	0.13
14 AOR15227-2	37.8	48.0	42.9	**5-**	11.3	0	0.8	0.5	13	0.13
		LSD 0.05	*3.3*		*5.1*				*20*	
Average	34.8	43.6	39.2		9.7	1	1.2	0.7	50	0.29
Idaho										
1 Clearwater Russet	33.1	38.1	35.6	**4+**	6.1	0	1.1	0.8	0	0.00
2 Ranger Russet	41.1	42.5	41.8	**5+**	6.7	0	0.7	0.6	13	0.13
3 Russet Burbank	28.2	36.2	32.2	**3+**	8.0	1	1.6	0.9	87	0.00
4 A09086-1LB	39.3	42.7	41.0	**5+**	6.7	0	0.8	0.6	93	0.13
5 A09136-9LB	52.6	48.4	50.5	**5+**	4.5	0	0.5	0.5	0	0.25
6 A12304-1sto	36.5	40.5	38.5	**4+**	5.3	0	0.9	0.7	0	0.00
7 A12305-2adg	33.2	35.5	34.4	**3+**	5.0	0	1.1	1.0	0	0.00
8 A13072-7	53.7	44.6	49.2	**5-**	9.1	0	0.5	0.6	0	0.00
9 A13091-5	54.3	52.2	53.2	**5+**	4.4	0	0.5	0.5	0	0.00
10 AFA5661-8	40.5	48.2	44.3	**5+**	8.6	0	0.7	0.5	20	0.13
11 AOR11217-3	42.5	44.4	43.5	**5+**	6.7	0	0.6	0.6	0	0.00
12 AOR13064-2	49.3	49.8	49.6	**5+**	2.3	0	0.5	0.5	0	0.00
13 AOR15166-2	49.5	45.4	47.4	**5+**	5.2	0	0.5	0.6	0	0.00
14 AOR15227-2	48.3	48.7	48.5	**5+**	3.2	0	0.5	0.5	0	0.00
		LSD 0.05	*3.8*		*3.7*				*12*	
Average	43.0	44.1	43.5		5.8	0	0.8	0.6	15	0.04
Oregon										
1 Clearwater Russet	50.5	48.3	49.4	**5+**	3.8	0	0.5	0.5	87	0.25
2 Ranger Russet	39.6	41.9	40.8	**5+**	4.4	0	0.7	0.7	100	1.00
3 Russet Burbank	32.3	37.9	35.1	**3+**	6.2	0	1.2	0.8	0	0.00
4 A09086-1LB	38.5	42.2	40.3	**4+**	4.6	0	0.8	0.6	93	0.75
5 A09136-9LB	43.2	40.4	41.8	**5+**	3.8	0	0.6	0.7	100	1.50
6 A12304-1sto	35.2	36.7	36.0	**4+**	5.1	0	1.0	0.9	80	0.25
7 A12305-2adg	43.4	47.1	45.3	**5+**	5.0	0	0.6	0.5	33	0.13
8 A13072-7	42.2	37.9	40.1	**4+**	5.2	0	0.6	0.8	100	0.25
9 A13091-5	50.7	49.0	49.8	**5+**	2.9	0	0.5	0.5	100	0.13
10 AFA5661-8	39.0	42.2	40.6	**5+**	4.3	0	0.8	0.6	100	0.75
11 AOR11217-3	52.6	51.2	51.9	**5+**	4.1	0	0.5	0.5	100	1.00
12 AOR13064-2	52.7	45.9	49.3	**5+**	6.9	0	0.5	0.5	100	1.50
13 AOR15166-2	55.0	52.0	53.5	**5+**	3.5	0	0.5	0.5	100	0.50
14 AOR15227-2	50.6	50.1	50.3	**5+**	3.7	0	0.5	0.5	100	0.50
		LSD 0.05	*3.0*		*2.9*				*13*	
Average	44.7	44.5	44.6		4.5	0	0.7	0.6	85	0.61

Date test performed:

Washington	Dec. 2	Dec. 2	Dec. 17
Idaho	Dec. 5	Dec. 5	Dec. 17
Oregon	Dec. 8	Dec. 8	Dec. 17

§ 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. Sprouting was rated after 60 days - storage.

2024 Phase 2 (LRT) Trial

Stored at 44°F for 45 Days

Clone	PHOTOVOLT READING stem	bud	ave	rtg § *	DIFF **	USDA COLOR ***	% REDUCING SUGAR stem	bud
Washington								
1 Clearwater Russet	24.9	39.1	32.0	**3-**	14.2	2	2.0	0.8
2 Ranger Russet	20.4	35.9	28.2	**2-**	15.5	2	2.6	0.9
3 Russet Burbank	17.7	36.5	27.1	**2-**	18.8	3	3.1	0.9
4 A09086-1LB	13.8	23.7	18.7	**0-**	9.9	4	3.9	2.1
5 A09136-9LB	32.8	37.7	35.3	**3+**	6.7	0	1.1	0.8
6 A12304-1sto	20.2	29.2	24.7	**2-**	9.0	2	2.6	1.5
7 A12305-2adg	17.8	28.9	23.4	**1-**	11.1	3	3.0	1.5
8 A13072-7	29.3	34.9	32.1	**3+**	6.0	1	1.5	1.0
9 A13091-5	38.1	47.8	43.0	**5-**	9.7	0	0.8	0.5
10 AFA5661-8	26.4	32.5	29.5	**2+**	7.7	1	1.8	1.2
11 AOR11217-3	28.4	39.1	33.7	**3-**	10.7	1	1.5	0.8
12 AOR13064-2	38.5	41.0	39.8	**4+**	4.3	0	0.8	0.7
13 AOR15166-2	27.5	41.5	34.5	**3-**	13.9	1	1.6	0.7
14 AOR15227-2	23.2	44.3	33.8	**3-**	21.1	2	2.2	0.6
		LSD 0.05	*2.6*		*3.8*			
Average	25.7	36.6	31.1		11.3	2	2.0	1.0
Idaho								
1 Clearwater Russet	23.6	32.2	27.9	**2+**	8.7	2	2.1	1.2
2 Ranger Russet	32.4	36.2	34.3	**3+**	4.8	0	1.2	0.9
3 Russet Burbank	21.7	26.8	24.2	**1+**	5.2	2	2.4	1.7
4 A09086-1LB	21.4	25.6	23.5	**1+**	5.9	2	2.5	1.9
5 A09136-9LB	42.3	40.8	41.5	**5+**	3.6	0	0.6	0.7
6 A12304-1sto	27.6	32.3	30.0	**2+**	4.8	1	1.6	1.2
7 A12305-2adg	24.7	28.0	26.3	**2+**	4.1	2	2.0	1.6
8 A13072-7	43.1	37.6	40.4	**4+**	8.7	0	0.6	0.8
9 A13091-5	45.9	51.9	48.9	**5+**	6.2	0	0.5	0.5
10 AFA5661-8	36.2	41.3	38.8	**4+**	5.5	0	0.9	0.7
11 AOR11217-3	33.7	35.3	34.5	**3+**	6.0	0	1.1	1.0
12 AOR13064-2	46.5	45.2	45.9	**5+**	5.5	0	0.5	0.6
13 AOR15166-2	35.9	39.4	37.6	**4+**	6.5	0	0.9	0.8
14 AOR15227-2	36.2	41.2	38.7	**4+**	6.4	0	0.9	0.7
		LSD 0.05	*3.8*		*3.8*			
Average	33.6	36.7	35.2		5.9	1	1.3	1.0
Oregon								
1 Clearwater Russet	46.3	43.8	45.0	**5+**	3.2	0	0.5	0.6
2 Ranger Russet	30.2	28.4	29.3	**2+**	6.5	1	1.4	1.5
3 Russet Burbank	31.3	34.7	33.0	**3+**	7.6	0	1.3	1.0
4 A09086-1LB	23.7	32.9	28.3	**2-**	9.5	2	2.1	1.1
5 A09136-9LB	38.6	38.8	38.7	**4+**	4.0	0	0.8	0.8
6 A12304-1sto	29.8	33.0	31.4	**3+**	4.3	1	1.4	1.1
7 A12305-2adg	33.5	38.6	36.1	**4+**	5.6	0	1.1	0.8
8 A13072-7	37.1	34.0	35.6	**4+**	5.7	0	0.9	1.1
9 A13091-5	46.2	48.3	47.3	**5+**	4.4	0	0.5	0.5
10 AFA5661-8	33.8	37.1	35.5	**4+**	6.0	0	1.1	0.9
11 AOR11217-3	43.5	42.0	42.8	**5+**	5.5	0	0.6	0.7
12 AOR13064-2	51.0	48.8	49.9	**5+**	3.6	0	0.5	0.5
13 AOR15166-2	48.5	50.8	49.6	**5+**	3.9	0	0.5	0.5
14 AOR15227-2	49.5	50.6	50.1	**5+**	2.3	0	0.5	0.5
		LSD 0.05	*2.9*		*3.1*			
Average	38.8	40.1	39.5		5.2	0	0.9	0.8

Date test performed:

Washington	Dec. 3	Dec. 3
Idaho	Dec. 6	Dec. 6
Oregon	Dec. 9	Dec. 9

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

2024 Phase 2 (LRT) Trial

Stored at 40°F for 60 Days and Reconditioned

		PHOTOVOLT READING (60 Days at 40°F)						PHOTOVOLT AFTER RECONDITIONING (21 days at 60°F)				
Clone	SPROUTING (%)	stem	bud	ave	rtg §	DIFF	USDA COLOR	stem	bud	ave	Diff	USDA COLOR
Washington												
1 Clearwater Russet	20	18.9	30.8	24.8	**2**	11.9	3	23.0	41.5	32.2	20.5	2
2 Ranger Russet	7	15.0	27.7	21.3	**1**	12.7	4	20.2	34.9	27.5	14.7	2
3 Russet Burbank	0	10.1	21.3	15.7	**0**	11.2	4	14.3	28.7	21.5	14.4	4
4 A09086-1LB	0	11.6	17.7	14.7	**0**	6.1	4	15.5	28.7	22.1	13.2	3
5 A09136-9LB	40	22.4	26.8	24.6	**2**	4.9	2	31.2	38.8	35.0	9.3	0
6 A12304-1sto	0	18.0	26.0	22.0	**1**	8.0	3	21.0	33.9	27.5	13.0	2
7 A12305-2adg	0	10.8	20.3	15.6	**0**	9.5	4	13.0	31.6	22.3	18.5	4
8 A13072-7	0	20.8	25.5	23.2	**1**	5.2	2	20.2	25.8	23.0	5.6	2
9 A13091-5	0	25.1	29.6	27.3	**2**	9.5	1	23.8	37.5	30.7	13.7	2
10 AFA5661-8	0	23.7	29.8	26.7	**2**	6.8	2	24.9	37.5	31.2	12.7	2
11 AOR11217-3	0	17.0	24.7	20.8	**1**	7.7	3	20.0	34.4	27.2	14.4	2
12 AOR13064-2	0	26.2	38.0	32.1	**3**	11.9	1	34.0	45.4	39.7	11.3	0
13 AOR15166-2	0	20.2	30.8	25.5	**2**	10.6	2	26.9	36.5	31.7	9.7	1
14 AOR15227-2	0	20.3	40.1	30.2	**2**	19.8	2	20.6	43.2	31.9	22.6	2
$LSD_{0.05}$	*ns*			*2.7*		*3.9*				*3.6*	*4.6*	
Average	5	18.6	27.8	23.2		9.7	3	22.0	35.6	28.8	13.8	2
Idaho												
1 Clearwater Russet	0	26.8	29.4	28.1	**2**	5.2	1	32.8	36.5	34.7	5.8	0
2 Ranger Russet	0	19.7	23.6	21.6	**1**	4.4	3	25.8	31.0	28.4	7.0	1
3 Russet Burbank	0	13.6	20.2	16.9	**0**	6.6	4	19.5	23.6	21.6	5.5	3
4 A09086-1LB	0	17.8	25.1	21.4	**1**	7.4	3	27.0	36.3	31.7	9.9	1
5 A09136-9LB	0	37.6	35.4	36.5	**4**	5.4	0	43.1	45.7	44.4	3.5	0
6 A12304-1sto	0	19.2	24.3	21.7	**1**	5.3	3	23.5	30.4	27.0	7.0	2
7 A12305-2adg	0	15.6	18.1	16.9	**0**	3.6	3	16.9	22.4	19.7	5.5	3
8 A13072-7	0	36.4	35.0	35.7	**4**	4.7	0	38.7	40.6	39.6	4.9	0
9 A13091-5	0	28.2	38.9	33.6	**3**	10.7	1	34.2	45.5	39.8	11.2	0
10 AFA5661-8	0	25.8	35.1	30.5	**2**	9.3	1	31.5	42.3	36.9	10.8	0
11 AOR11217-3	0	24.2	25.3	24.7	**2**	5.7	2	29.2	33.4	31.3	4.9	1
12 AOR13064-2	0	40.2	41.8	41.0	**5**	5.1	0	42.7	46.0	44.3	6.5	0
13 AOR15166-2	0	25.2	30.3	27.8	**2**	6.1	1	34.9	40.4	37.6	6.7	0
14 AOR15227-2	0	25.4	31.1	28.2	**2**	7.6	1	34.3	41.7	38.0	7.9	0
$LSD_{0.05}$	*ns*			*3.4*		*4.0*				*3.6*	*3.6*	
Average	0	25.4	29.5	27.5		6.2	1.6	31.0	36.8	33.9	6.9	0.8
Oregon												
1 Clearwater Russet	60	37.2	37.6	37.4	**4**	7.2	0	37.5	41.2	39.4	7.1	0
2 Ranger Russet	19	16.4	20.4	18.4	**0**	5.3	3	25.6	36.6	31.1	12.1	1
3 Russet Burbank	0	16.5	20.6	18.6	**0**	5.4	3	17.3	26.8	22.1	9.4	3
4 A09086-1LB	73	20.2	25.5	22.8	**1**	6.0	2	25.4	33.1	29.3	8.7	1
5 A09136-9LB	80	29.9	30.9	30.4	**2**	3.6	1	35.3	42.1	38.7	8.1	0
6 A12304-1sto	0	23.2	27.3	25.2	**2**	4.1	2	24.6	31.6	28.1	7.8	2
7 A12305-2adg	0	19.9	29.4	24.6	**2**	9.5	3	21.2	40.8	31.0	19.6	2
8 A13072-7	0	22.2	20.2	21.2	**1**	2.7	2	30.7	32.4	31.5	4.9	1
9 A13091-5	0	30.7	33.0	31.9	**3**	3.4	1	38.2	44.1	41.1	6.6	0
10 AFA5661-8	0	23.7	27.7	25.7	**2**	7.6	2	31.0	37.1	34.1	10.7	0
11 AOR11217-3	0	26.2	28.8	27.5	**2**	5.0	1	39.6	48.5	44.0	9.6	0
12 AOR13064-2	0	43.1	42.8	43.0	**5**	5.5	0	46.4	46.7	46.5	4.1	0
13 AOR15166-2	0	34.1	39.4	36.8	**4**	6.2	0	37.3	49.5	43.4	12.3	0
14 AOR15227-2	0	40.5	44.6	42.6	**5**	5.1	0	46.1	49.9	48.0	4.6	0
$LSD_{0.05}$	*ns*			*3.8*		*3.1*				*4.0*	*4.3*	
Average	17	27.4	30.6	29.0		5.5	1	32.6	40.0	36.3	9.0	1

Date test performed:

Washington	Dec. 18	Dec. 4	Dec. 17
Idaho	Dec. 18	Dec. 7	Dec. 17
Oregon	Dec. 18	Dec. 10	Dec. 17

DIFF = Absolute difference between bud and stem Photovolt reading.
Sprouting was rated after approximately 3 months after storage.

