

# 2017

## Klamath Basin Potato Variety Development Summary



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**Klamath Basin Research  
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<b>Introduction</b>	<b>3</b>
<b>Acknowledgements</b>	<b>4</b>
<b>Contributors</b>	<b>5</b>
<b>2017 Weather</b>	<b>6-8</b>
<b>2017 Insect Trapping Results</b>	<b>9-11</b>
<b>Guide to Clone Designations</b>	<b>12</b>
<b>Single-hill Screening Results</b>	<b>13</b>
<b>Preliminary Yield Trial (PYT-1) Screening</b>	<b>14</b>
<b>Fresh Market Value Methods</b>	<b>15</b>
<b>Replicated Trial Cultural Information</b>	<b>16</b>
<b>Russet Potato Variety Development Trials</b>	
Preliminary Yield Trial (PYT-2)	17
Statewide Trial	18-22
Tri-State Trial	23-27
<b>Red/Specialty Potato Variety Development Trials</b>	
Preliminary Yield Trial (PYT-2)	28
Statewide Trial	29-31
Tri-State	32-35
<b>Chip Potato Variety Development Trial</b>	
Preliminary Yield Trial (PTY-2)	36
Statewide Trial	37-40
Regional Trial	41-44
Chip Processing Results	45
<b>DuPont Rhizoc Trial</b>	<b>46-47</b>

## Introduction

Since its inception in 1985, the Tri-State variety development program has primarily focused on the development of processing and dual-purpose (process and fresh) russets. Recent breeding efforts have focused more on improving genetic resistance to various pests and diseases as a means of lowering production costs. During the past decade, Oregon has been the lead state in the release of eleven russet varieties. Although the development of russet varieties remains the primary focus, recent efforts have included red-skinned and specialty-type selections. Many of these selections offer unique skin and/or flesh color combinations along with enhanced nutritional qualities including elevated antioxidant and Vitamin C content. In total, more than 25 new varieties have been released by the Tri-State variety development program since 1985. More recently Klamath Basin growers have identified the need for chipping potatoes suitable for export markets. Trials were initiated in 2008 and 2009, with funding from the Oregon Potato Commission, to identify acceptable chipping varieties using advanced selections and recently released varieties from the Tri-State, Southwest, North-central, and Eastern breeding programs.

Screening for resistance to various species of nematodes and related diseases is being accomplished at several locations. The Klamath Basin Research and Extension Center (KBREC) routinely screens selections for resistance to root-knot nematode (*Meloidogyne chitwoodi* and *Meloidogyne hapla*) and corky ringspot disease (CRS) resulting from infection of Tobacco rattle virus which is vectored by stubby-root (*Paratrachodorus* spp.) nematodes. Other cooperating sites within the Tri-State area also work on resistant screening and other production limitations most suited to their respective location. The overall objective is that future releases will offer genetic resistance to many economically important pests and diseases which will help reduce production inputs as these costs continue to rise.

The Klamath Basin Research and Extension Center (KBREC) also serves as an initial field screening location for first-generation selections of russet, specialty, and chipping clones (single-hills). Second-year evaluations of four-hill red/specialty and chip selections also take place in Klamath; however, russet selections are currently sent to the Central Oregon Agricultural Research Center (COARC). Breeding progeny are supplied by programs at the USDA Agricultural Research Service (ARS) facility in Prosser, Washington, and Aberdeen, Idaho, as well as, Oregon State University (OSU), Colorado State University, and North Dakota State University.

The purpose of this summary booklet is to report the results of our variety trial efforts. In 2009, KBREC participated in the following research trials: Russet Preliminary Yield 2 (PYT-2), Statewide Russet, Tri-state Russet, Western Regional Russet, Red/Specialty PYT- 1, Statewide Specialty, Tri-state Specialty, Western Regional Red/Specialty, and a modified Western Regional Chip Trial. A brief summary of weather during the growing season, insect trapping results, and single-hill selections.

## Acknowledgements

The ultimate goal of variety development at OSU-KBREC and cooperating Tri-state partners is the development and commercialization of new potato varieties to benefit the Northwest potato industry. The effect of the Tri-state Potato Variety Development Program on the Northwest potato industry has been substantial. The fresh market industry, French fry processors and chippers have incorporated many varieties developed through this program into their businesses. Ranger Russet, Western Russet, Umatilla Russet, and Alturas are examples of russet cultivars released from the Tri-State program that have greatly benefited the Northwest potato industry, being the 3<sup>rd</sup>, 5<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> most widely grown cultivars in Oregon and accounted for 27% of total acreage. As expected, recently released russet varieties have found greater adoption by Northwest processors compared to fresh market usage in the Klamath Basin. However, several varieties have found fresh market niches in the Klamath Basin including GemStar Russet, Premier Russet, and most recently Classic Russet.

Varieties recently released by the Tri-State program are now produced on over 140,000 acres in the Pacific Northwest with value to growers estimated at approximately \$390 million. A recent economic analysis of the Tri-state breeding effort revealed that every dollar invested in the program results in a \$39 return (Araji and Love, 2002). The current focus of Tri-state variety development efforts is to develop improved varieties that increase quality and production efficiency while decreasing fertilizer and pesticide inputs.

The success of OSU-KBREC potato variety development is made possible with funding from USDA CREES, USDA ARS, and the generous support of the Oregon Potato Commission. In addition, the Klamath Potato Growers Association annually contributes to OSU-KBREC research and Extension activities.

### References

Araji, A.A. and S. Love. 2002. The economic impact of investment in the Pacific Northwest potato variety development program. **Amer. J. Potato Res.** 79:411-420.

### Special Acknowledgment

OSU-KBREC plagiarized the design and layout for this publication from the WSU Potato Cultivar Yield and Postharvest Quality Evaluation publication. This is an excellent publication which provides a vast amount of data in a 'grower friendly' venue. The publication below, by the Washington State University Potato Research Group, can be found at the listed website.

Mark Pavek, Rick Knowles, Zach Holden, Nora Fuller. 2009. Washington State University Potato Research Group, Pullman, WA. **2009 Potato Cultivar Yield and Postharvest Quality Evaluations.** <http://www.potatoes.wsu.edu>

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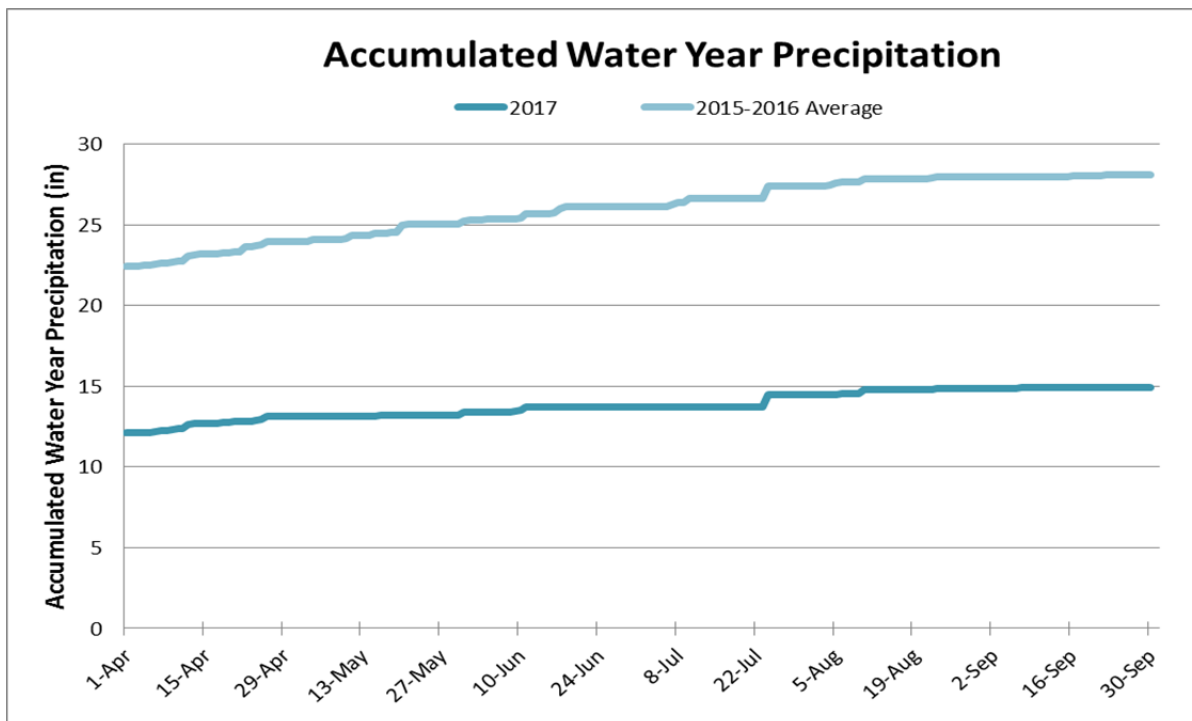
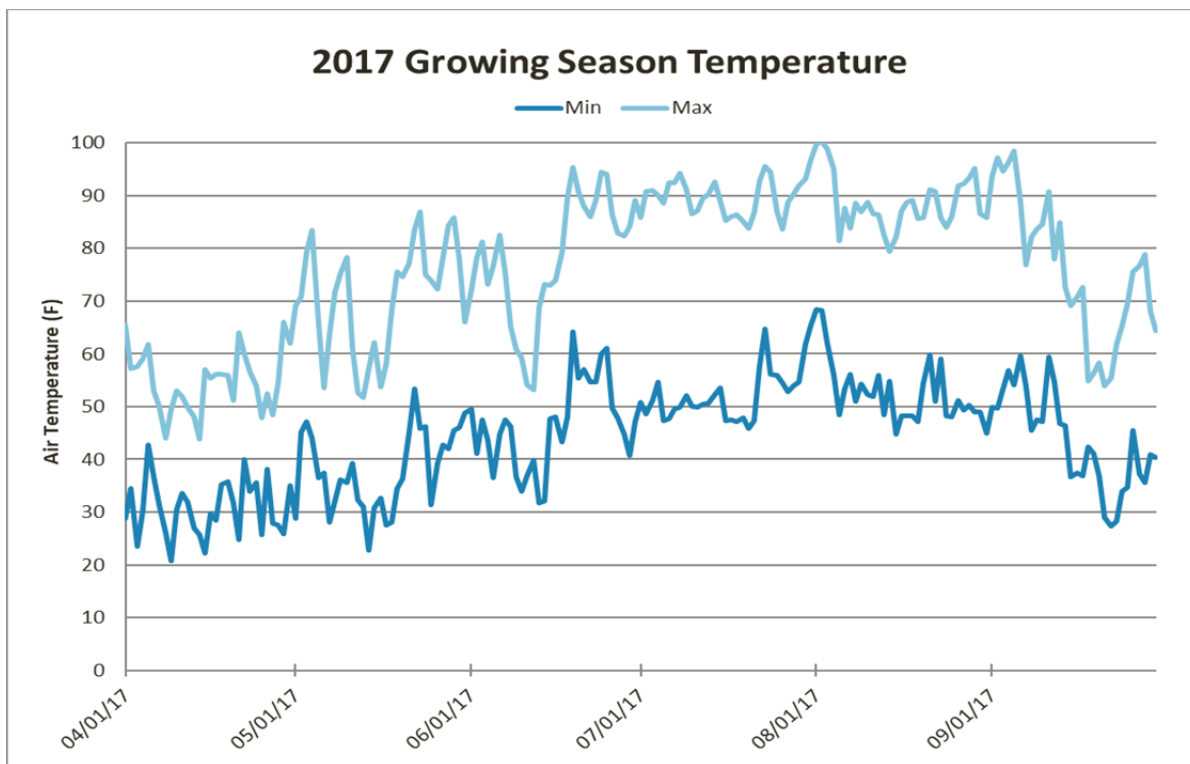
Cam Curtis, Klamath Falls, OR