2024 Phase 2 (LRT) Trial

Stored at 40°F for 60 Days and Water Blanched

	PHOTOVOLT READING (60 Days at 40°F)						PHOTOVOLT AFTER WATER BLANCHING (10 min @ 160°F)				
Clone	stem	bud	ave	rtg §	DIFF	USDA COLOR	stem	bud	ave	Diff	USDA COLOR
Washington											
1 Clearwater Russet	18.9	30.8	24.8	**2**	11.9	3	27.7	38.0	32.9	11.2	1
2 Ranger Russet	15.0	27.7	21.3	**1**	12.7	4	22.1	32.9	27.5	10.9	2
3 Russet Burbank	10.1	21.3	15.7	**0**	11.2	4	16.1	27.5	21.8	11.4	3
4 A09086-1LB	11.6	17.7	14.7	**0**	6.1	4	17.6	23.1	20.4	5.5	3
5 A09136-9LB	22.4	26.8	24.6	**2**	4.9	2	33.8	35.0	34.4	3.3	0
6 A12304-1sto	18.0	26.0	22.0	**1**	8.0	3	22.8	29.0	25.9	6.6	2
7 A12305-2adg	10.8	20.3	15.6	**0**	9.5	4	17.5	28.7	23.1	11.2	3
8 A13072-7	20.8	25.5	23.2	**1**	5.2	2	27.0	31.0	29.0	4.8	1
9 A13091-5	25.1	29.6	27.3	**2**	9.5	1	31.9	39.9	35.9	8.0	0
10 AFA5661-8	23.7	29.8	26.7	**2**	6.8	2	32.2	35.4	33.8	4.5	0
11 AOR11217-3	17.0	24.7	20.8	**1**	7.7	3	25.6	32.0	28.8	6.8	1
12 AOR13064-2	26.2	38.0	32.1	**3**	11.9	1	36.3	39.7	38.0	4.2	0
13 AOR15166-2	20.2	30.8	25.5	**2**	10.6	2	31.8	37.5	34.6	6.1	0
14 AOR15227-2	20.3	40.1	30.2	**2**	19.8	2	25.0	38.6	31.8	13.5	1
LSD 0.05			*2.7*		*3.9*				*2.9*	*3.4*	
Average	18.6	27.8	23.2		9.7	3	26.2	33.5	29.8	7.7	1
Idaho											
1 Clearwater Russet	26.8	29.4	28.1	**2**	5.2	1	38.1	38.4	38.3	3.7	0
2 Ranger Russet	19.7	23.6	21.6	**1**	4.4	3	26.5	30.2	28.4	4.3	1
3 Russet Burbank	13.6	20.2	16.9	**0**	6.6	4	23.0	27.2	25.1	4.7	2
4 A09086-1LB	17.8	25.1	21.4	**1**	7.4	3	27.4	32.2	29.8	5.1	1
5 A09136-9LB	37.6	35.4	36.5	**4**	5.4	0	41.9	40.4	41.2	2.9	0
6 A12304-1sto	19.2	24.3	21.7	**1**	5.3	3	30.9	34.0	32.4	3.7	1
7 A12305-2adg	15.6	18.1	16.9	**0**	3.6	3	22.8	25.9	24.4	4.1	2
8 A13072-7	36.4	35.0	35.7	**4**	4.7	0	39.5	37.1	38.3	5.3	0
9 A13091-5	28.2	38.9	33.6	**3**	10.7	1	39.5	44.5	42.0	5.0	0
10 AFA5661-8	25.8	35.1	30.5	**2**	9.3	1	37.8	41.0	39.4	5.3	0
11 AOR11217-3	24.2	25.3	24.7	**2**	5.7	2	35.9	32.1	34.0	6.9	0
12 AOR13064-2	40.2	41.8	41.0	**5**	5.1	0	45.1	45.9	45.5	2.9	0
13 AOR15166-2	25.2	30.3	27.8	**2**	6.1	1	34.7	38.0	36.4	4.9	0
14 AOR15227-2	25.4	31.1	28.2	**2**	7.6	1	37.8	38.3	38.1	4.6	0
LSD 0.05			*3.4*		*4*				*2.9*	*2.7*	
Average	25.4	29.5	27.5		6.2	1.6	34.4	36.1	35.2	4.5	0.5
Oregon											
1 Clearwater Russet	37.2	37.6	37.4	**4**	7.2	0	45.1	44.1	44.6	7.5	0
2 Ranger Russet	16.4	20.4	18.4	**0**	5.3	3	16.5	20.6	18.6	5.4	3
3 Russet Burbank	16.5	20.6	18.6	**0**	5.4	3	25.3	27.8	26.5	3.4	1
4 A09086-1LB	20.2	25.5	22.8	**1**	6.0	2	27.8	33.3	30.5	7.1	1
5 A09136-9LB	29.9	30.9	30.4	**2**	3.6	1	38.6	40.0	39.3	4.0	0
6 A12304-1sto	23.2	27.3	25.2	**2**	4.1	2	31.3	33.0	32.1	3.2	0
7 A12305-2adg	19.9	29.4	24.6	**2**	9.5	3	30.6	38.1	34.3	7.5	1
8 A13072-7	22.2	20.2	21.2	**1**	2.7	2	30.5	27.9	29.2	2.7	1
9 A13091-5	30.7	33.0	31.9	**3**	3.4	1	37.7	38.3	38.0	4.1	0
10 AFA5661-8	23.7	27.7	25.7	**2**	7.6	2	32.1	36.3	34.2	7.3	0
11 AOR11217-3	26.2	28.8	27.5	**2**	5.0	1	36.5	38.1	37.3	4.4	0
12 AOR13064-2	43.1	42.8	43.0	**5**	5.5	0	46.8	45.5	46.1	3.3	0
13 AOR15166-2	34.1	39.4	36.8	**4**	6.2	0	41.5	45.3	43.4	4.9	0
14 AOR15227-2	40.5	44.6	42.6	**5**	5.1	0	45.7	46.3	46.0	2.6	0
LSD 0.05			*3.8*		*3.1*				*3.4*	*3.0*	
Average	27.4	30.6	29.0		5.5	1	34.7	36.7	35.7	4.8	1

Date test performed:

Washington	Dec. 4	Dec. 4
Idaho	Dec. 7	Dec. 7
Oregon	Dec. 10	Dec. 10

Diff = Absolute difference between stem and bud Photovolt reading.

Entries Retained from the 2023 Trials Currently in Phase 2

Harvested fall of 2023 **Held at 48° F until December 18, 2023** **Stored at 44° F until analysis**

Four clones, A12304-1sto, A13072-7, AOR15166-2, & AOR15227-2 were advanced from the 2023 Tri-State Trial into the 2024 Phase 2 (LRT) Trial. Six clones were retained in the Phase 2 (LRT) Trial. When averaged across states, COTX08063-2Ru produced the lightest fries (45.8 ref units). AOR15227-2 produced the second lighest fries (45.6 ref units). The uniformity of fry color was unacceptable for Clearwater (WA & ID), RR (ID), RB (ID), A09086-1LB (ID & OR), A12305-2adg (WA, ID & OR), A13072-7 (ID), and AOR11217-3 (ID) . Average sprout length ranged from 0.7 to 2.1 inches. A13072-7 had the longest average sprouts with 2.0 (WA), 1.5 (ID) and 2.8 (OR).

	PHOTOVOLT READING				USDA	% REDUCING SUGAR			Sprouting	
Clone	stem	bud	avg	DIFF	COLOR	stem	bud	avg	percent	length (in.)
Washington										
1 Clearwater Russet	35.9	45.6	40.7	9.7	0	0.9	0.6	0.7	100	0.5
2 Ranger Russet	26.8	32.1	29.5	6.0	1	1.7	1.2	1.5	100	1.0
3 Russet Burbank	29.3	35.1	32.2	6.2	1	1.5	1.0	1.2	80	0.8
4 A09086-1LB	22.7	29.1	25.9	7.0	2	2.3	1.5	1.9	100	1.0
5 A12304-1sto §	29.5	36.3	32.9	7.3	1	1.4	0.9	1.2	100	0.8
6 A12305-2adg	24.3	40.3	32.3	16.0	1	2.0	0.7	1.4	100	1.0
7 A13072-7 §	38.8	39.9	39.3	3.9	0	0.8	0.7	0.8	100	2.0
8 AFA5661-8	34.3	41.3	37.8	7.1	0	1.0	0.7	0.9	100	1.0
9 AOR11217-3	39.8	44.9	42.3	5.6	0	0.7	0.6	0.7	100	0.5
10 AOR13064-2	45.8	42.4	44.1	3.8	0	0.6	0.6	0.6	100	0.5
11 AOR15166-2 §	49.2	47.2	48.2	6.0	0	0.5	0.5	0.5	100	0.8
12 AOR15227-2 §	42.2	47.0	44.6	5.1	0	0.6	0.5	0.6	100	3.0
13 COTX08063-2Ru	41.5	44.8	43.2	4.3	0	0.7	0.6	0.6	100	0.8
		LSD 0.05	*3.1*	*3.5*						
Average	35.4	40.5	37.9	6.8	0	1.1	0.8	1.0	98	1.0
Idaho										
1 Clearwater Russet	33.4	44.1	38.8	10.7	0	1.1	0.6	0.8	100	0.8
2 Ranger Russet	27.3	40.5	33.9	13.3	1	1.7	0.7	1.2	100	1.0
3 Russet Burbank	20.0	35.1	27.5	15.1	2	2.7	1.0	1.8	50	0.5
4 A09086-1LB	21.2	32.5	26.8	11.3	2	2.5	1.2	1.8	100	1.3
5 A12304-1sto §	32.2	38.0	35.1	6.4	0	1.2	0.8	1.0	100	0.8
6 A12305-2adg	20.6	34.1	27.4	13.5	2	2.6	1.1	1.8	100	0.8
7 A13072-7 §	35.6	38.1	32.3	12.2	0	0.7	0.8	0.8	100	1.5
8 AFA5661-8	35.6	42.2	38.9	6.6	0	1.0	0.6	0.8	100	0.8
9 AOR11217-3	29.5	35.5	32.5	9.0	1	1.4	1.0	1.2	100	1.0
10 AOR13064-2	39.4	42.7	41.0	5.2	0	0.8	0.6	0.7	100	1.3
11 AOR15166-2 §	44.1	46.6	45.4	5.2	0	0.6	0.5	0.6	100	0.5
12 AOR15227-2 §	41.3	47.6	44.5	6.3	0	0.7	0.5	0.6	100	1.3
13 COTX08063-2Ru	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
		LSD 0.05	*3.7*	*5.2*						
Average	31.7	39.7	35.3	9.6	1	1.4	0.8	1.1	96	0.9
Oregon										
1 Clearwater Russet	44.0	47.7	45.9	4.6	0	0.6	0.5	0.6	100	0.8
2 Ranger Russet	25.9	34.8	30.3	8.9	1	1.8	1.0	1.4	100	1.8
3 Russet Burbank	33.1	37.3	35.2	4.8	0	1.1	0.9	1.0	93	0.8
4 A09086-1LB	25.0	35.7	30.3	10.7	1	2.0	1.0	1.5	100	1.0
5 A12304-1sto §	32.9	36.1	34.5	6.5	0	1.1	0.9	1.0	100	2.0
6 A12305-2adg	26.5	41.9	34.2	15.4	1	1.8	0.7	1.2	93	0.8
7 A13072-7 §	46.1	43.8	45.0	3.1	0	0.5	0.6	0.6	100	2.8
8 AFA5661-8	39.7	44.3	42.0	5.9	0	0.7	0.6	0.7	100	1.8
9 AOR11217-3	41.7	42.6	42.1	4.0	0	0.7	0.6	0.6	100	0.8
10 AOR13064-2	48.9	48.8	48.9	1.5	0	0.5	0.5	0.5	100	1.8
11 AOR15166-2 §	38.5	42.1	40.3	4.3	0	0.8	0.7	0.7	100	1.3
12 AOR15227-2 §	49.0	46.3	47.7	4.6	0	0.5	0.5	0.5	100	1.5
13 COTX08063-2Ru	48.6	48.3	48.4	1.7	0	0.5	0.5	0.5	100	2.0
		LSD 0.05	*4.4*	*3.2*						
Average	38.4	42.3	40.4	5.8	0	1.0	0.7	0.8	99	1.4