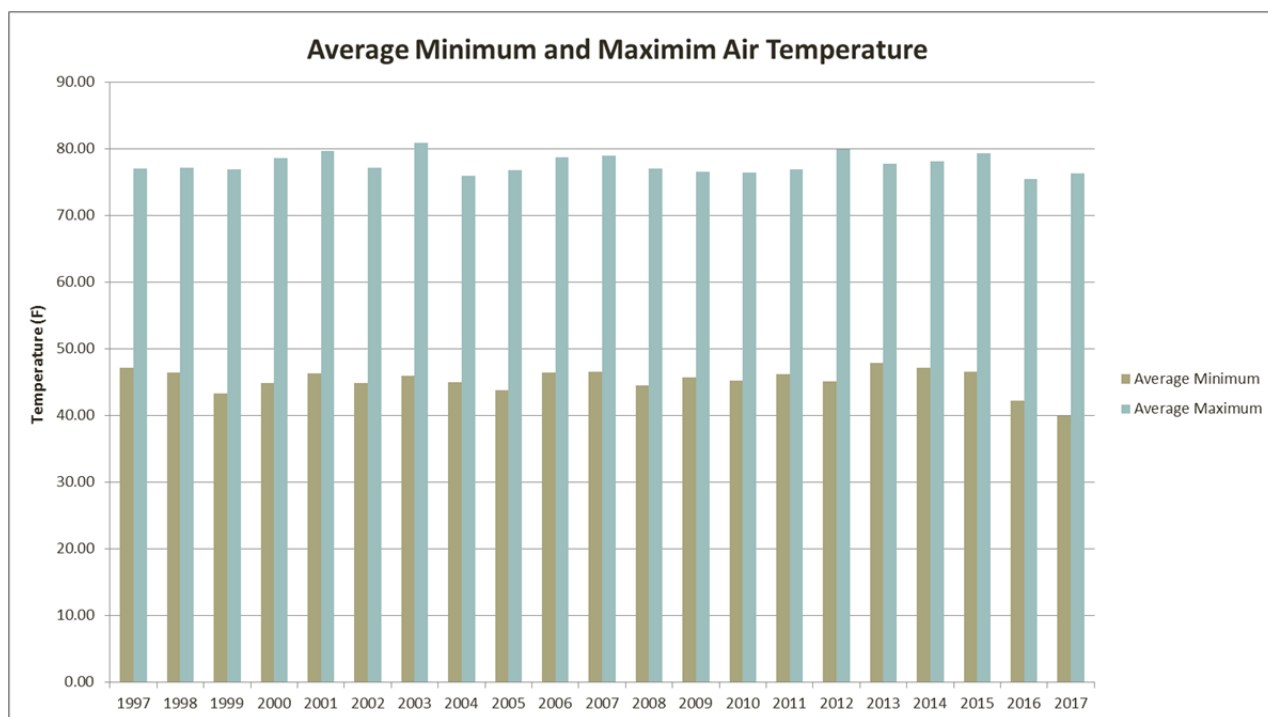
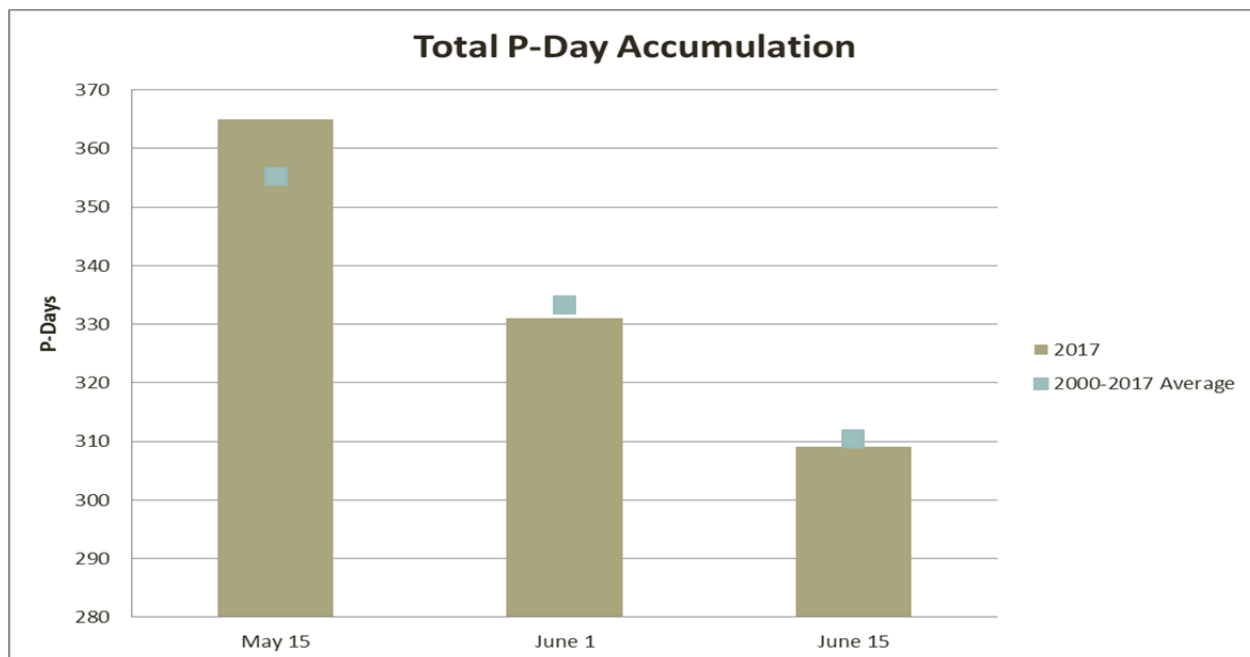
### Commissions and Associations

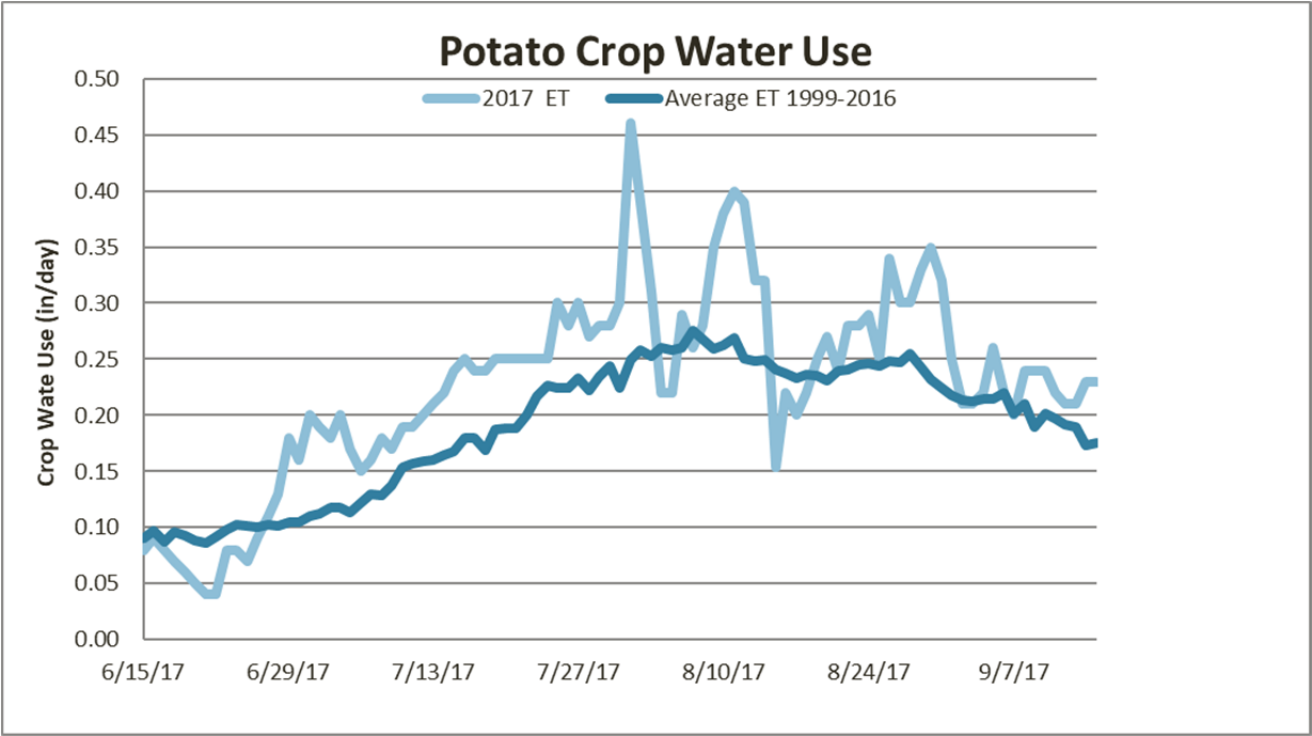
Bill Brewer, Jennifer Fletcher, Judy Schwartz, Oregon Potato Commission, Portland, OR

Klamath Potato Growers Association, Klamath Falls, OR

## Weather Data



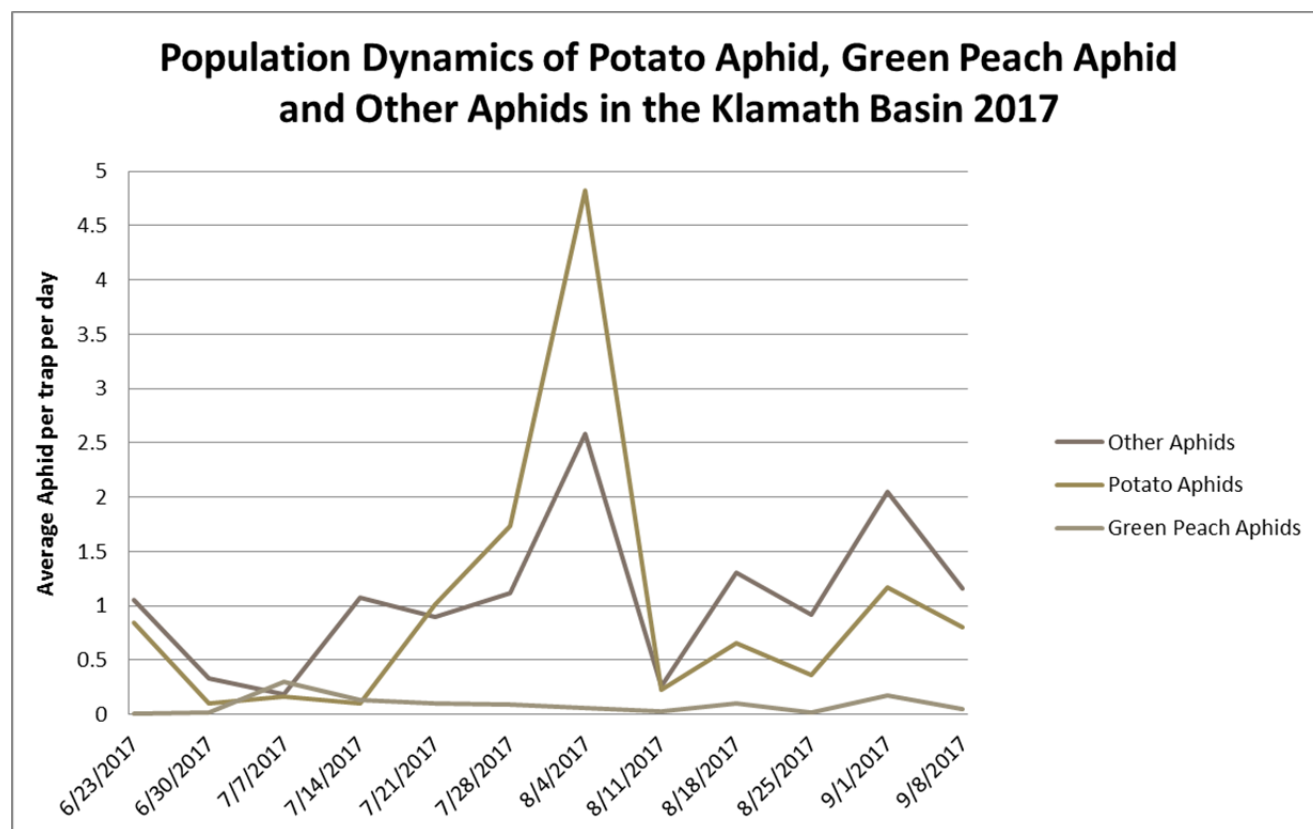




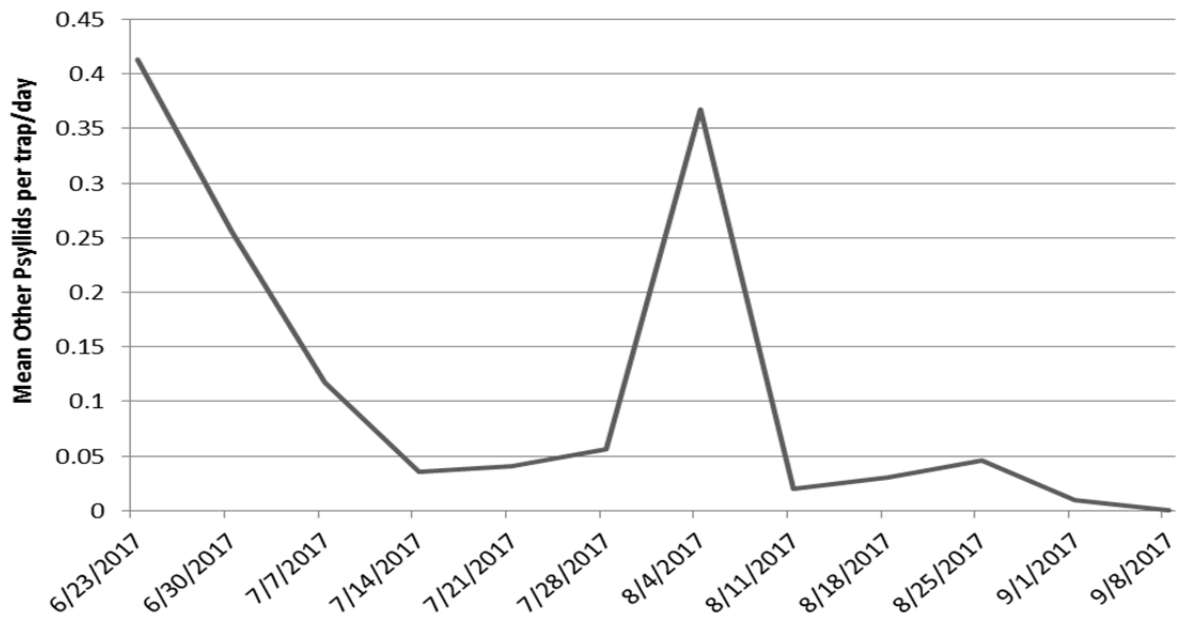


## 2017 Insect Trapping Results

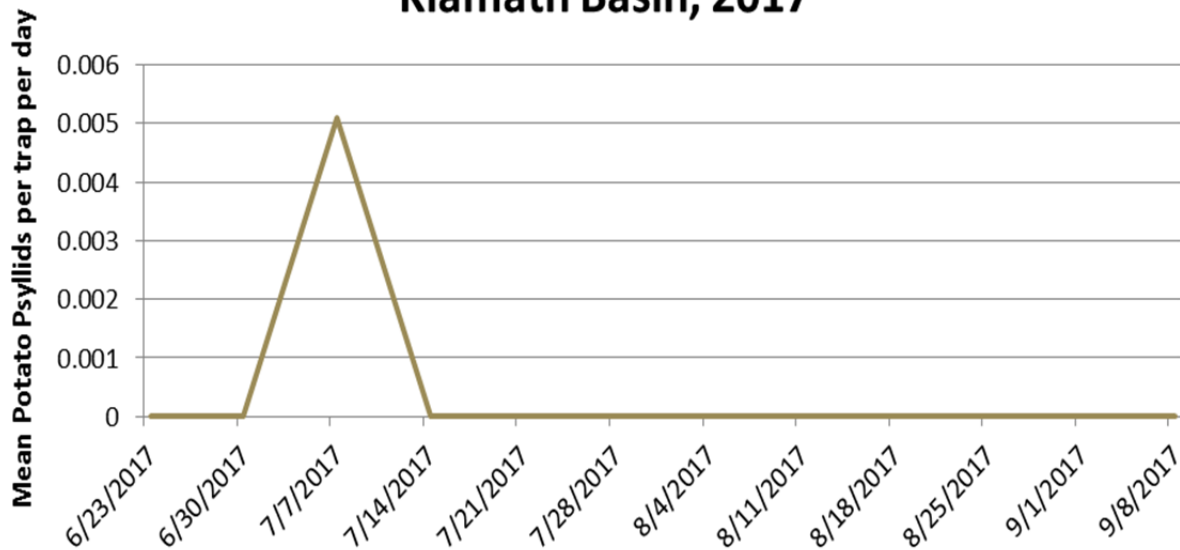
Potato tuberworm was first detected in the Klamath Basin in late August of 2005. KBREC initiated an extensive trapping program the following year (2006) and have continued this effort annually. In 2009, we expanded our trapping efforts to include aphids, leafhoppers, and psyllids. Eighteen Delta traps (tuber moth), ten yellow water-pan traps (aphids), and eighteen sticky cards (leafhoppers and psyllids) were placed in growers' fields shortly after crop emergence. Traps were checked weekly during the growing season and results were tabulated and made available to growers, crop consultants, and other industry personnel electronically in a newsletter titled *Potato Bytes*. This newsletter was also published on the KBREC website at <http://oregonstate.edu/dept/kbrec/>. Collected data provided Basin producers with pertinent information to improve pest management strategies. Potato tuberworm has not been found despite an extensive eleven year trapping program. The following graphs show population dynamic trends for aphids and leafhoppers throughout the growing season.