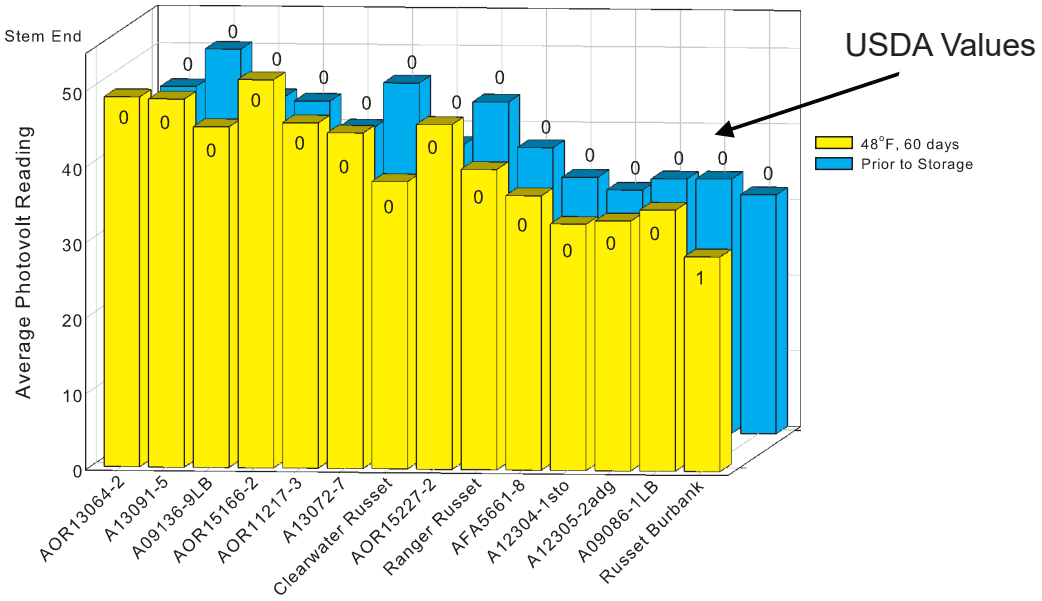
Date test performed:
Washington April 30
Idaho May 1
Oregon May 3

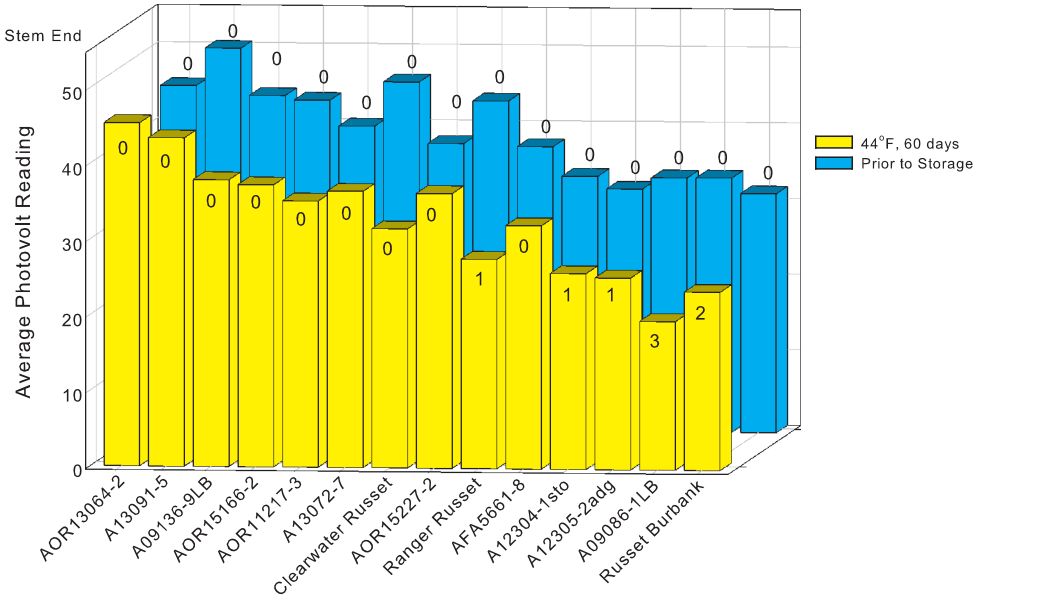
§ Advanced from 2023 Tri-State Trial.

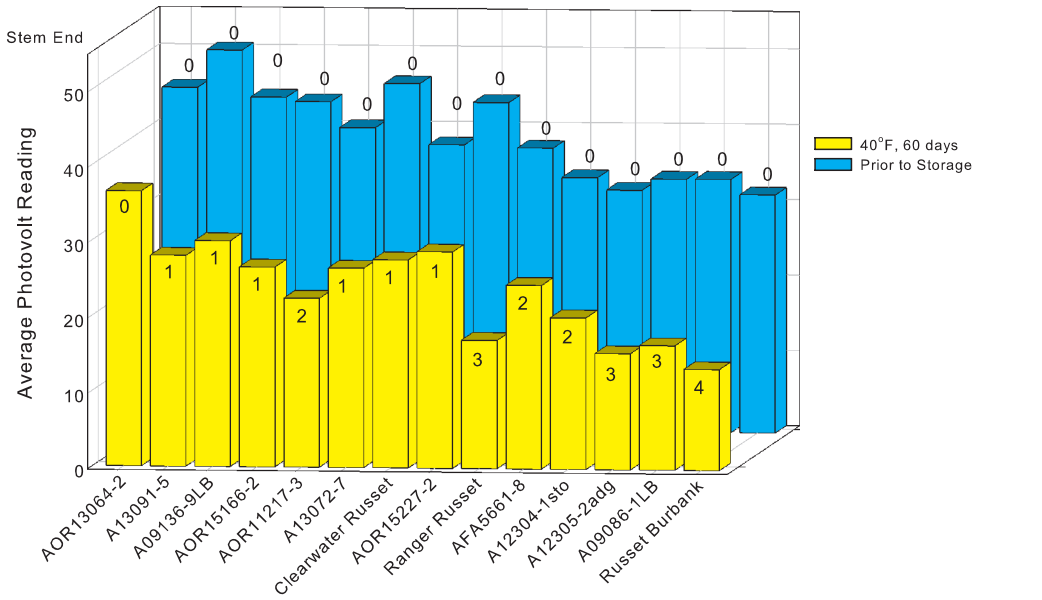
Seed lot readings and WSU Potato Field Day 2024

2024 Phase 2 (LRT) Trial

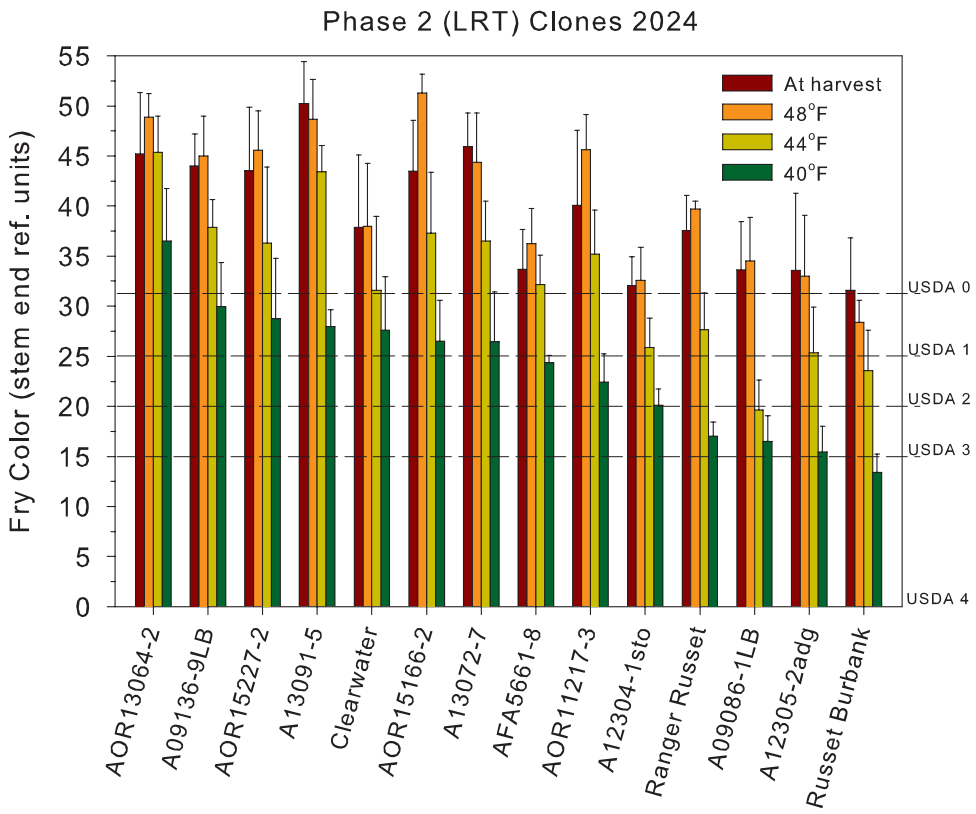
Phase 2 - 3 State Average of Stem End

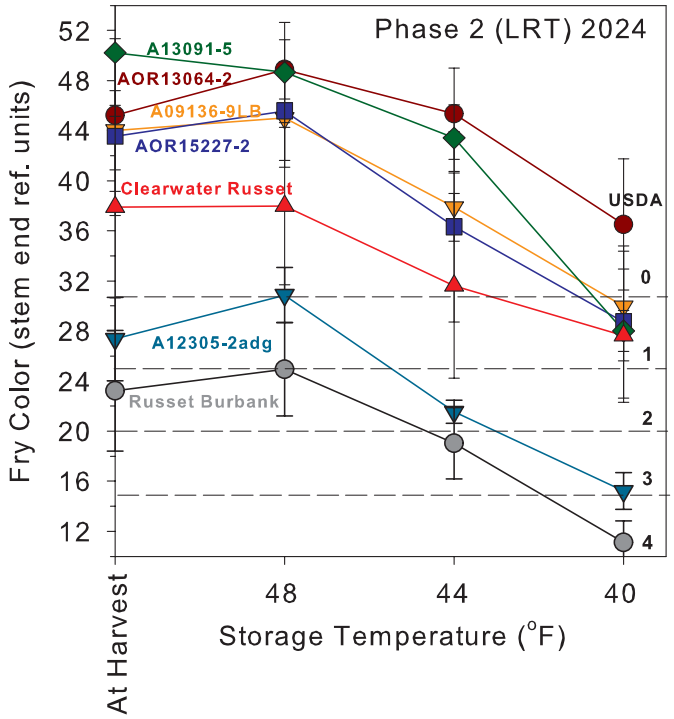






2024 Phase 2 (LRT) Trial

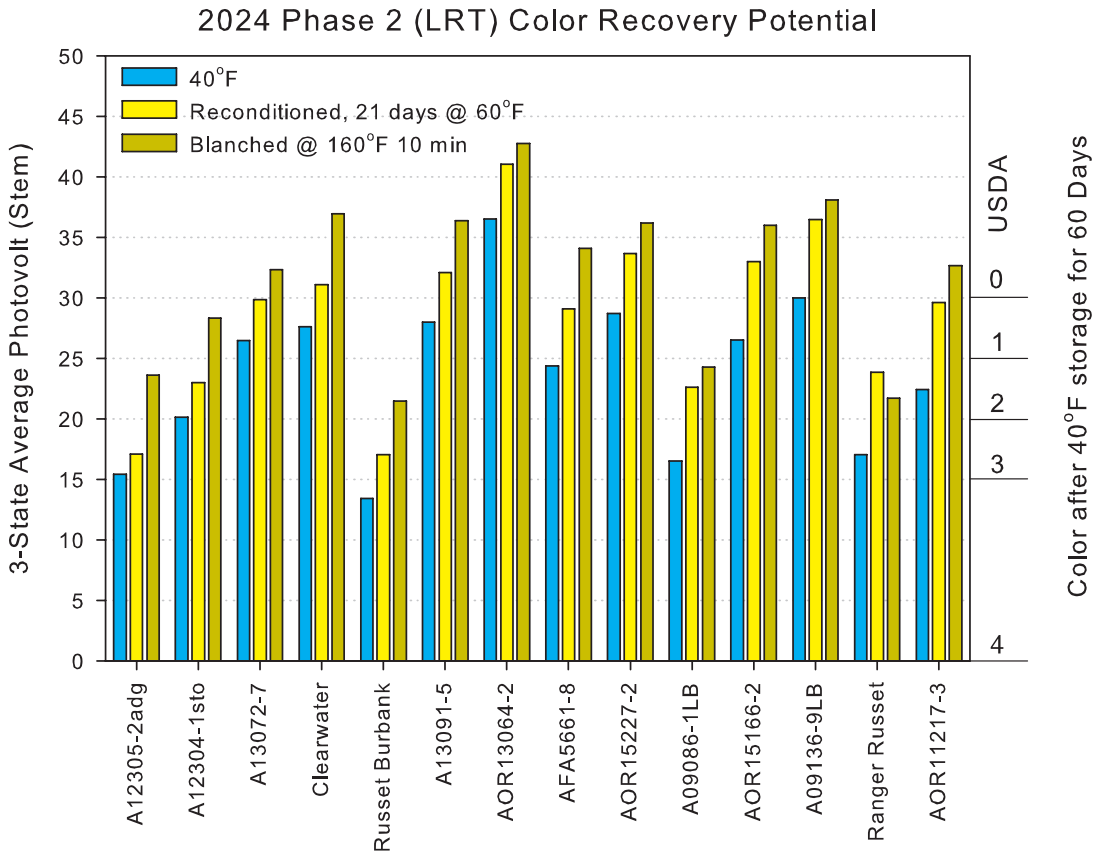


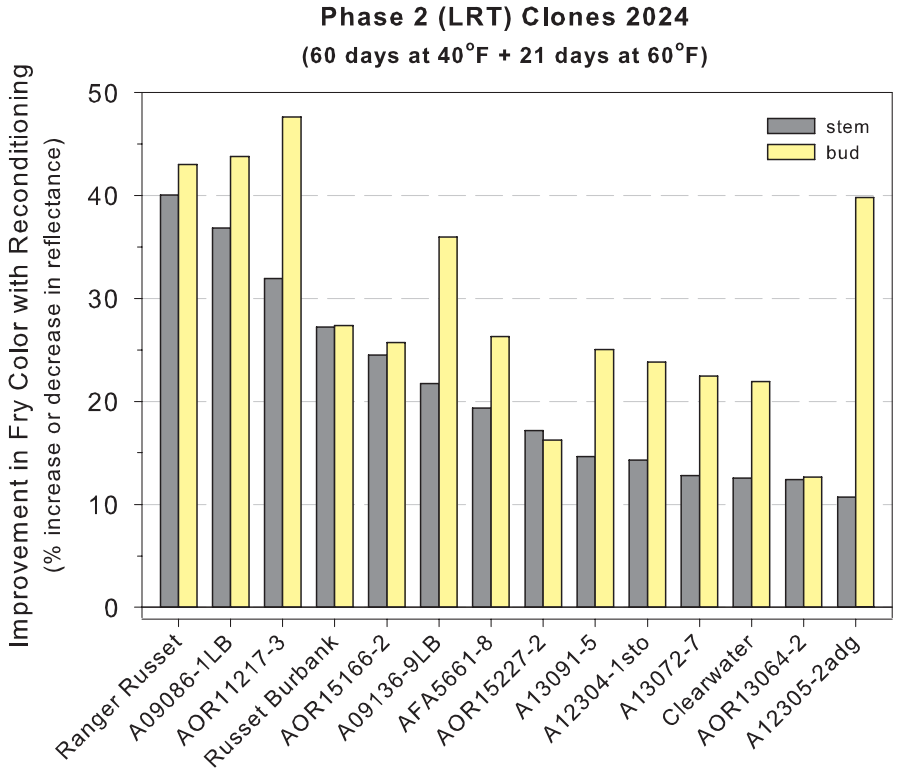


Top: At-harvest and after-storage French fry colors (stem end) of clones in Phase 2. Tubers were stored for 60 days at 48, 44 and 40°F. The clones are ranked from best to worst based on fry color of the 40°F-stored tubers. High reflectance values indicate light colored fries.

Bottom: Line graph depicting the effects of storage temperature on change in French fry processing quality (stem end fry color) of the most cold sweetening resistant (AOR13064-2*, A13091-5, A09136-9LB, AOR15227-2, and Clearwater Russet) and susceptible (A12305-2adg and Russet Burbank) clones in Phase 2. *Indicates similar performance of the clones last year. †Indicates top performance in Phase 1 before advancement to Phase 2.

2024 Phase 2 (LRT) Trial





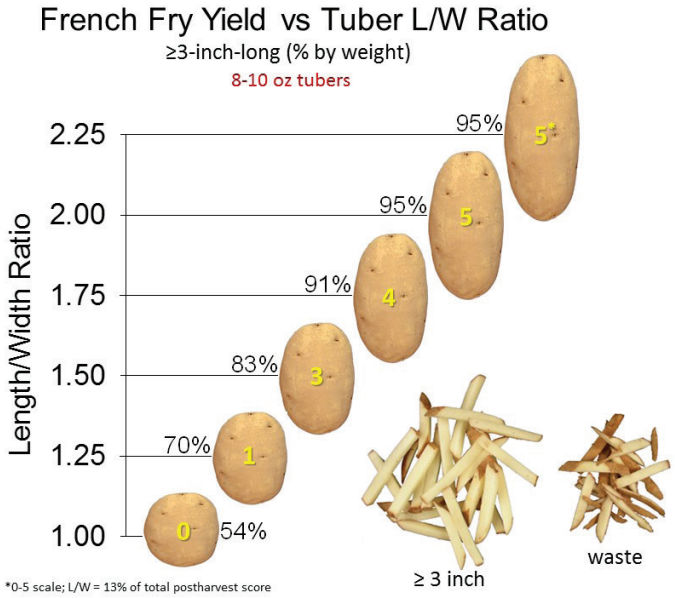
Reconditioning abilities of clones in the 2024 Phase 2 (3-state averages). Clones were stored at 40°F for 60 days after harvest and then reconditioned at 60°F for 21 days. Top: Stem end fry color before and after reconditioning & blanching. Numbers on side indicate the USDA color rating of the stem end. **Bottom:** Percent improvement of stem and bud end fry color with reconditioning.

2024 Phase 2 (LRT) Trial

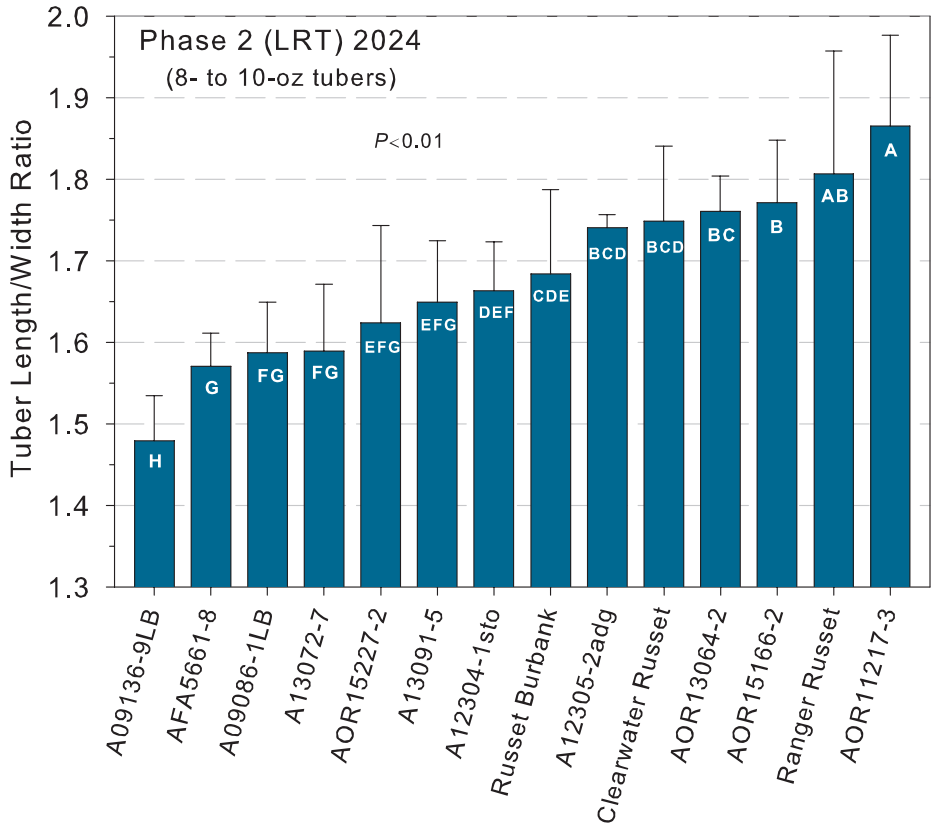
Length to Width Ratios of 8-10 oz Tubers

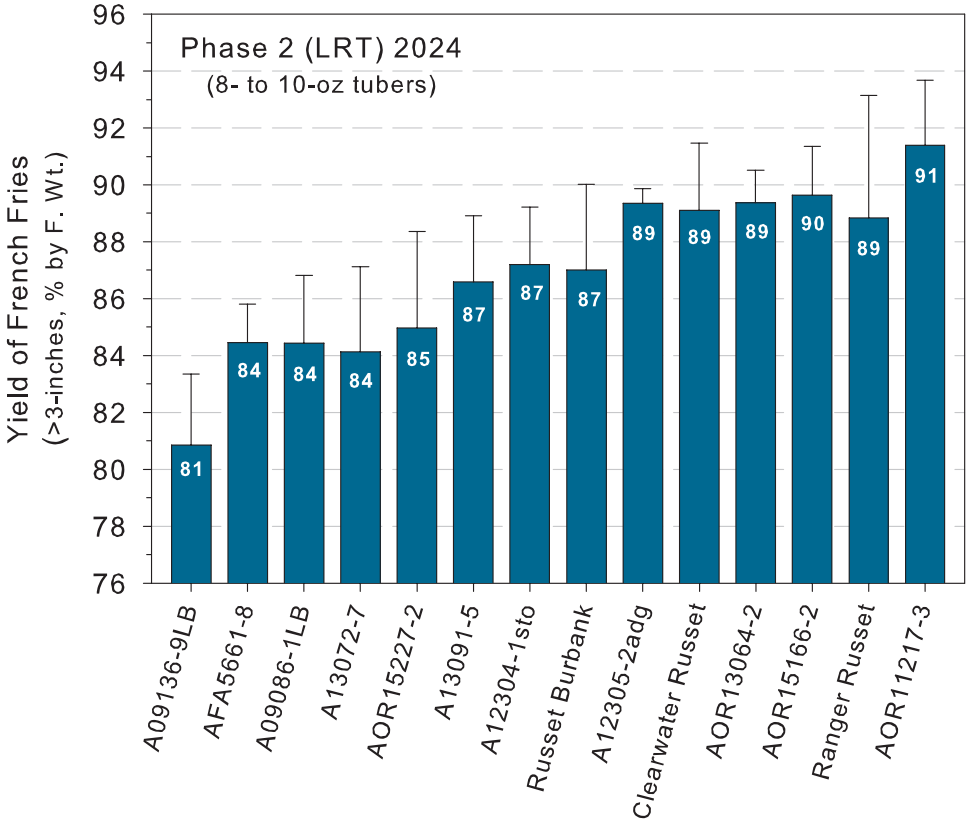
Clone	Phase 2 (Regional) Length to width ratio WA	rtg §	ID	rtg §	OR	rtg §	3 State Avg.
1 Clearwater Russet	1.62	**3**	1.92	**5**	1.70	**4**	1.75
2 Ranger Russet	1.51	**3**	1.99	**5**	1.92	**5**	1.81
3 Russet Burbank	1.49	**2**	1.85	**5**	1.71	**4**	1.68
4 A09086-1LB	1.47	**2**	1.68	**4**	1.62	**3**	1.59
5 A09136-9LB	1.37	**2**	1.54	**3**	1.52	**3**	1.48
6 A12304-1sto	1.54	**3**	1.74	**4**	1.71	**4**	1.66
7 A12305-2adg	1.72	**4**	1.73	**4**	1.77	**4**	1.74
8 A13072-7	1.44	**2**	1.72	**4**	1.62	**3**	1.59
9 A13091-5	1.50	**3**	1.74	**4**	1.70	**4**	1.65
10 AFA5661-8	1.52	**3**	1.65	**4**	1.54	**3**	1.57
11 AOR11217-3	1.66	**4**	2.03	**5**	1.91	**5**	1.87
12 AOR13064-2	1.68	**4**	1.79	**4**	1.82	**5**	1.76
13 AOR15166-2	1.64	**3**	1.91	**5**	1.76	**4**	1.77
14 AOR15227-2	1.46	**2**	1.86	**5**	1.55	**3**	1.62
Average	1.54		1.80		1.70		1.68

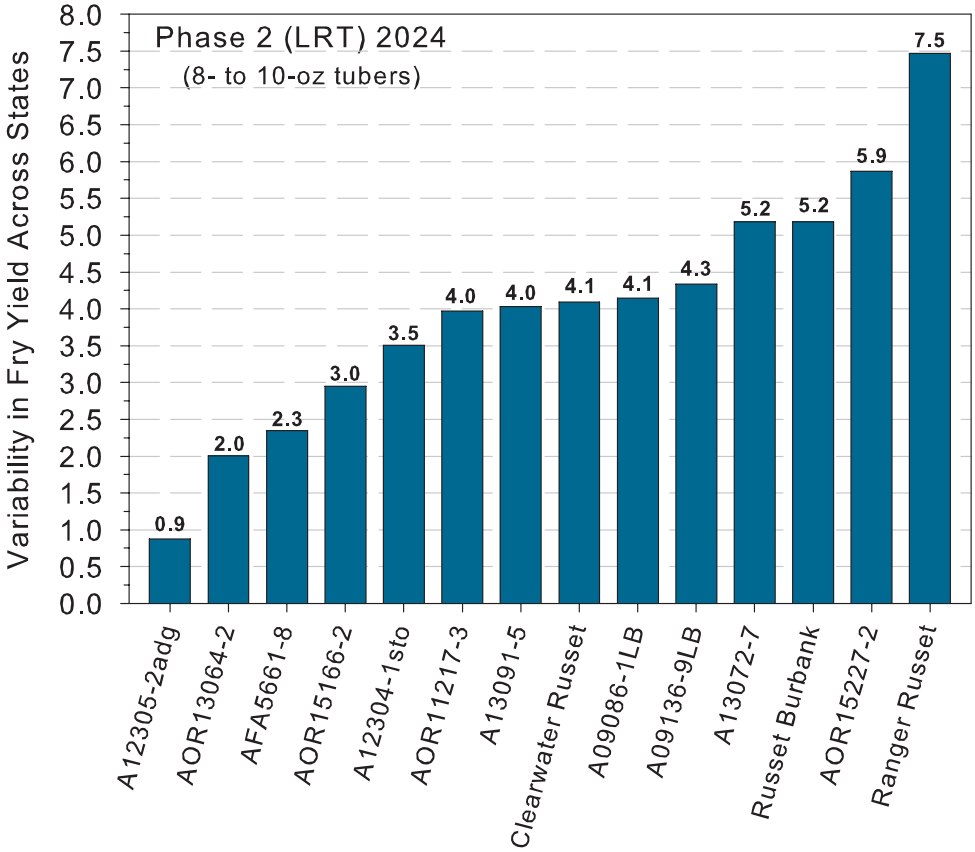
Clone	Phase 2 (Regional) Width to thickness ratio WA	ID	OR	3 State Avg.
1 Clearwater Russet	1.13	1.15	1.14	1.14
2 Ranger Russet	1.10	1.11	1.16	1.12
3 Russet Burbank	1.10	1.14	1.18	1.14
4 A09086-1LB	1.18	1.13	1.13	1.15
5 A09136-9LB	1.17	1.09	1.20	1.15
6 A12304-1sto	1.14	1.10	1.16	1.13
7 A12305-2adg	1.09	1.07	1.12	1.09
8 A13072-7	1.16	1.12	1.14	1.14
9 A13091-5	1.16	1.07	1.16	1.13
10 AFA5661-8	1.10	1.09	1.14	1.11
11 AOR11217-3	1.15	1.08	1.12	1.12
12 AOR13064-2	1.12	1.11	1.11	1.11
13 AOR15166-2	1.18	1.12	1.10	1.13
14 AOR15227-2	1.16	1.10	1.16	1.14
Average	1.14	1.10	1.14	1.13



2024 Phase 2 (LRT) Trial







Relative ranking of clones in Phase 2 (LRT) for variability in yield of French fries prepared from 8- to 10-oz tubers. Variability is expressed as the standard deviation (calculated across ID, WA and OR production sites) for the yield of fries ≥3 inches in length (% by fresh weight) from 8- to 10-oz tubers. High values reflect more variation in tuber shape and thus fry yield from state to state. For example, Ranger Russet had a length to width ratio of 1.81, resulting in 89% of the tuber producing usable French fries ≥3 inches in length (page 86). However, tuber shape of this entry also varied the most across production sites (see above), resulting in fry yields ranging from 83 to 99% (91±7.5%).

Pages 86-87: Tuber length to width ratios and the associated percentage yield of fries. Bars with same letter are not significantly different (P≤0.01).