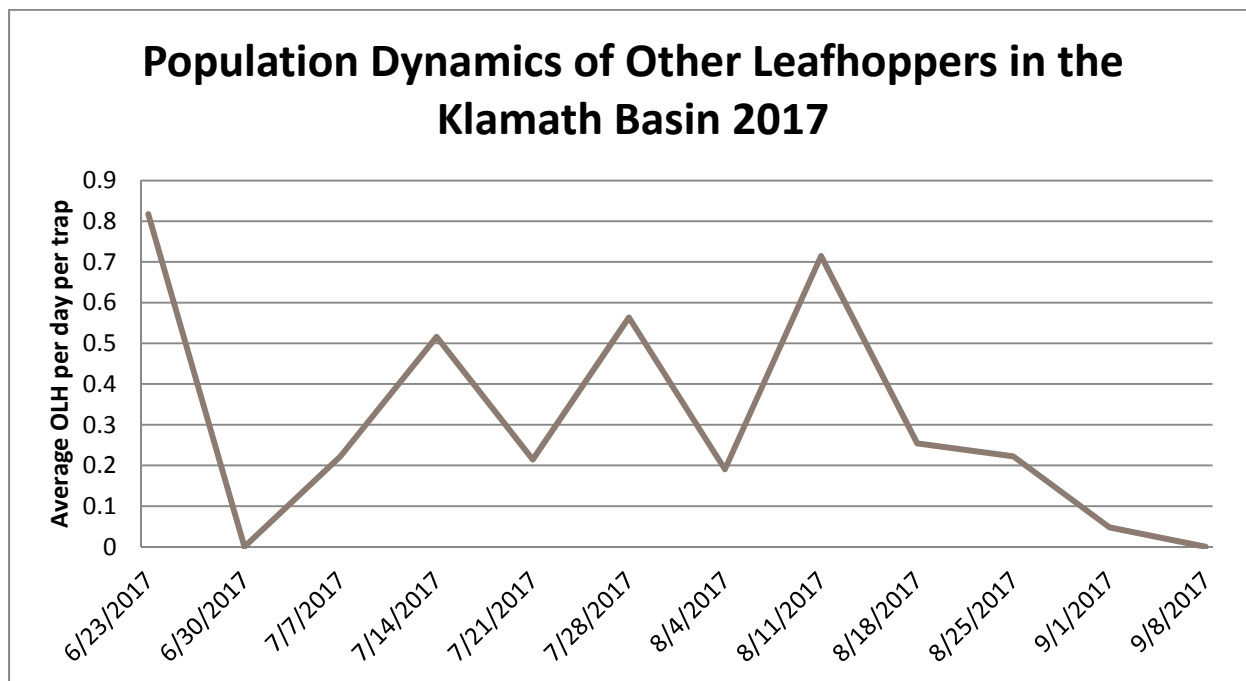


### Population Dynamics of Other Psyllids in the Klamath Basin, 2017



### Population Dynamics of Potato Psyllids in the Klamath Basin, 2017





## Guide to Clone Designation

Example: AC99375-1RU	AC99375-1RU	Breeding Program ( <b>A</b> berdeen, ID)
	AC99375-1RU	Selection Site ( <b>C</b> olorado)
	AC <b>99</b> 375-1RU	Year of Cross ( <b>1999</b> )
	AC99 <b>375</b> -1RU	Cross Number ( <b>375</b> )
	AC99375- <b>1</b> RU	Tuber Selection ( <b>1</b> )
	AC99375-1 <b>R</b> U	Russet ( <b>Ru</b> )

## Location Codes

Designation	Breeding Program	Selection Program	Other
A	Aberdeen, Idaho	Aberdeen, Idaho	
AO	Aberdeen, Idaho	Oregon	
AOA	Aberdeen, Idaho	Oregon	
AOR	Aberdeen, Idaho	Oregon	
ATX	Aberdeen, Idaho	Texas	
BTX	Beltsville, Maryland	Texas	
CO	Colorado		
MWTX	Madison, Wisconsin	Texas	
NDA	North Dakota	Aberdeen, Idaho	
NY	New York		
PA	Prosser, Washington	Aberdeen, Idaho	
POR	Prosser, Washington	Oregon	
TC	Texas	Colorado	
TE	Tetonia, Idaho		
TXA	Texas	Aberdeen, Idaho	
TXNS	Texas		Norkotah Strain

## Miscellaneous Designations

<b>B</b>	Chuck <b>B</b> rown's Cross
<b>LS</b>	Low <b>S</b> ugar
<b>P/P</b>	Purple skin/ <b>P</b> urple flesh
<b>R</b>	Red skin
<b>R/R</b>	Red skin/ <b>R</b> ed flesh
<b>R/Y</b>	Red skin/ <b>Y</b> ellow flesh
<b>Ru</b>	<b>R</b> usset
<b>W/Y</b>	<b>W</b> hite skin/ <b>Y</b> ellow flesh
<b>LB</b>	Late <b>B</b> light resistance
<b>PW/Y</b>	Purple skin with <b>W</b> hite eyes/ <b>Y</b> ellow flesh
<b>P/Y</b>	Purple skin/ <b>Y</b> ellow flesh
<b>P/PW</b>	Purple skin/ <b>P</b> urple and <b>W</b> hite flesh

## Single Hill Results

Approximately, sixty one thousand (63,000) greenhouse-produced seedling tubers were planted at a Rock Creek Ranch five miles west of Running Y Ranch on May 23, 2017. Located about 20 miles west of Klamath Falls, soils are approximately 6.1 percent organic matter and a pH of 6.3. The location provides good isolation from other potato production areas and intensively fumigated soils allow us to harvest very clean material for seed increase. Progeny included 6 families from Oregon State University; 57 from USDA, Prosser, WA; 171 from USDA, Aberdeen, Idaho; 11 from Colorado State University; 10 from University of North Dakota. Several crosses included russet parents with virus, late blight and potato tuber worm resistance.

Tuber families were lifted with a two-row, level-bed digger on October 7. A selection team including researchers, extension agents, growers and industry personnel selected desirable clones from various families immediately after lifting. As expected, selection was based primarily on external appearance; however, internal evaluation was performed on a limited number of selections. All retained material was transported to Klamath Falls, Oregon for storage at the Klamath Basin Research and Extension Center (KBREC). The following table outlines the number of single- hills provided by each breeding program and selection rate.

Location	General Cross Types	Number of Progeny Planted	Number of Progeny Selected	% Selection Rate
ARS Prosser, WA	Disease resistance, pigmented	9,719	88	.90
Oregon State University	Disease resistance, mixed type	990	9	.90
North Dakota	Disease resistance, russet	2,746	60	2.1
ARS Aberdeen, ID	Disease resistance, russet	48,825	478	.97
Colorado State University		1,704	11	.64
<b>Total</b>		<b>63,984</b>	<b>646</b>	<b>1.01</b>

## **Preliminary Yield (PYT-1) Russet Screening**

Eight hundred fifty four (854) selections from 2016 single-hills were planted in 16-hill seed increase plots at Rock Creek Ranch. Potato tubers were lifted using a two-row, level-bed digger on October 6, 2017. A team of about 20 research and industry personnel selected 138 clones for further evaluation based on market potential and possible disease resistance. Tubers from these selections were retained and stored at KBREC for seed increase. This material will be evaluated in a Preliminary Yield Trial (PYT-2 Russet) conducted at KBREC and other locations throughout the Pacific Northwest in 2018.

## **Preliminary Yield (PYT-1) Specialty Screening**

One hundred forty seven (147) selections from 2016 single-hills were planted in 16-hill seed increase plots at Rock Creek Ranch. Potato tubers were lifted using a two-row, level-bed digger on October 6, 2017. A team of about 20 research and industry personnel selected 22 clones for further evaluation based on market potential and possible disease resistance. Tubers from these selections were retained and stored at KBREC for seed increase. This material will be evaluated in a Preliminary Yield Trial (PYT-2 Specialty) conducted at KBREC and other locations throughout the Pacific Northwest in 2018.

## **Preliminary Yield (PYT-1) Chip Screening**

Thirty one (31) chip selections from 2016 single-hills were planted in 16-hill seed increase plots at Rock Creek Ranch. Potato tubers were lifted using a two-row, level-bed digger on October 6, 2017. Research and industry personnel selected 31 clones for further evaluation based on chipping potential and possible cold sweetening resistance. Seed of these selections was hand collected and stored at the KBREC potato facilities. This material will be evaluated in a Preliminary Yield Trial (PYT-2 Chip) conducted at KBREC and other locations throughout the Pacific Northwest in 2018. KBREC will also be increasing seed for future evaluation.

## Fresh Market Value – Methods

Graphs showing the difference in gross returns per acre (Fresh Market Value) compared to Russet Norkotah are provided for all entries in both the Tri-state and Western Regional Russet Trials. Values were calculated by subtracting the gross return of Russet Norkotah from the gross return of each particular entry. Net packing shed returns to growers were calculated using a four-year average of fresh potato prices in the Columbia Basin and a packing shed cost of \$4.00/cwt. The sales free on board shipping point is taken from the market periods 2007-2010 according to the USDA Federal-State Market News Service. Process-culls are priced at regional process-cull market value. Assessing the fresh value of a given entry is difficult as packing sheds utilize various tuber sizes to meet current market orders. For example, all tubers that meet 90 or 100 count carton specifications are sometimes used to fill 5 and 10 lb. bale orders. As expected, these types of scenarios are not accounted for in our assumptions. In addition, this type of economic analysis does not account for consumer preference. As such, entries which appear to lack fresh market appeal are highlighted as white bars. The table below lists point prices per tuber size and grade with associated pack fees for grade and size categories used.

Grade Size	Markets/Packaging <sup>1</sup>	Four Year Columbia Basin Avg. \$/cwt <sup>2</sup>	Packaging and Handling
4-6 oz.	10.0 lb. poly bags	\$11.07	\$4.00
	5.0 lb. poly bags	\$13.07	\$4.00
6-10 oz.	70, 80, 90 and 100 count	\$18.46	\$4.00
10-20 oz.	40, 50, 60 and 70 count	\$20.72	\$4.00
<4 oz. and culls	Washed Processed Grade	\$4.00	\$4.00
No. 2	10-20 oz (50 lb. sacks)	\$12.79	\$4.00
	6-10 oz (50 lb. sacks)	\$9.69	\$4.00

<sup>1</sup>Count = tuber number per 50 lb. carton.

<sup>2</sup>Sales F.O.B. Shipping Point, market periods 2007 to 2010 (USDA Federal-State Market News Service 2007-2010). Process-culls priced at regional process-cull market value.