2024 Tri-State Specialty Trial

Location: WSU Research Center – Othello, WA
Planting Date: March 28 Vine Kill Date: July 21
Harvest Date: August 5 Days Grown: 124
In-Row Spacing: 8 inches

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 4 local reference varieties to 11 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/Yellow flesh: **COOR15108-1**
Yellow flesh: **A11576-1Ysto**
Purple/Purple: POR16PG25-2

Standcounts

- **60 Day**
  Full emergence: All entries were greater than 78% emerged at 60 days after planting, except for A11576-1Ysto (76%).

Plant and Tuber Growth & Development

- **60 Day Stems per plant**
  Most: COOR15108-1 and A11582-1R (4.5).
  Fewest: POR18PG54-1 (2.0) and Yukon Gold (2.2).

- **Average Tuber Number Per Plant**
  Most: A11573-5RYsto (19.5) and A11576-1Ysto (18.5).
  Fewest: Yukon Gold (5.5) and POR18PG54-1 (6.4).

- **Average Tuber Size (oz)**
  Largest: Yukon Gold (8.4) and Chieftain (7.5).
  Smallest: A11573-5RYsto (2.8), A11661-2Y (2.9), and A11661-3Y (3.0).

Yield

- **Total Yield and U.S. #1 Yield**
  Highest: Chieftain had the highest total (1018 CWT/A) and the highest U.S. #1 yield (984 CWT/A). A11576-1Ysto had the second highest total yield (898 CWT/A) and second highest U.S. #1 yield (855 CWT/A).
  Lowest: A11661-2Y had the lowest total (590 CWT/A) and U.S. #1 yield (558 CWT/A).

2024 Tri-State Red/Specialty Trial

Postharvest Information

The 2024 red & specialty trial consisted of four cultivars and eleven numbered clones (6 red, 6 yellow, and 3 purple) for a total of 15 entries. An "*" in the summary below indicates similar performance and/or ranking in trials from previous years.

- **Overall Postharvest Ratings**

  Highest scoring Overall: Modoc

  Highest scoring Red: Modoc

  Highest scoring Yellow: A1161-2Y

  Highest scoring Purple: Purple Majesty

- **Boiling**

  Highest scoring Overall: A11661-2Y

  Highest scoring Red: A11573-5RYsto

  Highest scoring Yellow: A11661-2Y

  Highest scoring Purple: Purple Majesty

- **Baking**

  Highest scoring Overall: Modoc

  Highest scoring Red: Modoc

  Highest scoring Yellow: A11661-2Y

  *Highest scoring Purple: Purple Majesty**

- **Microwaving**

  Highest scoring Overall: Yukon Gold

  Highest scoring Red: Modoc

  Highest scoring Yellow: Yukon Gold

  *Highest scoring Purple: POR16PG25-2**

Details:

- Similar to previous years, culinary scores were high with all entries receiving 67-77% of the total points possible in the 2024 culinary evaluations.
- The top scoring clone was Modoc (Red) with 57.7 points and POR17PG64-2 (Purple) was the lowest with 50.5 points. There was a 7.2 point difference between the top and bottom scoring clones.
- The top red entries were Modoc, Chieftain, & A11573-5RYsto (average 56.3 points). A11661-2Y & A11661-3Y were the top yellow entries with 56.7 and 56.6 points respectively. Purple Majesty was the top purple entry with 54.2 points.
- Modoc, A11582-1R, COOR15108-1, A11573-5RYsto, A11569-1Y, A11661-2Y, and A11661-3Y showed no sloughing in the boiling cook method evaluations. All other entries showed "slight" to "moderate" sloughing except for Yukon Gold and TXA18020-1DY which rated "severe" for sloughing. All entries showed "slight" to "moderate" after cooking darkening except Purple Majesty and POR16PG25-2 which showed "none". All entries scored a "creamy" to "Mealy" texture except

POR17PG64-2 which scored “Pasty”. The tuber center for all entries rated between “mushy” and “fully cooked”. Flavor was “bland” for all entries. A11573-5RYsto & A11661-2Y rated the highest.

- In baked evaluations, all entries had “slight” after cooking darkening except for POR17PG64-2 which was rated as “moderate”. Chieftain, POR17PG64-2, COOR15108-1, and POR18PG54-1 had a “pasty” texture and all other entries had a “creamy” texture. The flavor of all entries were acceptable (“good” to “bland”). Skin ratings for all entries were “steamy” to “fully cooked”. Tuber centers for all entries were rated as “mushy” to “fully cooked”.

- Microwaving produced “slight” to “moderate” darkening in all entries. The texture of the microwaved samples was favorably rated as “fluffy” or “creamy” in all entries. All entries rated as “bland” to “good” for flavor. All entries received skin ratings of “steamy” to “fully cooked”. Finally, tuber centers of all entries rated as “mushy” except for Purple Majesty which had a “somewhat raw” center rating.

- TXA18020-1DY (yellow) produced the lightest chips with a SFA color rating of 2.5, while Modoc and A11582-1R produced the darkest color of 4.7 (1-5 scale). All other entries rated from 2.8 to 4.5 with an average color of 3.8 overall.

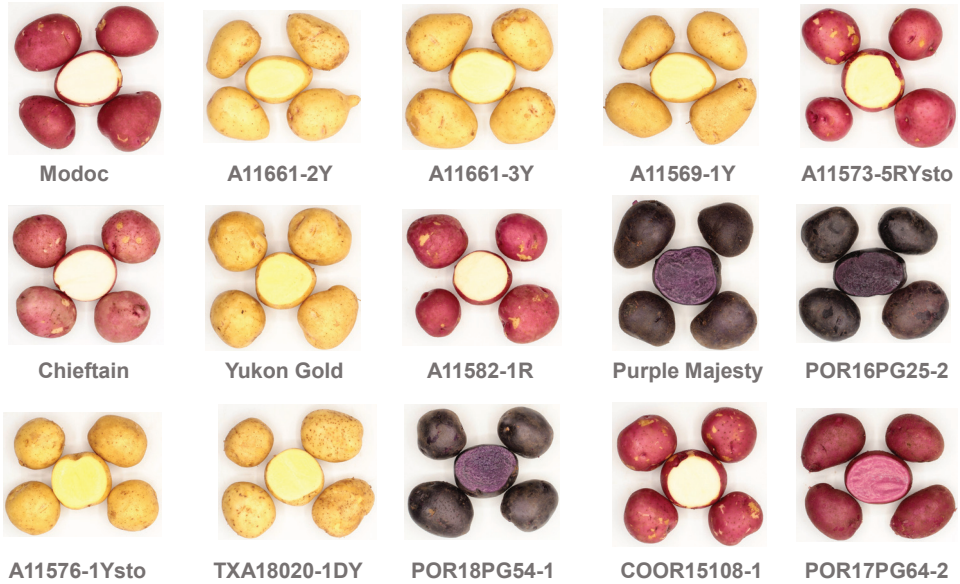
- Cooking time for boiled samples was again assessed this year. Cores of tuber tissue (1.3 cm diameter x 1.3 cm long) from the stem and bud ends of all entries were immersed in boiling water and the time to penetration by a 90-g probe was recorded. Stem cores averaged 4.5 minutes to cook compared with 4.3 minutes for bud end cores. Cooking times (stem end) ranged from 3.0 min (A11576-1Ysto) to 7.5 min (Modoc). Overall average cooking time, regardless of tuber portion, was 4.4 minutes.

Overall Culinary Evaluation Scores

	Clone	Boiled (25 max)	Baked (25 max)	Microwaved (25 max)	Total (75 max)
2	Modoc	19.7	19.4	18.6	57.7
9	A11661-2Y	20.3	19.0	17.4	56.7
10	A11661-3Y	20.2	18.9	17.6	56.6
8	A11569-1Y	20.1	18.3	17.9	56.2
6	A11573-5RYsto	20.2	18.1	17.5	55.8
1	Chieftain	19.1	18.2	18.3	55.6
7	Yukon Gold	18.3	17.9	18.7	55.0
4	A11582-1R	19.7	17.1	18.1	54.9
13	Purple Majesty	19.0	17.9	17.3	54.2
15	POR16PG25-2	18.2	17.5	18.1	53.8
12	A11576-1Ysto	18.2	17.1	18.5	53.8
11	TXA18020-1DY	17.8	17.5	17.8	53.1
14	POR18PG54-1	19.0	17.2	16.7	52.9
5	COOR15108-1	18.7	16.3	16.3	51.3
3	POR17PG64-2	17.7	16.2	16.6	50.5

Chipped: Aug. 20
Boiled: Aug. 22
Microwaved: Aug. 29
Baked: Aug. 20
Cooking Time: Aug. 26

2024 Tri-State Red & Specialty Trial



15 clones; grown 106 d; harvested Aug. 9 processed Aug. 18-30

Ordered best to worst overall score

2024 Tri-State Specialty Trial

Summaries

ENTRY	TOTAL YIELD		US # 1's*	US # 2's*	Culls*	EXTERNAL DEFECTS 1 = Severe 5 =None		
			> 0 oz	> 0 oz	> 0 oz		Growth	
	CWT/A	Tons/A	——— % of Total Yield ———			Knobs	Cracks	Green
Red Skin/White Flesh								
Chieftain	1018	50.9	90	2	8	5	4	5
Modoc	799	39.9	66	4	30	5	5	5
POR17PG64-2	818	40.9	68	3	30	5	4	5
A11582-1R	897	44.9	47	2	51	5	4	5
COOR15108-1	620	31.0	45	1	53	5	5	5
Red-Purple/Yellow Flesh								
A11573-5RYsto	833	41.6	30	2	68	5	5	5
Yellow Flesh								
Yukon Gold	709	35.4	89	3	8	5	5	5
A11569-1Y	860	43.0	60	3	37	5	5	4
A11661-2Y	590	29.5	30	2	67	5	5	4
A11661-3Y	651	32.5	36	2	62	5	5	5
TXA18020-1DY	831	41.6	69	2	29	5	5	5
A11576-1Ysto	898	44.9	41	2	57	5	4	4
Purple/Purple Flesh								
Purple Majesty	804	40.2	58	6	36	4	5	5
POR18PG54-1	681	34.1	86	5	9	4	5	5
POR16PG25-2	807	40.4	55	1	44	5	5	5

ENTRY	US # 1 YIELD							Specific Gravity
			0-2 oz*	2-4 oz*	4-6 oz*	6-10 oz*	> 10 oz*	
	CWT/A	Tons/A	----------%----------					
Red Skin/White Flesh								
Chieftain	984	49.2	1	6	13	41	39	1.060
Modoc	752	37.6	5	25	30	32	7	1.062
POR17PG64-2	789	39.5	9	21	23	38	9	1.060
A11582-1R	851	42.5	11	38	29	20	1	1.053
COOR15108-1	609	30.5	12	42	29	15	2	1.072
Red-Purple/Yellow Flesh								
A11573-5RYsto	803	40.2	18	51	25	6	0	1.069
Yellow Flesh								
Yukon Gold	675	33.7	2	5	7	24	63	1.078
A11569-1Y	810	40.5	7	30	36	27	1	1.064
A11661-2Y	558	27.9	15	53	27	5	0	1.069
A11661-3Y	633	31.7	17	47	25	12	0	1.064
TXA18020-1DY	788	39.4	5	23	29	34	9	1.076
A11576-1Ysto	855	42.8	11	46	31	10	0	1.072
Purple/Purple Flesh								
Purple Majesty	720	36.0	7	27	29	32	5	1.067
POR18PG54-1	641	32.0	2	7	17	41	34	1.058
POR16PG25-2	801	40.0	9	35	28	23	5	1.069

* Percent values may not total 100% due to rounding

ENTRY	SKIN SET 1 = Poor 5 = Good	TUBER SHAPE 1 = Round 5 = Long	60 DAY STAND % Emerged	STEMS PER PLANT Above Ground	AVERAGE TUBER WEIGHT Ounces	AVERAGE TUBER NUMBER Tubers/Plant	SIZE UNIFORMITY 1 = Poor 5 = Good	SHAPE UNIFORMITY 1 = Poor 5 = Good
Red Skin/White Flesh								
Chieftain	2.8	1.8	78	3.1	7.5	8.9	3.0	3.3
Modoc	4.0	2.0	83	3.3	4.3	12.0	3.0	2.0
POR17PG64-2	2.3	2.0	86	3.1	4.2	12.7	3.0	3.0
A11582-1R	2.0	2.0	78	4.5	3.4	17.4	3.0	2.0
COOR15108-1	2.0	1.0	88	4.5	3.3	12.3	4.0	4.0
Red-Purple/Yellow Flesh								
A11573-5RYsto	2.0	1.0	85	3.4	2.8	19.5	3.3	3.3
Yellow Flesh								
Yukon Gold	3.0	1.0	85	2.2	8.4	5.5	3.0	3.0
A11569-1Y	3.0	2.3	79	3.6	3.9	14.3	3.0	1.8
A11661-2Y	3.0	3.0	85	2.9	2.9	13.5	3.0	1.0
A11661-3Y	1.0	2.0	90	2.8	3.0	14.5	3.0	3.0
TXA18020-1DY	4.0	1.3	78	2.8	4.6	11.9	3.0	2.8
A11576-1Ysto	4.0	1.0	76	4.3	3.2	18.5	4.0	3.5
Purple/Purple Flesh								
Purple Majesty	3.0	2.0	86	3.0	4.2	12.5	3.0	3.0
POR18PG54-1	3.0	1.0	81	2.0	7.0	6.4	3.0	2.8
POR16PG25-2	4.0	2.0	85	4.1	3.7	14.4	3.0	3.0

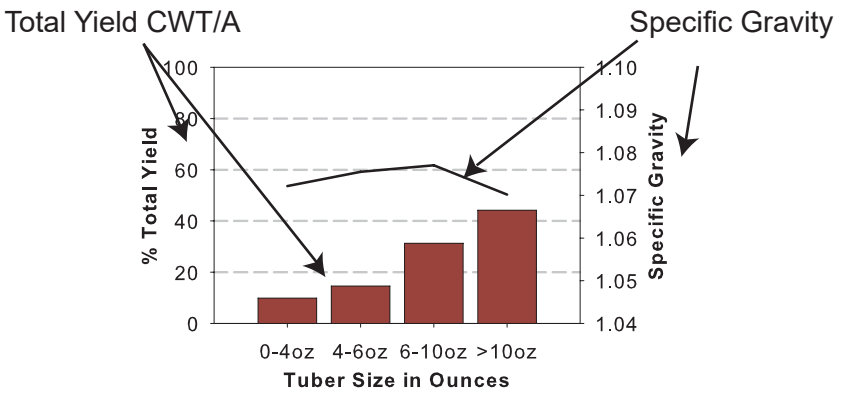
Seed lot readers take a look at over thirty five different varieties.

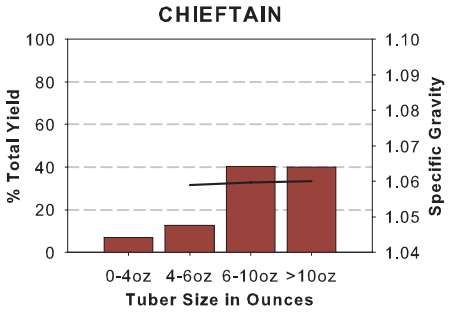
2024 Tri-State Specialty Trial

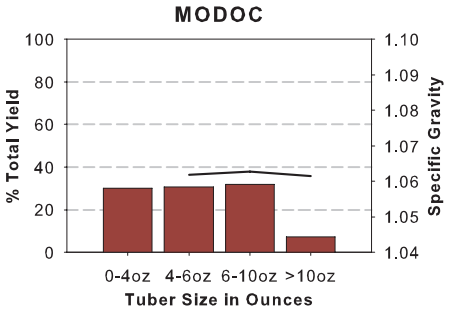
Tuber Yield and Specific Gravity Distributions

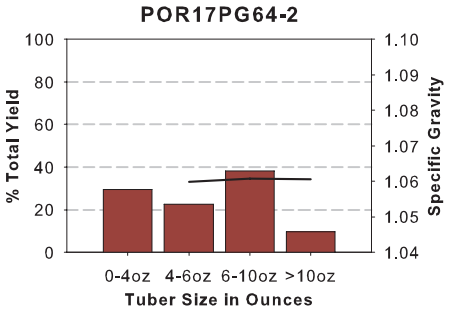
Note: Specific Gravity is based on a sample of U.S. #1 tubers within each size category

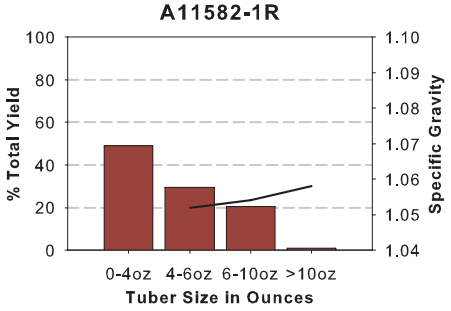
8 inch In-Row Spacing

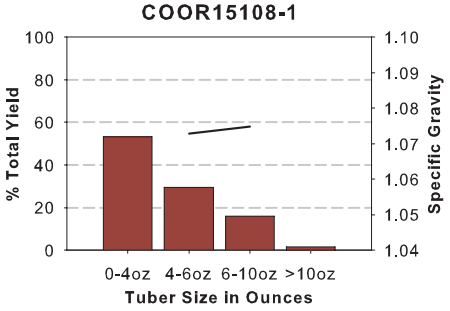


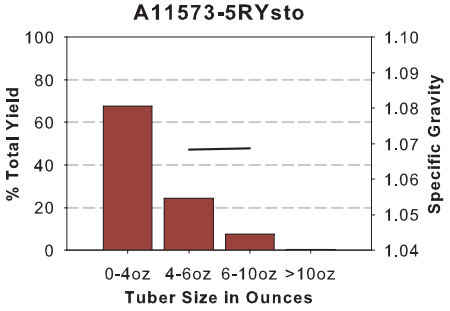


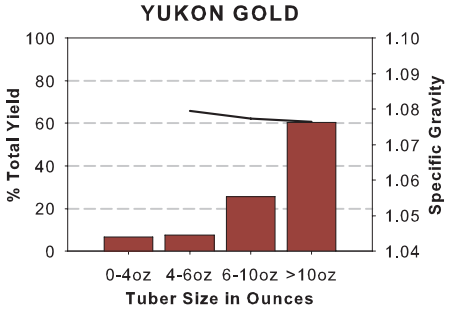


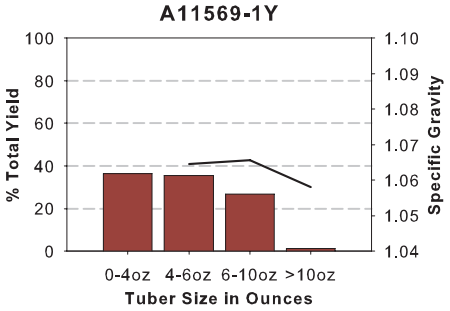


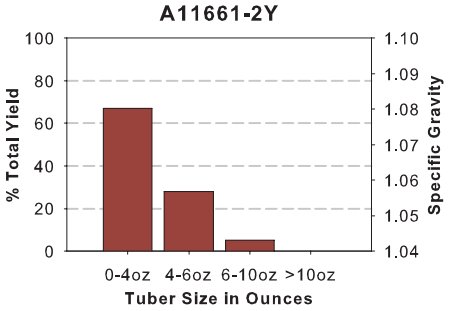


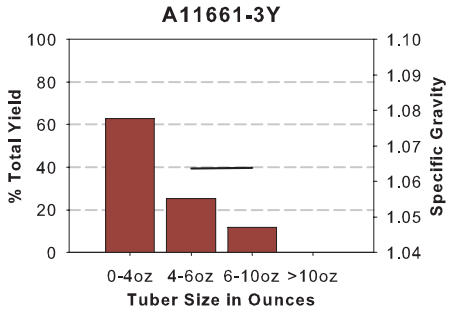


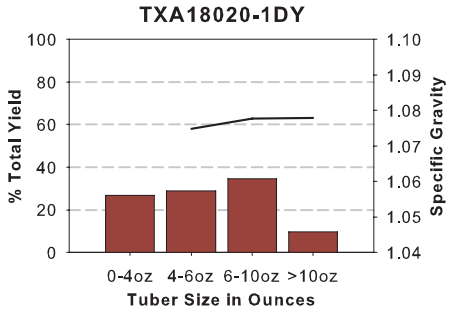


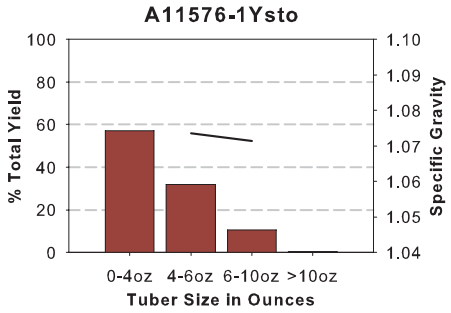


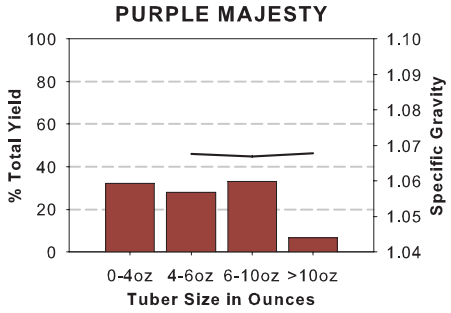


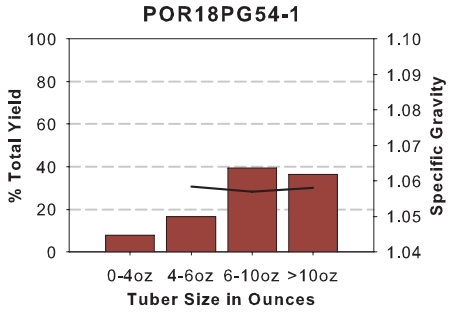


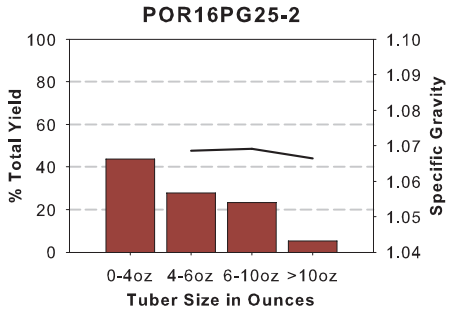

A11661-3Y
% Total Yield
Specific Gravity
0-4oz
4-6oz
6-10oz
>10oz
Tuber Size in Ounces


TXA18020-1DY
% Total Yield
Specific Gravity
0-4oz
4-6oz
6-10oz
>10oz
Tuber Size in Ounces


A11576-1Ysto
% Total Yield
Specific Gravity
0-4oz
4-6oz
6-10oz
>10oz
Tuber Size in Ounces


PURPLE MAJESTY
% Total Yield
Specific Gravity
0-4oz
4-6oz
6-10oz
>10oz
Tuber Size in Ounces


POR18PG54-1
% Total Yield
Specific Gravity
0-4oz
4-6oz
6-10oz
>10oz
Tuber Size in Ounces


POR16PG25-2
% Total Yield
Specific Gravity
0-4oz
4-6oz
6-10oz
>10oz
Tuber Size in Ounces

2024 Washington Tri-State Specialty Trial

Red Clone Culinary Evaluation

Boiled

	Clone	Flavor	After Cooking Darkening	Texture	Tuber Center	Sloughing	Total Rating
1	Chieftain	3.7	4.3	3.0	4.3	3.8	19.1
2	Modoc	3.7	4.2	2.8	4.3	4.7	19.7
3	POR17PG64-2	2.5	4.3	2.2	4.5	4.2	17.7
4	A11582-1R	3.0	4.0	2.8	4.8	5.0	19.7
5	COOR15108-1	2.7	4.0	3.2	4.3	4.5	18.7
6	A11573-5RYsto	3.3	4.0	3.2	4.7	5.0	20.2
	$LSD_{0.05}$	*1.2*	*ns*	*ns*	*ns*	*0.6*	*0.4*
	Average	3.1	4.1	2.9	4.5	4.5	19.2

Oven Baked

	Clone	Flavor	After Cooking Darkening	Texture	Tuber Center	Skin Rating	Total Rating
1	Chieftain	3.5	4.0	2.4	4.2	4.1	18.2
2	Modoc	3.8	4.4	2.7	4.3	4.2	19.4
3	POR17PG64-2	2.4	3.4	2.5	4.1	3.9	16.2
4	A11582-1R	3.1	3.5	2.9	3.5	4.1	17.1
5	COOR15108-1	2.6	4.1	2.5	3.6	3.5	16.3
6	A11573-5RYsto	3.1	4.3	2.7	3.7	4.3	18.1
	$LSD_{0.05}$	*0.9*	*0.6*	*ns*	*ns*	*0.6*	*0.3*
	Average	3.1	3.9	2.6	3.9	4.0	17.5

Microwaved

	Clone	Flavor	After Cooking Darkening	Texture	Tuber Center	Skin Rating	Total Rating
1	Chieftain	3.4	3.7	3.1	4.0	4.1	18.3
2	Modoc	3.4	4.0	2.9	4.3	4.1	18.6
3	POR17PG64-2	2.7	3.6	2.5	3.8	4.1	16.6
4	A11582-1R	3.7	3.4	2.8	3.9	4.4	18.1
5	COOR15108-1	2.6	3.1	2.9	3.5	4.1	16.3
6	A11573-5RYsto	2.6	3.6	3.0	3.9	4.4	17.5
	$LSD_{0.05}$	*0.9*	*0.6*	*ns*	*0.7*	*ns*	*0.3*
	Average	3.1	3.6	2.9	3.9	4.2	17.6

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

2024 Washington Tri-State Specialty Trial

Specialty Clone Culinary Evaluation

Boiled

	Clone	Flavor	After Cooking Darkening	Texture	Tuber Center	Sloughing	Total Rating
7	Yukon Gold	3.3	4.3	3.5	4.8	2.3	18.3
8	A11569-1Y	3.3	4.3	2.8	5.0	4.6	20.1
9	A11661-2Y	3.7	4.3	3.7	4.2	4.5	20.3
10	A11661-3Y	3.3	4.3	3.2	4.7	4.7	20.2
11	TXA18020-1DY	3.2	4.3	3.5	4.5	2.3	17.8
12	A11576-1Ysto	2.7	4.3	3.3	3.7	4.2	18.2
13	Purple Majesty	3.0	4.5	3.7	4.5	3.3	19.0
14	POR18PG54-1	3.2	4.3	2.8	4.5	4.2	19.0
15	POR16PG25-2	3.2	4.5	2.7	3.8	4.0	18.2
	$LSD_{0.05}$	*ns*	*ns*	*ns*	*0.9*	*0.8*	*0.5*
	Average	3.2	4.4	3.2	4.4	3.8	19.0

Oven Baked

	Clone	Flavor	After Cooking Darkening	Texture	Tuber Center	Skin Rating	Total Rating
7	Yukon Gold	3.1	4.2	3.5	3.5	3.7	17.9
8	A11569-1Y	2.9	3.9	2.9	4.3	4.3	18.3
9	A11661-2Y	3.5	4.1	3.2	4.2	4.0	19.0
10	A11661-3Y	3.3	4.1	2.9	4.5	4.1	18.9
11	TXA18020-1DY	2.2	3.8	3.5	3.8	4.2	17.5
12	A11576-1Ysto	2.9	3.6	3.2	3.5	3.9	17.1
13	Purple Majesty	3.2	3.8	2.9	3.7	4.3	17.9
14	POR18PG54-1	3.5	3.5	2.4	3.9	3.8	17.2
15	POR16PG25-2	3.4	3.5	3.0	3.7	3.9	17.5
	$LSD_{0.05}$	*0.9*	*ns*	*0.9*	*0.8*	*0.7*	*0.4*
	Average	3.1	3.8	3.0	3.9	4.0	17.9

Microwaved

	Clone	Flavor	After Cooking Darkening	Texture	Tuber Center	Skin Rating	Total Rating
7	Yukon Gold	3.3	3.8	3.1	4.0	4.6	18.7
8	A11569-1Y	2.5	3.8	3.1	4.1	4.4	17.9
9	A11661-2Y	3.3	2.9	3.0	3.7	4.4	17.4
10	A11661-3Y	3.3	3.6	3.0	3.9	3.8	17.6
11	TXA18020-1DY	2.4	3.5	3.8	3.9	4.1	17.8
12	A11576-1Ysto	3.0	3.2	3.5	4.1	4.6	18.5
13	Purple Majesty	2.6	3.5	3.4	3.4	4.3	17.3
14	POR18PG54-1	2.8	3.3	2.5	4.1	4.1	16.7
15	POR16PG25-2	3.2	3.2	3.3	4.3	4.1	18.1
	$LSD_{0.05}$	*ns*	*0.5*	*0.9*	*0.7*	*0.5*	*0.3*
	Average	2.9	3.4	3.2	4.0	4.3	17.8

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

Chipping and Boiling Evaluations

	Clone	(Chips) Snack Food Assoc. Rating	(BOILED Cooking Time) Time to Breakdown (min) Stem	Bud	Average
1	Chieftain	4.5	5.5	3.8	4.6
2	Modoc	4.7	7.5	4.7	6.1
3	POR17PG64-2	4.0	4.9	3.5	4.2
4	A11582-1R	4.7	5.0	3.7	4.4
5	COOR15108-1	3.8	4.0	3.8	3.9
6	A11573-5RYsto	3.8	4.4	4.0	4.2
7	Yukon Gold	4.4	4.0	4.9	4.4
8	A11569-1Y	3.3	5.1	5.9	5.5
9	A11661-2Y	2.8	3.7	4.6	4.2
10	A11661-3Y	2.8	4.0	5.7	4.8
11	TXA18020-1DY	2.5	4.1	5.0	4.5
12	A11576-1Ysto	3.3	3.0	3.6	3.3
13	Purple Majesty	3.4	3.3	2.9	3.1
14	POR18PG54-1	4.0	4.2	3.7	4.0
15	POR16PG25-2	4.5	5.1	3.6	4.3
	*$LSD_{0.05}$ **		*1.5*	*0.6*	
	Average	3.8	4.5	4.3	4.4

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

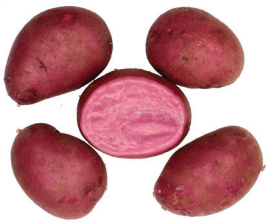
Nora Fuller passing out rating sheets for the evaluations.