## 2017 Replicated Trial Cultural Information

<b>Location:</b>	Klamath Falls, OR
<b>Soil Type:</b>	Poe fine sandy loam, pH 6.8
<b>Planting Date:</b>	5/22/2017
<b>Vine Kill Date:</b>	9/7/2017 Mechanical (vine chop)
<b>Harvest Date:</b>	9/26/2017
<b>Irrigation:</b>	Solid-set sprinkler + natural precipitation = 23.79 inches
<b>Plot Length:</b>	25 hills (19.27 ft.)
<b>In-row spacing:</b>	9.25 inches
<b>Row spacing:</b>	36 inches
<b>Number of Reps:</b>	4
<b>Fertilizer:</b>	180-125-250-265 Sulfur
<b>Weed Control:</b>	Prowl, Matrix, Outlook
<b>Insecticides:</b>	Alias
<b>Fungicides:</b>	Luna, Vertisan
<b>Nematode Control:</b>	Vydate

**General Comments:** This was a warmer growing season. It also consisted of several weeks of heavy smoke due to surrounding wildfires. Water ET use was good, and yields were on average higher than previous years' yields.



## 2017 Preliminary Yield (PYT-2) Russet Trial

Location: OSU KBREC – Klamath Falls, OR

Planting Date: May 23

Harvest Date: October 6

Fertility: 180-125-250-265 Sulfur

Vine Kill Date: August 30

Days to Vine kill: 92

In-Row Spacing: 9.25 inch

The PYT-2 Russet Trial evaluates recently selected clones, often only three years removed from single-hill selection. Retained entries are further evaluated in replicated trials at several Oregon locations before advancing (if applicable) to the Tri-state trial which includes testing locations in Washington and Idaho. This trial included 3 standard varieties and 76 new entries. The Oregon Potato Variety Development Team chose to advance 26 selections to the Statewide Russet Trial in 2017 and discarded the remaining selections due to poor performance. **Only retained selections are listed in the following tables.**

Clone	Female Parent	Male Parent
AOR12145-3	AF3317-15	Freedom Russet
AOR12149-1	PA08NCBD2-2	A03082-4
AOR12176-4	Slaney	A06021-1T
AOR12342-2	A02507-2LB	AF4342-3
AOR12344-21	AC96052-1RU	Dakota Trailblazer
AOR12347-5	AC96052-1RU	AF4342-3
AOR12350-5	AC99375-1RU	A06084-1TE
AOR12386-5	W9604-1rus	AC96052-1RU
AOR13011-1	A03158-2TE	A08069-3
AOR13011-2	A03158-2TE	A08069-3
AOR13018-5	A06015-13TE	A06084-1TE
AOR13038-1	A08291-102	A03158-2TE
AOR13058-9	A06029-4T	A05084-11
AOR13061-20	A06029-4T	CO99053-3Ru
AOR13063-3	A06029-4T	A08069-3
AOR13082-6	A08069-3	A05084-11
AOR13107-2	Dakota Trailblazer	CO99053-3Ru
AOR11847-2	A06740-2VR	COA06191-1
POR15NCYK022-1	PA99N82-4	Shepody
OR13SPC101-8	OR03085-5 CRKN	PA10NCKY18-6
AOR13066-1	A06029-4T	Freedom Russet
AOR12327-3	A06862-11VR	A06021-1T
AOR13343-16	Dakota Trailblazer	AF4342-3
OR14SP016-3	OR09158-119	SILVERTON

<b>AOR13075-10</b>	A07431-3	CO99053-3Ru
<b>AOR13064-2</b>	A06029-4T	AO02183-2

## 2017 Statewide Russet Trial

Location: OSU KBREC – Klamath Falls, OR

Planting Date: May 22

Harvest Date: September 26

Fertility: 180-125-250-265 Sulfur

Vine Kill Date: September 7

Days to Vine kill: 107

In-Row Spacing: 9.25 inch

The Statewide Russet Trial evaluates selections retained from the PYT-2 Russet Trial at three locations in Oregon. As mentioned earlier, selections retained from this trial are advanced to the Tri-State Trial, which includes testing locations in Washington and Idaho. Testing locations in Oregon represent diverse climatic conditions (hot, long-season and cool, short-season) which allow for the retention of selections that exhibit stability over multiple locations. Oregon selections remain in the Statewide Trial until they complete Tri-State and Western Regional evaluation or are discarded. Despite a warmer season, potato plots at the KBREC site performed above average. The following is a summary of the Klamath Falls field results.

### Stand Counts

#### ➤ 30 Day

Slow emergence: All entries had greater than 90% emergence.

#### ➤ 45 Day

All entries had greater than 97% final emergence.

### Plant and Tuber Growth and Development

#### ➤ Average Tuber Number Per Plant

Most: AOR12144-1 (14), AOR11141-2 (11)

Least: AOR10140-1 (5), AOR11018-2 (7)

#### ➤ Average Tuber Size (oz.)

Largest: AOR10140-1 (9.9), AOR10204-3 (7.8)

Smallest: AOR12144-1 (3.8), AOR11141-2 (4.9)

#### ➤ Undersized Tubers (<4 oz.) cwt/Acre

Most: AOR12144-1 (240), AOR11141-2 (154)

Least: AOR10140-1 (21), AOR11018-2 (42)

### Yield and Economic Data

#### ➤ Total Yield (cwt/Acre)

Highest: OR12133-10 (769), AOR08540-1 (727)

Lowest: Russet Burbank (541), AOR11018-2 (587)

#### ➤ US No. 1 Yield (cwt/Acre)

Highest: OR12133-10 (602), AOR10633-1 (593)

Lowest: Russet Burbank (328), AOR12144-1 (335)

➤ **Carton Yield (6-20 oz.) cwt/Acre**

Highest: AOR10633-1 (478)

Lowest: AOR12144-1 (132)

➤ **Gross Return (\$/acre)**

Fresh Market Highest: AOR10633-1

Fresh Market Lowest: AOR12144-1

**Tuber Defect Incidence (10 tuber-samples per 4 reps, 6-10 oz.)**

➤ **Hollow Heart**

Notable Defects: Russet Burbank (13%)

➤ **Corky Ringspot**

Notable Defects: Ranger Russet (10%)

➤ **Vascular Discoloration**

Notable Defects: AOR11217-3 (10%)

Entry	Total Yield		US # 1s > 4 oz.	US # 2s > 4 oz.	Culls & <4 oz.	Oversized >20 oz.	Carton Yield 100-50 count (US 1's 6-20 oz)	
	(cwt/ A)	stats**	% of total yield*				% of total yield	(cwt/A)
<b>Ranger Russet</b>	599	CD	68	13	16	3	50	300
<b>Russet Burbank</b>	541	D	61	18	19	2	41	221
<b>Russet Norkotah</b>	618	BCD	80	6	10	5	64	396
<b>AOR08540-1***</b>	728	AB	82	2	14	2	65	470
<b>AOR11018-2</b>	587	D	71	11	11	8	58	338
<b>AOR11141-2</b>	588	D	68	5	27	0	43	252
<b>AOR10140-1</b>	613	BCD	77	7	7	9	70	431
<b>AOR10204-3***</b>	619	BCD	73	11	12	3	54	335
<b>AOR11217-3***</b>	606	CD	73	6	20	1	48	290
<b>OR12133-10***</b>	769	A	78	8	13	1	59	453
<b>AOR12144-1</b>	626	BCD	53	5	41	0	21	132
<b>AOR10633-1***</b>	715	ABC	84	3	11	2	67	478
<b>LSD (0.05)</b>		<b>115</b>						

\*Percent values may not total 100% due to rounding

\*\*Entries showing the same letter are not significantly different at the 5% level

\*\*\*Entries retained for further testing in 2018

# Klamath Basin Potato Variety Development Summary **2017**

Entry	US # 1 Yield					6-10 oz	Internal Defects (%)			
	>4 oz.	STATS**	%*			Specific	6-10 oz. tubers****			
	(Cwt/A)		4-6 oz.	6-10 oz	>10 oz	Gravity	HH	IB	CRS	VD
Ranger Russet	407	BC	26	38	36	1.092	0	0	10	0
Russet Burbank	328	C	33	44	23	1.084	13	0	3	0
Russet Norkotah	492	B	19	39	42	1.074	0	0	0	0
AOR08540-1	594	A	21	42	37	1.089	3	3	5	0
AOR11018-2	414	A	18	35	47	1.081	8	5	3	0
AOR11141-2	399	BC	37	49	15	1.084	0	0	0	0
AOR10140-1	473	B	9	28	63	1.077	3	3	3	3
AOR10204-3	453	B	26	37	37	1.078	3	0	0	0
AOR11217-3	443	B	35	37	29	1.090	5	3	0	10
OR12133-10	603	A	25	46	29	1.082	0	5	8	0
AOR12144-1	335	C	61	36	4	1.087	3	0	0	3
AOR10633-1	598	A	20	45	35	1.092	0	0	3	0
LSD (0.05)		95								













\*Percent values may not total 100% due to rounding

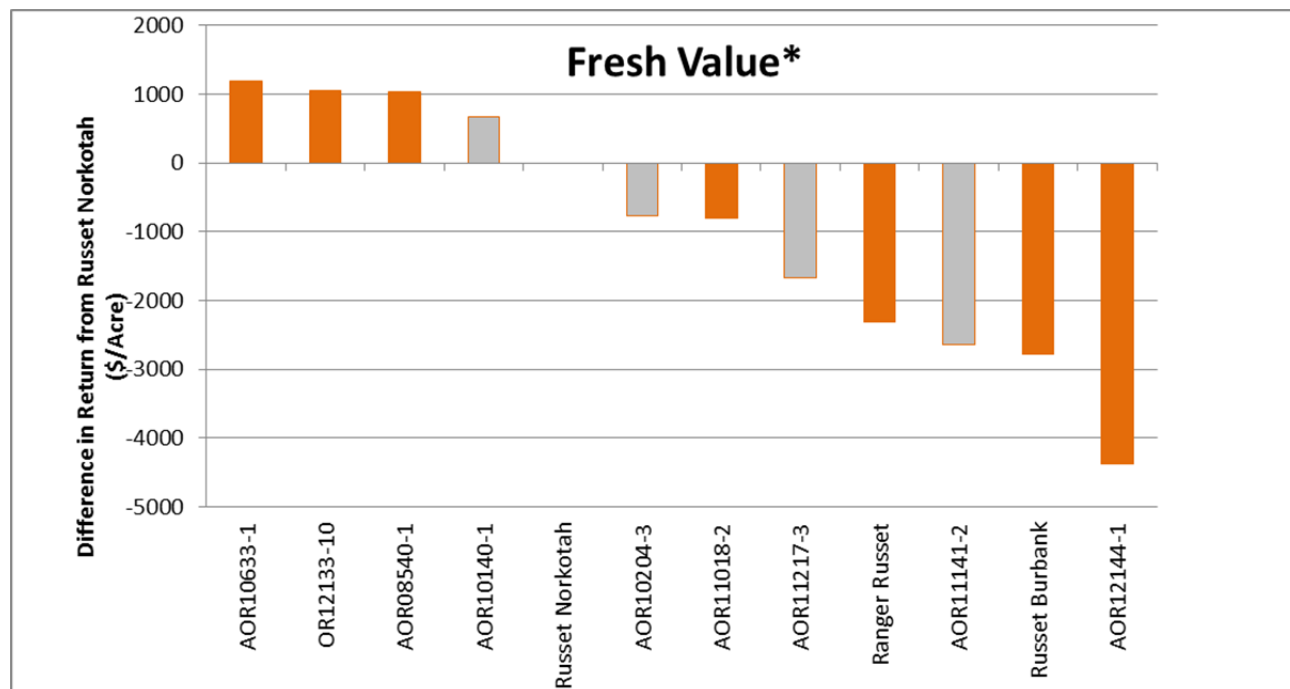
\*\*Entries showing the same letter are not significantly different at the 5% level