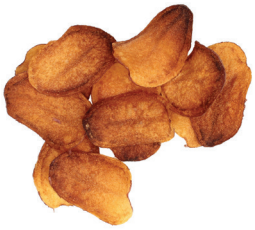
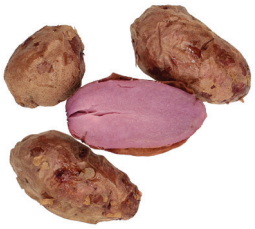
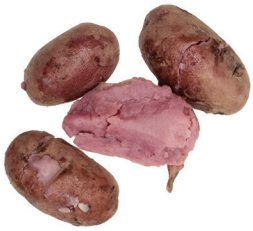
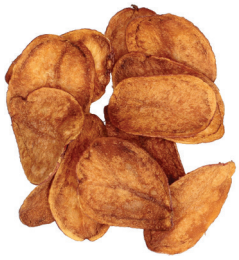
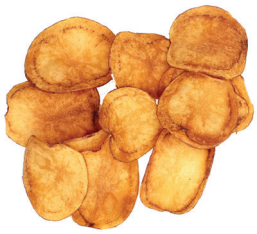
Daphne Crum points out an infected plant.

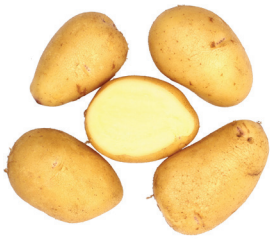
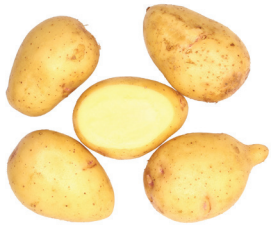
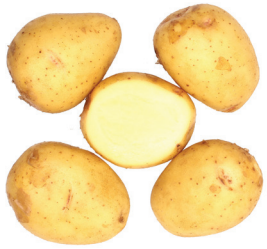
Olufunke Ogundiya gives a talk at Field Day.

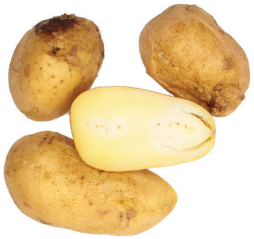
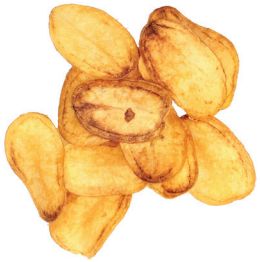
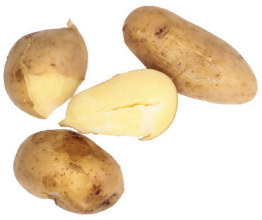
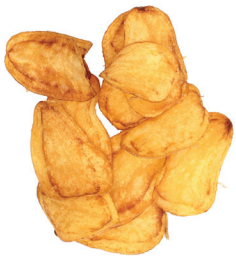
In-season sprays being conducted.

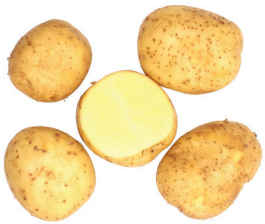
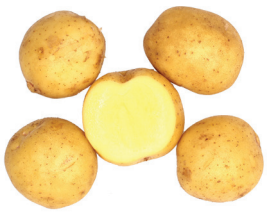
A group gathers at Field Day 2024.

Tubers	WA Tri-State Specialty Trial Comments
Chieftain	
	Tubers: Round to oblong tubers. Fair skin set; moderate eye depth. **Baked:** slight after cooking darkening, pastey texture, good flavor, mushy tuber center, steamy skin. **Boiled:** good sloughing, slight after cooking darkening, creamy texture, mushy flavor, slight tuber center. **Microwaved:** bland after cooking darkening, slight texture, creamy flavor, mushy tuber center, steamy skin.
Modoc	
	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:** good sloughing, slight after cooking darkening, creamy texture, mushy flavor, none tuber center. **Microwaved:** bland after cooking darkening, slight texture, creamy flavor, mushy tuber center, steamy skin.
POR17PG64-2	
	**Tubers:** Round to oblong tubers. Poor skin set; very shallow eyes. **Baked:** slight after cooking darkening, creamy texture, unacceptable flavor, mushy tuber center, steamy skin. **Boiled:** bland sloughing, slight after cooking darkening, pastey texture, fully cooked flavor, slight tuber center. **Microwaved:** bland after cooking darkening, slight texture, creamy flavor, mushy tuber center, steamy skin.
A11582-1R	
	Tubers: Round to oblong tubers. Poor skin set; moderate eye depth. **Baked:** slight after cooking darkening, creamy texture, bland flavor, mushy tuber center, steamy skin. **Boiled:** bland sloughing, slight after cooking darkening, creamy texture, fully cooked flavor, none tuber center. **Microwaved:** bland after cooking darkening, moderate texture, creamy flavor, mushy tuber center, steamy skin.
COOR15108-1	
	Tubers: Round tubers. Poor skin set; moderate eye depth. **Baked:** slight after cooking darkening, creamy texture, bland flavor, mushy tuber center, steamy skin. **Boiled:** bland sloughing, slight after cooking darkening, creamy texture, mushy flavor, none tuber center. **Microwaved:** bland after cooking darkening, moderate texture, creamy flavor, mushy tuber center, steamy skin.

Chips	Baked	Boiled	Microwaved
Chieftain			
Modoc			
			
POR17PG64-2			
			
A11582-1R			
			
COOR15108-1			
			

Tubers	WA Tri-State Specialty Trial Comments
A11573-5RYsto	
	Tubers: Round tubers. Poor skin set; moderate eye depth. **Baked:** slight after cooking darkening, creamy texture, bland flavor, mushy tuber center, steamy skin. **Boiled:** bland sloughing, slight after cooking darkening, creamy texture, fully cooked flavor, none tuber center. **Microwaved:** bland after cooking darkening, slight texture, creamy flavor, mushy tuber center, steamy skin.
Yukon Gold	
	Tubers: Round tubers. Fair skin set; moderate eye depth. **Baked:** slight after cooking darkening, fluffy texture, bland flavor, mushy tuber center, steamy skin. **Boiled:** bland sloughing, slight after cooking darkening, fluffy texture, fully cooked flavor, severe tuber center. **Microwaved:** bland after cooking darkening, slight texture, creamy flavor, mushy tuber center, fully cooked skin.
A11569-1Y	
	**Tubers:** Round to oblong tubers. Fair skin set; shallow eyes. **Baked:** slight after cooking darkening, creamy texture, bland flavor, mushy tuber center, steamy skin. **Boiled:** bland sloughing, slight after cooking darkening, creamy texture, fully cooked flavor, none tuber center. **Microwaved:** bland after cooking darkening, slight texture, creamy flavor, mushy tuber center, steamy skin.
A11661-2Y	
	**Tubers:** Oblong tubers. Fair skin set; shallow eyes. **Baked:** slight after cooking darkening, creamy texture, good flavor, mushy tuber center, steamy skin. **Boiled:** good sloughing, slight after cooking darkening, fluffy texture, mushy flavor, none tuber center. **Microwaved:** bland after cooking darkening, moderate texture, creamy flavor, mushy tuber center, steamy skin.
A11661-3Y	
	**Tubers:** Round to oblong tubers. Very poor skin set; moderate eye depth. **Baked:** slight after cooking darkening, creamy texture, bland flavor, fully cooked tuber center, steamy skin. **Boiled:** bland sloughing, slight after cooking darkening, creamy texture, fully cooked flavor, none tuber center. **Microwaved:** bland after cooking darkening, slight texture, creamy flavor, mushy tuber center, steamy skin.

Chips	Baked	Boiled	Microwaved
A11573-5RYsto			
Yukon Gold			
A11569-1Y			
			
A11661-2Y			
			
A11661-3Y			
			

Tubers	WA Tri-State Specialty Trial Comments
TXA18020-1DY	
	**Tubers:** Round tubers. Good skin set; shallow eyes. **Baked:** slight after cooking darkening, fluffy texture, unacceptable flavor, mushy tuber center, steamy skin. **Boiled:** bland sloughing, slight after cooking darkening, fluffy texture, fully cooked flavor, severe tuber center. **Microwaved:** unacceptable after cooking darkening, slight texture, fluffy flavor, mushy tuber center, steamy skin.
A11576-1Ysto	
	**Tubers:** Round tubers. Good skin set; shallow eyes. **Baked:** slight after cooking darkening, creamy texture, bland flavor, mushy tuber center, steamy skin. **Boiled:** bland sloughing, slight after cooking darkening, creamy texture, mushy flavor, slight tuber center. **Microwaved:** bland after cooking darkening, moderate texture, fluffy flavor, mushy tuber center, fully cooked skin.
Purple Majesty	
	Tubers: Round to oblong tubers. Fair skin set; shallow eyes. **Baked:** slight after cooking darkening, creamy texture, bland flavor, mushy tuber center, steamy skin. **Boiled:** bland sloughing, none after cooking darkening, fluffy texture, fully cooked flavor, moderate tuber center. **Microwaved:** bland after cooking darkening, slight texture, creamy flavor, mushy tuber center, steamy skin.
POR18PG54-1	
	Tubers: Round tubers. Fair skin set; moderately deep eyes. **Baked:** slight after cooking darkening, creamy texture, good flavor, mushy tuber center, steamy skin. **Boiled:** bland sloughing, slight after cooking darkening, creamy texture, fully cooked flavor, slight tuber center. **Microwaved:** bland after cooking darkening, moderate texture, creamy flavor, mushy tuber center, steamy skin.
POR16PG25-2	
	Tubers: Round to oblong tubers. Good skin set; shallow eyes. **Baked:** slight after cooking darkening, creamy texture, bland flavor, mushy tuber center, steamy skin. **Boiled:** bland sloughing, none after cooking darkening, creamy texture, mushy flavor, slight tuber center. **Microwaved:** bland after cooking darkening, moderate texture, creamy flavor, mushy tuber center, steamy skin.

Chips	Baked	Boiled	Microwaved
TXA18020-1DY			
A11576-1Ysto			
Purple Majesty			
POR18PG54-1			
POR16PG25-2			

2024 Tri-State Chip Trial

Summaries

ENTRY	TOTAL YIELD		US # 1's*	US # 2's*	Culls*	EXTERNAL DEFECTS 1 = Severe 5 =None		
			> 0 oz	> 0 oz	> 0 oz		Growth	
	CWT/A	Tons/A	% of Total Yield			Scab	Cracks	Green
Atlantic	934	46.7	98	1	1	3	4	4
Lamoka	870	43.5	96	1	3	3	4	4
Snowden	1031	51.5	98	1	1	2	5	4
A13125-3C	1025	51.2	92	0	8	3	4	4
A16150-1C	736	36.8	99	0	1	4	5	4
A16153-2C	1001	50.1	94	0	6	2	2	4
A16154-2C	911	45.5	92	1	8	3	4	4

* Percent values may not total 100% due to rounding.
** Numbers followed by the same letter are not significantly different at the 5% level using Fisher's LSD Test.

ENTRY	US # 1 YIELD		0-2 oz*	2-4 oz*	4-6 oz*	6-10 oz*	> 10 oz*	Specific Gravity
	CWT/A	Tons/A	%					
Atlantic	913	45.7	2	13	20	44	21	1.081
Lamoka	835	41.7	1	11	18	43	27	1.085
Snowden	1009	50.5	2	13	27	41	17	1.085
A13125-3C	943	47.1	2	5	12	38	44	1.083
A16150-1C	728	36.4	5	23	33	34	5	1.084
A16153-2C	937	46.9	7	27	34	30	3	1.074
A16154-2C	834	41.7	1	7	15	42	35	1.070

* Percent values may not total 100% due to rounding.
** Numbers followed by the same letter are not significantly different at the 5% level using Fisher's LSD Test.

ENTRY	SKIN SET 1 = Poor 5 = Good	L x W RATIO 1 = Round 5 = Long	60 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
Atlantic	4.0	1.0	85	2.5	6.3	10.3	3.0	3.0
Lamoka	4.0	1.1	92	1.8	6.8	8.8	3.0	3.7
Snowden	4.0	1.0	88	2.4	6.0	12.0	3.0	2.3
A13125-3C	4.0	1.0	87	1.9	8.1	8.8	3.0	3.7
A16150-1C	4.0	1.1	90	2.0	4.7	10.9	3.0	4.0
A16153-2C	3.0	1.0	92	2.1	4.3	16.1	3.0	4.0
A16154-2C	4.0	1.0	92	1.8	7.4	8.5	3.0	4.0

* Percent values may not total 100% due to rounding

Planting Date: April 3rd
Harvest Date: September 11

Vine Kill Date: September 3rd
Days grown: 153

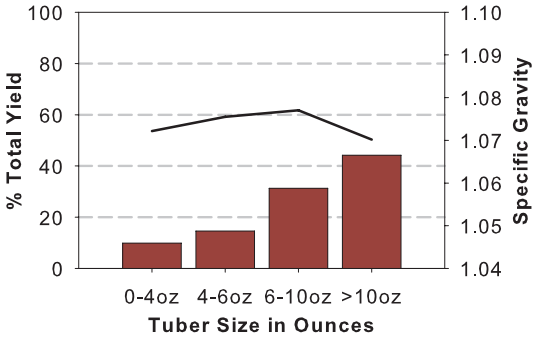
2024 Tri-State Chip Trial

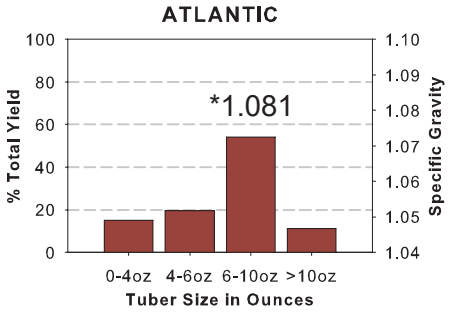
Tuber Yield and Specific Gravity Distributions

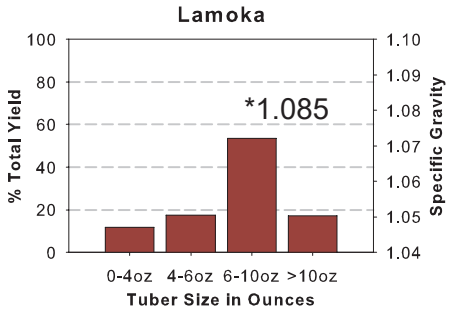
Note: Specific Gravity is based on a sample of U.S. #1 tubers within the 6-10 oz category

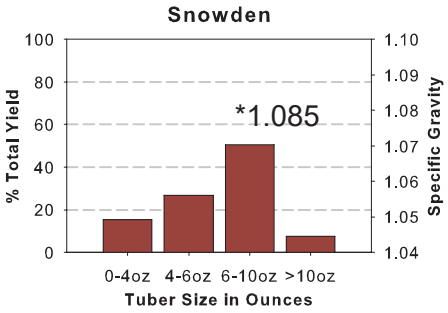
11 inch In-Row Spacing

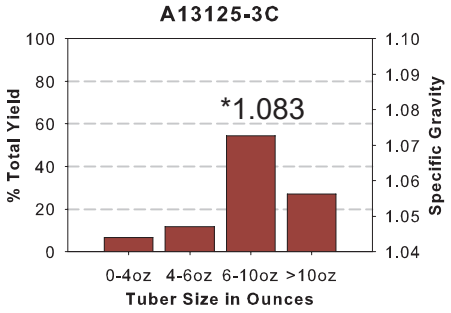
Total Yield CWT/A Specific Gravity

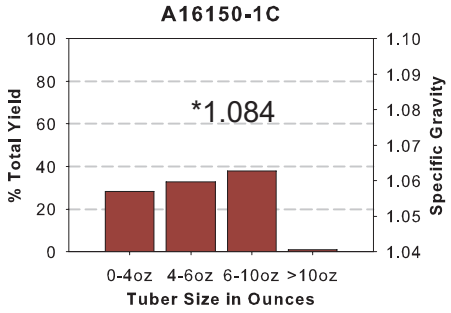


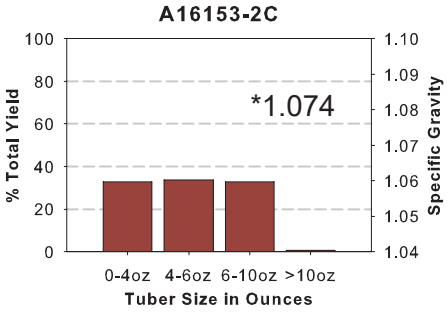


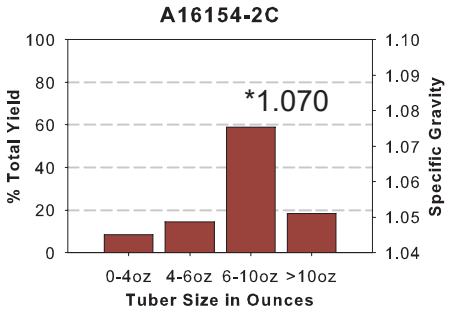












2024 WA Chip Trial
Postharvest Information

Four experimental chipping clones were evaluated in 2024 along with Atlantic, Lamoka, and Snowden as check cultivars. Samples were from WSU's Othello, WA Research station. An asterisk in the summary below indicates similar performance and/or ranking in trials from previous years.

- **Overall Fry Color**

  Lightest Fry Color: A16150-1C

  Darkest Fry Color: Atlantic*

- **Harvest Fry Color**

  Lightest Fry Color: Lamoka

  Darkest Fry Color: Atlantic

- **44°F Fry Color**

  Lightest Fry Color: A13125-3C

  Darkest Fry Color: Atlantic* & A16154-2C

- **48°F Fry Color**

  Lightest Fry Color: Lamoka & A16153-2C

  Darkest Fry Color: Atlantic*

Details:

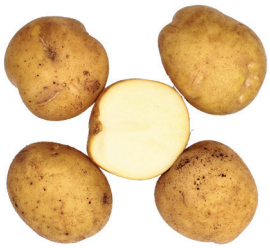
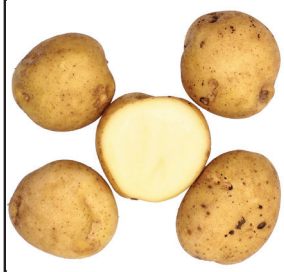
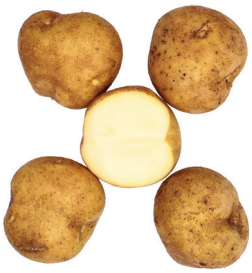
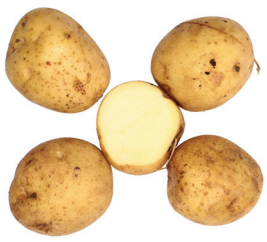
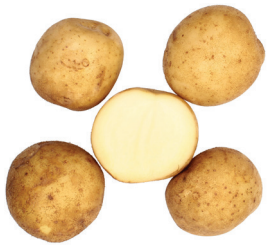
- When averaged over the three frying intervals (Harvest & 60 days at 48°F & 44°F), A16150-1C produced the lightest chips (2.4) as referenced with the SFA color chart (1-5 [darkest]). A13125-3C had the second lightest overall color of the experimental clones (2.5), slightly lighter than Lamoka (2.8).
- When fried directly out of the field, Lamoka averaged the lightest chips with a score of 2.0 and A16153-2C was the lightest experimental (2.3).
- Atlantic and A16154-2C scored the darkest out of the field at with a SFA score of 4.3 and 3.7, respectively.
- A13125-3C had an average score of 2.9 after 60 days at 44°F.
- A16154-2C was the darkest scoring experimental clone out of the 44°F storage with an average score of 4.9. Atlantic also scored a 4.9 under the same conditions.
- A16150-1C had an average score of 1.3 after 60 days at 48°F.
- A16154-2C was the darkest scoring experimental clone out of the 48°F storage with an average score of 2.3. Atlantic scored a 4.1 under the same conditions.
- A13125-3C is the only repeated experimental line in the 2024 evaluations. Performance was similar to the 2022 & 2023 cropping seasons, though, in 2023 and 2024, the crop was allowed to mature longer in the field and resulted in a darker at harvest fry color in 2023 & 2024 than 2022. Interestingly, the 48°F storage treatment appeared to be warm enough to condition the fries which resulted in the lightest fry color after 60 days storage.

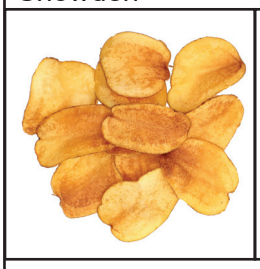
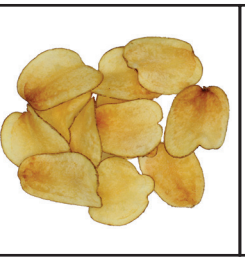
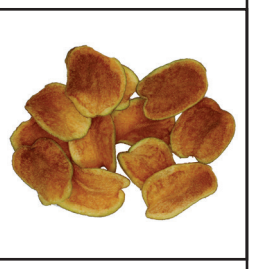
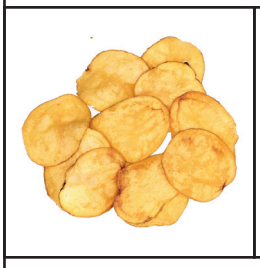
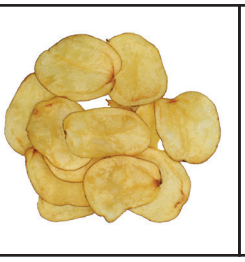
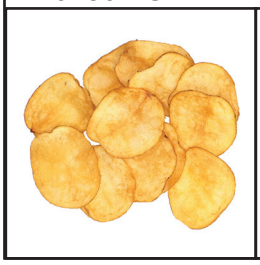
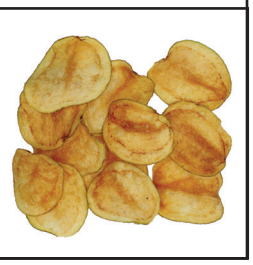
2024 Tri-State Chip Trial

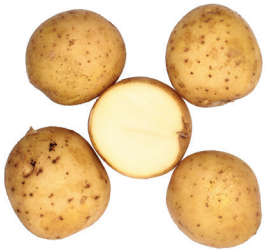
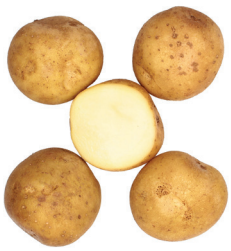
Postharvest Assessments for Storability and Color

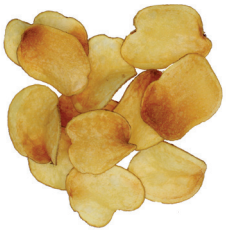
	Clone	Prior to Storage	SFA Ratings 48°F Storage	44°F Storage
1	Atlantic	4.3	4.1	4.9
2	Lamoka	2.0	2.0	4.3
3	Snowden	3.3	2.8	4.2
4	A13125-3C	2.8	1.9	2.9
5	A16150-1C	2.5	1.3	3.3
6	A16153-2C	2.3	2.0	4.4
7	A16154-2C	3.7	3.4	4.9
	Average	3.0	2.5	4.1
	Date test performed:			
	Prior to storage		Sept. 30	
	48°F		Nov. 15	
	44°F		Nov. 15	

*Chips were stored for 60 days at 48°F.

Tubers	WA Tri-State Chip Trial Comments
Atlantic	
	Tubers = Round tubers. Good skin set; moderately deep eyes. Initial Chips = Unacceptable 48°F = Unacceptable 44°F = Unacceptable
Lamoka	
	Tubers = Round Tubers. Good skin set; moderately deep eyes. Initial Chips = Light 48°F = Light 44°F = Unacceptable
Snowden	
	Tubers = Round Tubers. Good skin set; moderately deep eyes. Initial Chips = Acceptable 48°F = Acceptable 44°F = Unacceptable
A13125-3C	
	Tubers = Round Tubers. Good skin set; moderately deep eyes. Initial Chips = Acceptable 48°F = Light 44°F = Acceptable
A16150-1C	
	Tubers = Round tubers. Good skin set; shallow eyes. Initial Chips = Acceptable 48°F = Light 44°F = Acceptable

Initial Chips	48º F Storage	44º F Storage
Atlantic		
Lamoka		
Snowden		
		
A13125-3C		
		
A16150-1C		
		

Tubers	WA Tri-State Chip Trial Comments
A16153-2C	
	Tubers = Round Tubers. Fair skin set; deep eyes. Initial Chips = Light 48°F = Light 44°F = Unacceptable
A16154-2C	
	Tubers = Round tubers. Good skin set; moederately deep eyes. Initial Chips = Unacceptable 48°F = Acceptable 44°F = Unacceptable

Initial Chips	48º F Storage	44º F Storage
A16153-2C		
A16154-2C		
		

Index of Clones and Cultivars

Early Harvest Tri-State Trial 22-27

A10020-3sto
A12308-3adg
A12327-5VR
A13036-1
A13072-5
A13085-2
A13094-1
A15028-2TE
A15038-6
A15053-17
A15082-9
A16051-3
AOR15152-2
AOR15194-2
OR11222-4
Ranger Russet
Russet Burbank
Russet Norkotah 278
Shepody

Late Harvest Tri-State Trial 28-51

A10020-3sto
A12308-3adg
A12327-5VR
A13036-1
A13072-5
A13085-2
A13094-1
A15028-2TE
A15038-6
A15053-17
A15082-9
A16051-3
AOR15152-2
AOR15194-2
Clearwater Russet
OR11222-4
Ranger Russet
Russet Burbank
Russet Norkotah TX278

Early Harvest Regional Trial 52-57

Ranger Russet
Russet Burbank
A09086-1LB
A09136-9LB
A12305-2adg
A13072-7
A13091-5
AFA5661-8
AOR11217-3
AOR13064-2
AOR15166-2
AOR15227-2
Russet Norkotah 278
Shepody
CO13003-1RU
CO15016-1RUsto
COTX08063-2Ru
COTX10080-2Ru

Late Harvest Regional Trial 58-87

A09086-1LB
A09136-9LB
A12304-1sto
A12305-2adg
A13072-7
A13091-5
AFA5661-8
AOR11217-3
AOR13064-2
AOR15166-2
AOR15227-2
Clearwater Russet
CO13003-1RU
CO15016-1RUsto
COTX08063-2Ru
COTX10080-2Ru
Ranger Russet
Russet Burbank
Russet Norkotah TX278

Tri-State Specialty Trial 88-105

A11569-1Y
A11573-5RYsto
A11576-1Ysto
A11582-1R
A11661-2Y
A11661-3Y
Chieftain
COOR15108-1
Modoc
POR16PG25-2
POR17PG64-2
POR18PG54-1
Purple Majesty
TXA18020-1DY
Yukon Gold

Tri-State Chip Trial 106-113

A13125-3C
A16150-1C
A16153-2C
A16154-2C
Atlantic
Lamoka
Snowden