\*\*\*Entries retained for further testing in 2018

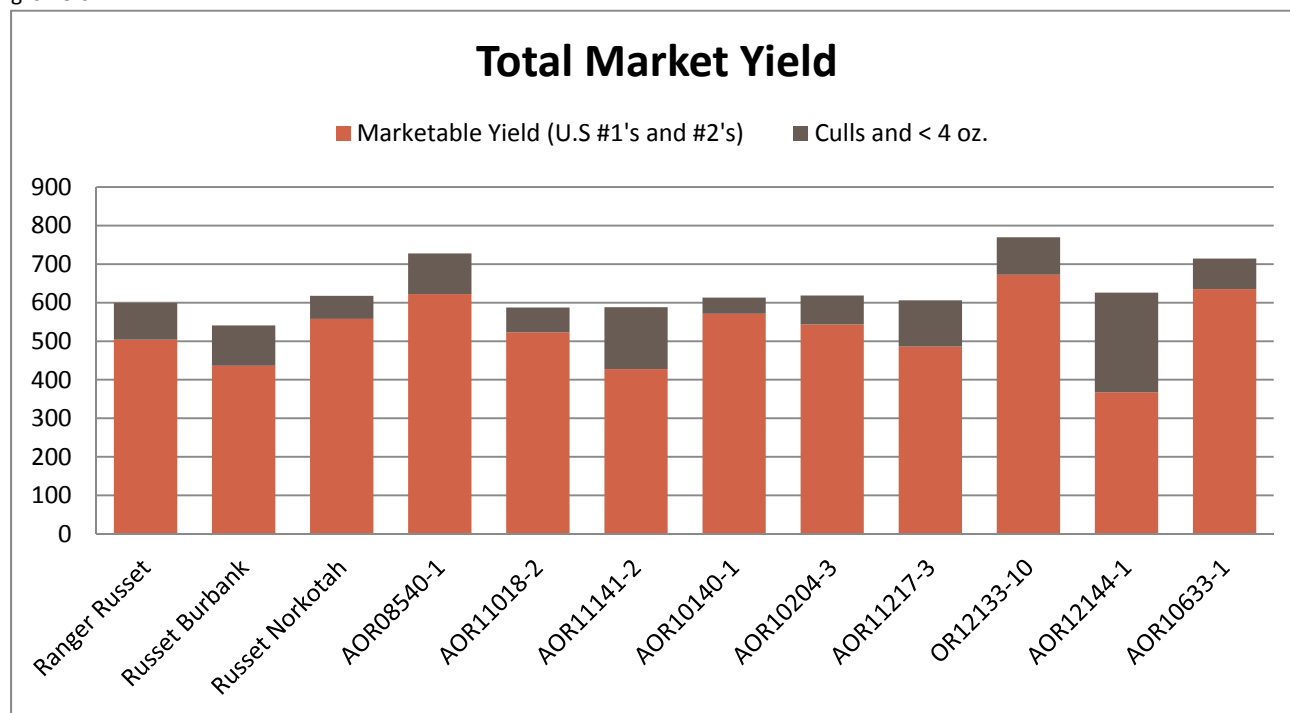
\*\*\*\*Internal Defects: HH=hollow heart, IB=impact bruise, CRS=corky ringspot, VD=vascular discoloration

Entry	Stand %	Average Tuber		Growth Cracks (1-5 best)	Rhizoc (1-5 none)	Skin Color (1-5 dark)	Russetting (1-5 hvy)	Shape (1-5 long)	Shape Uniformity (1-5 best)	Eye Depth (1-5 shal.)
		Wt. (oz.)	No. tubers/plant							
Ranger Russet	99	6.2	8	3.9	4.9	3.5	3.5	5.0	2.0	3.3
Russet Burbank	100	5.9	8	3.4	4.3	3.9	3.9	4.9	2.8	3.9
Russet Norkotah	99	7.1	8	4.8	4.8	4.1	4.1	4.6	3.6	3.5
AOR08540-1	99	6.4	10	4.6	3.8	3.4	3.6	3.6	3.6	4.3
AOR11018-2	98	7.8	7	4.9	3.6	4.5	4.4	5.0	2.8	2.9
AOR11141-2	99	5.0	11	5.0	4.8	3.9	3.9	3.6	3.8	3.8
AOR10140-1	98	9.9	5	4.6	4.6	4.1	4.0	4.5	3.8	4.5
AOR10204-3	97	7.8	8	4.6	4.5	4.3	4.4	4.3	3.3	4.3
AOR11217-3	99	5.7	10	4.8	3.0	4.1	4.1	4.1	3.5	4.1
OR12133-10	99	6.6	10	4.9	1.0	2.3	2.1	4.4	3.4	4.3
AOR12144-1	100	3.9	14	4.9	5.0	3.6	3.4	3.3	3.5	4.0
AOR10633-1	99	6.4	9	5.0	4.3	2.8	2.6	3.9	3.5	3.8

Entry	2017 KBREC- State Russet Comment	Entry	2017 KBREC- State Russet Comment
<b>Ranger Russet</b>		<b>Russet Burbank</b>	
	crooks (x2), knobs, misshaped (x3), growth cracks, long (x2), nice, skinny		erratic size (x2), erratic shape, knobs, growth cracks (x2), not bad, long, bowling pins
<b>Russet Norkotah</b>		<b>AOR08540-1</b>	
	erratic russeting, typy (x2), nice (x2), blocky, big, bright eyes, erratic size		keep, blocky (x2), typy (x2), fresh potential (x3), flat, impact bruise, skinned, process, short, plump
<b>AOR11018-2</b>		<b>AOR11141-2</b>	
	7 rotten, lumpy (x4), long (x2), drop (x2), crooks, dented (x2), misshaped (x3), rhizoc, deep eyes, large		fresh potential, keep, dingy, plumpy (x2), small (x2), skinned (x2), uniform
<b>AOR10140-1</b>		<b>AOR10204-3</b>	
	skinning (x3), round, dented, flat (x3), big (x3), blocky		skinning (x2), fresh pot (x2), plump (x2), crooks, pop eyes, erratic shape, erratic size
<b>AOR11217-3</b>		<b>OR12133-10</b>	
	dark, erratic size and shape, fresh potential (x3), ok, typy, rhizoc, nice vvv		rhizoc (x4), chicken tracks, process only (x3), typy (x2), Shepody-like, huge
<b>AOR12144-1</b>		<b>AOR10633-1</b>	
	small (x4), FBE (x2), round, drop		skinned, typy (x2), process only (x3), impact bruise, plumpy, ok (x2)



\*Difference in gross return per acre (Fresh Value) from Russet Norkotah calculated by subtracting the gross return of Russet Norkotah from the gross return of the particular entry. Entries with orange-colored bars may not appeal to fresh market consumers due to the undesirable shape or appearance. Refer to page 15 for parameters used to collect gross return to growers.



## 2017 Tri-State Russet Trial

Location: OSU KBREC – Klamath Falls, OR

Planting Date: May 22

Vine Kill Date: September 7

Harvest Date: September 26

Days to Vine kill: 107

Fertility: 180-125-250-265 Sulfur

In-Row Spacing: 9.25 inch

The Tri-state Russet Trial evaluates relatively advanced selections originally selected in both Oregon and Idaho. Entries are evaluated for both fresh market and processing potential in Washington, Idaho, and Oregon. Disposition of entries in this trial are determined by the Tri-State Technical Committee and if retained, advance to the Western Regional Russet Trial. Despite a warmer season, potato plots at the KBREC site performed above average. The following is a summary of the Klamath Falls field results.

### Stand Counts

- **30 Day**  
Slow emergence: POR12NCK50-1 (89%)
- **45 Day**  
All entries had greater than 95% final emergence

### Plant and Tuber Growth and Development

- **Average Tuber Number Per Plant**  
Most: AOR06576-1 (11), A07705-4 (11)  
Least: Russet Norkotah (6), A07769-4 (8)
- **Average Tuber Size (oz.)**  
Largest: A07769-4 (7.4), Russet Norkotah (7.3)  
Smallest: A07705-4 (4.9), A08510-1LB (4.9)
- **Undersized Tubers (<4 oz.) cwt/Acre**  
Most: A07705-4 (136), Russet Burbank (120)  
Least: A07769-4 (31), Russet Norkotah (31)

### Yield and Economic Data

- **Total Yield (cwt/Acre)**  
Highest: AOR06576-1 (718), A08422-2VRsto (663)  
Lowest: Russet Norkotah (534), POR12NCK50-1 (555)
- **US No. 1 Yield (cwt/Acre)**  
Highest: AOR06576-1 (537), A07769-4 (529)  
Lowest: Russet Burbank (401), Russet Norkotah (428)
- **Carton Yield (6-20 oz.) cwt/Acre**  
Highest: A07769-4 (439)  
Lowest: A07705-4 (266)



➤ **Gross Return (\$/acre)**

Fresh Market Highest: A07769-4

Fresh Market Lowest: A07705-4

**Tuber Defect Incidence (10 tuber-samples per 4 reps, 6-10 oz.)**

➤ **Hollow Heart**

Notable Defects: Russet Burbank (15%)

➤ **Vascular Discoloration**

Notable Defects: POR12NCK50-1 (18%)

➤ **Brown Center**

Notable Defects: AOR06576-1 (18%)

Entry	Total Yield		US # 1's > 4 oz.	US # 2's > 4 oz.	Culls & <4 oz.	Oversized >20 oz.	Carton Yield 100-50 count (US 1's 6-20 oz)	
	(cwt/A)	STATS**	% of Total Yield*				% of Total Yield	(cwt/A)
Ranger Russet	656	AB	72	9	16	3	55	362
Russet Burbank	605	BCD	66	12	21	0	46	276
Russet Norkotah	534	D	80	5	9	6	66	354
A07098-4	643	AB	76	5	19	0	53	338
A071012-4BF	649	AB	79	4	14	3	64	417
A07705-4	600	BCD	72	4	23	0	44	266
A07769-4	628	BC	84	6	8	3	70	439
A08422-2VRsto	663	AB	80	4	13	3	63	418
A08510-1LB	607	BCD	77	2	21	0	49	296
A10021-5TE	616	BC	80	3	12	5	56	343
AOR06576-1	719	A	75	5	19	0	52	371
AOR07821-1	637	B	80	6	13	2	61	388
POR12NCK50-1	556	CD	78	3	19	0	52	289
LSD (0.05)		<b>80</b>						

\*Percent values may not total 100% due to rounding

\*\*Entries showing the same letter are not significantly different at the 5% level



# Klamath Basin Potato Variety Development Summary **2017**

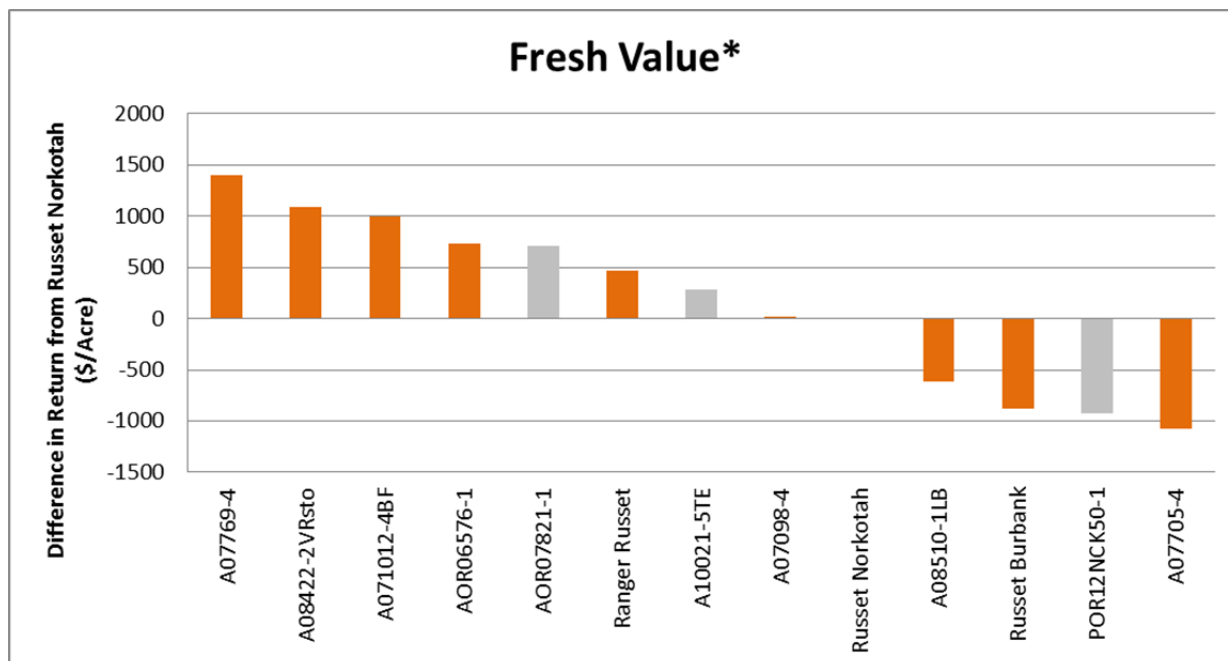
Entry	US # 1 Yield					6-10 oz. Specific Gravity	Internal Defects (%) 6-10 oz. tubers***			
	>4 oz. (cwt/A)	STATS**	%*				HH	BC	SEB	VD
			4-6 oz.	6-10 oz.	>10 oz.					
Ranger Russet	474	ABCD	24	39	37	1.090	0	0	0	8
Russet Burbank	401	D	31	43	26	1.085	15	3	0	3
Russet Norkotah	428	CD	17	34	49	1.074	8	0	0	0
A07098-4	489	ABC	31	46	23	1.079	0	10	3	5
A071012-4BF	516	A	19	40	40	1.097	5	0	3	0
A07705-4	434	BCD	39	48	13	1.077	0	0	0	0
A07769-4	530	A	17	42	41	1.085	3	0	8	0
A08422-2VRsto	529	A	21	44	35	1.087	3	0	0	0
A08510-1LB	469	ABCD	37	45	18	1.089	0	0	0	0
A10021-5TE	490	ABC	30	37	33	1.091	0	0	5	8
AOR06576-1	538	A	31	44	25	1.079	3	18	0	3
AOR07821-1	511	AB	24	44	32	1.088	8	3	0	3
POR12NCK50-1	432	CD	33	47	20	1.092	0	5	5	18
LSD (0.05)		77								

\*Percent values may not total 100% due to rounding

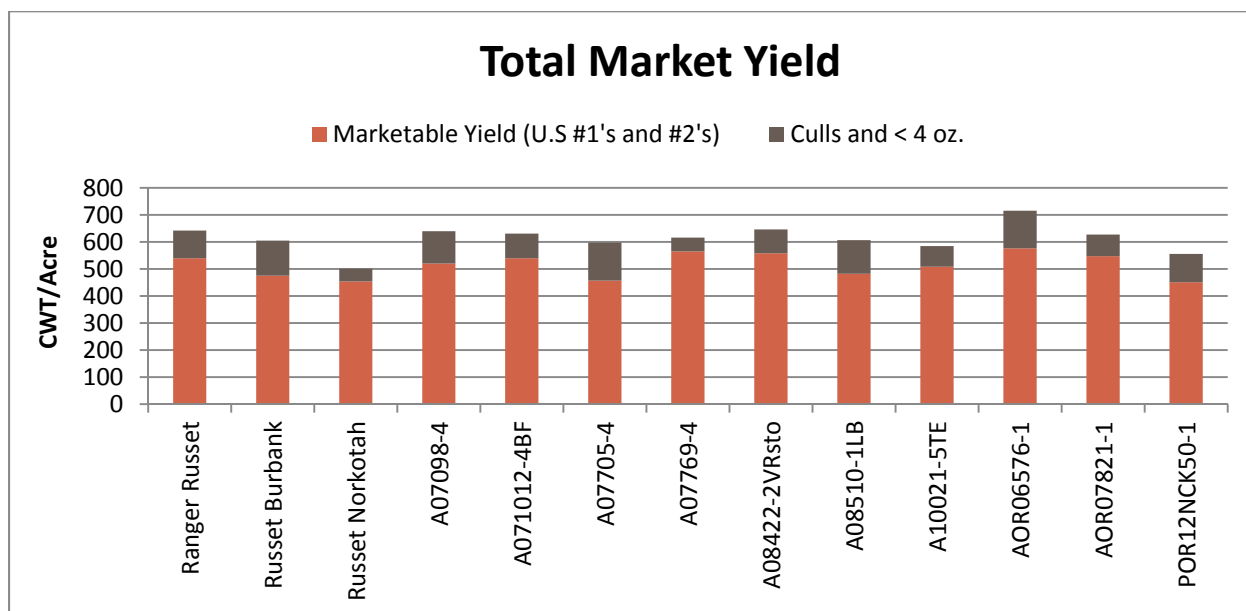
\*\*Entries showing the same letter are not significantly different at the 5% level

\*\*\*Internal Defects: HH=hollow heart, BC=brown center, SEB=stem end browning, VD= vascular discoloration

Entry	Stand %	Average Tuber		Green (1-5 none)	Growth Cracks (1-5 none)	Skin Color (1-5 dark)	Russetting (1-5 hvy)	Shape (1-5 long)	Shape Uniformity (1-5 best)	Eye Depth (1-5 shal.)
		Wt. (oz.)	Number tubers/plant							
Ranger Russet	100	6.8	8	4.3	4.5	3.5	3.5	5.0	2.6	3.5
Russet Burbank	100	5.3	10	4.8	3.9	4.0	4.0	4.9	2.9	3.6
Russet Norkotah	98	7.4	6	4.4	4.8	4.4	4.6	4.9	4.0	3.3
A07098-4	98	5.6	10	3.6	5.0	1.5	1.5	4.4	3.6	3.8
A071012-4BF	100	6.9	8	4.0	4.4	3.6	3.6	3.8	3.3	3.6
A07705-4	98	4.9	11	4.8	4.9	3.3	3.0	3.5	2.8	3.8
A07769-4	100	7.5	7	3.9	4.5	2.4	2.3	4.1	3.9	3.9
A08422-2VRsto	99	6.5	9	3.6	5.0	2.9	3.1	4.0	3.4	3.3
A08510-1LB	100	5.0	11	4.6	5.0	3.6	3.4	2.8	3.3	3.8
A10021-5TE	98	6.5	8	4.5	4.9	4.3	4.1	4.5	4.4	4.0
AOR06576-1	99	5.4	11	3.9	4.6	3.6	3.6	4.6	2.9	3.6
AOR07821-1	95	6.4	9	4.5	5.0	4.8	4.6	4.0	3.1	4.6
POR12NCK50-1	100	5.5	9	4.8	4.9	4.4	4.8	4.0	4.0	4.0



\*Difference in gross return per acre (Fresh Value) from Russet Norkotah calculated by subtracting the gross return of Russet Norkotah from the gross return of the particular entry. Entries with orange-colored bars may not appeal to fresh market consumers due to the undesirable shape or appearance. Refer to page 15 for parameters used to collect gross return to growers.



Entry	2017 KBREC- Tri-State Russet Comment	Entry	2017 KBREC- Tri-State Russet Comment
<b>Ranger Russet</b>		<b>Russet Burbank</b>	
	crooks (x2), long (x4), skinny (x2), nice, best rep (4), typy		3 rotten, misshaped, ok, knobs, some crooks
<b>Russet Norkotah</b>		<b>A07098-4</b>	
	typy (x4), nice (x3), best rep (3), blocky, dark		process only (x4), impact bruise (x4), ok (x2), typy
<b>A071012-4BF</b>		<b>A07705-4</b>	
	process only, misshaped, FBE, dingy, ok, erratic size and shape, typy (x2), bad skin, blocky, nice		small (x4), pears (x4), nice, skin, round, ok
<b>A07769-4</b>		<b>A08422-2VRsto</b>	
	process only (x3), erratic shape, round, plump, uniform, nice skin, blocky, typy, keep, Shepody-like, impact bruise		process only, typy (x3), not bad, plump (x2), blocky, rhizoc
<b>POR12NCK50-1</b>		<b>A10021-5TE</b>	
	skinning (x2), ok, fresh potential (x2), typy (x2), nice, small, dented		big, nice (x4), typy (x4), fresh potential (x2), keep (x2), long
<b>AOR06576-1</b>		<b>AOR07821-1</b>	
	ok (x2), typy (x3), nice, bright, Ranger-like, smaller, uniform		rough/heavy hide (x2), FBE, blocky, typy (x3), fresh potential (x2), nice (x2)

## 2017 Preliminary Yield (PYT-2) Specialty Trial

Location: OSU KBREC – Klamath Falls, OR

Planting Date: May 23

Harvest Date: October 6

Fertility: 180-125-250-265 Sulfur

Vine Kill Date: August 30

Days to Vine kill: 92

In-Row Spacing: 9.25 inch

The PYT-2 Specialty Trial evaluates recently selected clones, often only two years removed from single-hill selection. Retained entries are further evaluated in replicated trials at several Oregon locations before advancing (if applicable) to the Tri-State trial which includes testing locations in Washington and Idaho. This trial included 2 standard varieties and 6 entries. The Oregon Potato Variety Development Team chose to advance 4 selections to the Statewide Specialty Trial in 2018 and discarded the remaining selections due to poor performance. **Only retained selections are listed in the following tables.**

Entry	Female Parent	Male Parent
<b>POR15PG034-1</b>	G107 x orange bulk	Valentine
<b>POR15PG036-3</b>	AOR06267-3 x NDO6076113-1	AL3-1
<b>POR15PG015-3</b>	PAL07PG12Y	A170
<b>POR15PG014-8</b>	AmaRosa x AL3-1	A170

## 2017 Statewide Specialty Trial

Location: OSU KBREC – Klamath Falls, OR

Planting Date: May 22

Harvest Date: September 26

Fertility: 180-125-250-265 Sulfur

Vine Kill Date: September 7

Days to Vine kill: 107

In-Row Spacing: 9.25 inch

The Statewide Specialty Trial evaluates selections retained from the PYT-2 Specialty Trial at three locations in Oregon. As mentioned earlier, selections retained from this trial are advanced to the Tri-State Trial, which includes testing locations in Washington and Idaho. Testing locations in Oregon represent diverse climatic conditions (hot, long-season and cool, short-season) which allow for the retention of selections that exhibit stability over multiple locations. Oregon selections remain in the Statewide Trial until they complete Tri-State and Western Regional evaluation or are discarded. Despite a warmer than average growing season and high nematode pressure, potato plots at the KBREC site performed above average. The following is a summary of the Klamath Falls field results. Yields are not adjusted for external blemishes or for internal defects. Such defects are noted under comment section.

### Stand Counts

#### ➤ 30 Day

Slow emergence: POR14PG14-1 (81%)

#### ➤ 45 Day

Slow emergence: POR14PG14-1 (87%), All other entries had greater than 90% final emergence.

### Plant and Tuber Growth and Development

#### ➤ Average Tuber Number Per Plant

Most: POR14PG22-3 (31), POR14PG14-1 (23)

Least: Yukon Gold (7), Red LaSoda (8)

#### ➤ Average Tuber Size (oz.)

Largest: Red LaSoda (7.2), Yukon Gold (6.7)

Smallest: POR14PG14-1 (1.9), POR14PG22-3 (2.0)

#### ➤ C Size Tubers ( $\leq 1.875$ inch diameter and $<4$ oz.) cwt/Acre

Most: POR14PG22-3 (151), POR14PG14-1 (105)

Least: Yukon Gold (5), Red LaSoda (9)

#### ➤ B Size Tubers (1.875-2.25 inch diameter and $<4$ oz.) cwt/Acre

Most: POR14PG22-3 (446), POR14PG14-1 (249)

Least: Red LaSoda (33), Yukon Gold (41)

### Yield Data

#### ➤ Total Yield (cwt/Acre)

Highest: POR14PG22-3 (723)

Lowest: POR14PG14-1 (450)

# Klamath Basin Potato Variety Development Summary **2017**

## ➤ US No. 1 Yield (cwt/Acre)

Highest: POR14PG22-3 (699)

Lowest: Yukon Gold (402)

## Tuber Defect Incidence (10 tuber-samples per 4 reps, 4-6 oz.)

Growth Cracks: Red LaSoda (2.9)

Entry	Skin Color	Primary skin color (5 dark)	Flesh Color	Primary flesh color (1-5 dark)	Total Yield*		US # 1's > 0-14 oz. % of Total Yield	Culls > 0 oz.***	External Defects (1-5 none)		
					(cwt/A)	Stats**			Green	Growth crack	Knobs
Yukon Gold	Yellow	2.5	Yellow	2.3	536	BC	75	25	3.9	5.0	5.0
Red LaSoda	Red	2.0	Yellow	1.0	713	A	73	27	3.3	2.9	4.0
POR14PG14-1	Red	2.1	Yellow	2.3	450	C	92	8	3.5	4.8	4.6
POR14PG14-5	Red	4.0	Yellow	2.3	561	B	77	23	4.4	4.9	3.4
POR14PG22-3KK	Yellow	1.6	Yellow	2.0	723	A	97	3	3.9	5.0	4.8
LDS (0.05)						<b>87</b>					

\*Percent values may not total 100% due to rounding

\*\*Entries showing the same letter are not significantly different at the 5% level






\*\*\*Including >14oz. and #2's

\*\*\*\* Internal Defects: HH=hollow heart, SEB=stem end browning, VD= vascular discoloration, IB=impact bruise

Yields are not adjusted for external blemishes or for internal defects. Such defects are noted under comment section.

Entry	US # 1 Yield							Specific Gravity	Internal Defects (%)****			
	(cwt/A)	STATS**	%*						HH	SEB	VD	IB
			C size	B size	4-6 oz.	6-10 oz.	10-14 oz.					
Yukon Gold	402	C	1	10	24	38	27	1.085	10.0	3.3	0.0	0.0
Red LaSoda	519	B	2	6	19	42	31	1.075	0.0	0.0	2.5	0.0
POR14PG14-1	413	C	26	60	12	2	0	1.090	0.0	5.0	0.0	0.0
POR14PG14-5	434	C	6	30	34	28	3	1.089	0.0	2.5	0.0	0.0
POR14PG22-3KK	699	A	22	64	13	2	0	1.079	0.0	2.5	2.5	0.0
LDS (0.05)		79										

Entry	Stand %	Average Tuber		Rhizoc (1-5none)	Russetting (1-5 hvy)	Shape (1-5 long)	Size Uniformity (1-5 best)	Shape Uniformity (1-5 best)	Eye Depth (1-5 shal.)
		Wt. (oz.)	Number tubers/plant						
Yukon Gold	98	6.7	7	3.4	2.3	3.1	1.9	3.0	3.8
Red LaSoda	99	7.2	8	4.5	1.3	3.4	1.5	1.8	2.4
POR14PG14-1	87	2.0	23	4.2	1.4	2.6	4.6	3.1	3.8
POR14PG14-5	100	4.1	12	3.4	3.4	3.5	3.1	2.4	3.0
POR14PG22-3KK	100	2.0	31	4.4	1.1	1.6	5.0	4.6	3.6

Entry	2017 KBREC- Statewide Specialty Comment	Entry	2017 KBREC- Statewide Specialty Comment
Yukon Gold	 <p>CRS (x2), erratic size (x4), dingy (x2), ok, no CRS, dented</p>	Red LaSoda	 <p>skinning (x3), FBE (x2), lumpy (x2), growth cracks (x2), erratic size and shape, bulgy eyes, ugly, big</p>
POR14PG14-1	 <p>bronzing (x2), uniform, sprouting (x4), skinned, drop</p>	POR14PG14-5	 <p>No Photo Available</p> <p>misshaped (x4), nice color (x2), dented, 2's, pointy stem ends, drop, russetting (x2), bronzing</p>
POR14PG22-3	 <p>pink/purple (x3), uniform (x4), some sprouts (x3), nice, smooth, keep, babies</p>		



## 2017 Tri-State Specialty Trial

Location: OSU KBREC – Klamath Falls, OR

Planting Date: May 22

Harvest Date: September 26

Fertility: 180-125-250-265 Sulfur

Vine Kill Date: September 7

Days to Vine kill: 107

In-Row Spacing: 9.25 inch

The Tri-State Specialty Trial evaluates relatively advanced selections originally selected in both Oregon and Idaho. Entries are evaluated for both fresh market and processing potential in Washington, Idaho, and Oregon. Disposition of entries in this trial are determined by the Tri-State Technical Committee and if retained, advance to the Western Regional Russet Trial. Despite a warmer season, potato plots at the KBREC site performed above average. The following is a summary of the Klamath Falls field results. Yields are not adjusted for external blemishes or for internal defects. Such defects are noted under comment section.

### Stand Counts

#### ➤ 30 Day

Slow Emergence: Purple Majesty (87%), Purple Fiesta (88%)

#### ➤ 45 Day

Slow Emergence: All entries had greater than 90% final emergence

### Plant and Tuber Growth and Development

#### ➤ Average Tuber Number Per Plant

Most: POR11PG7-1 (36), LaRatte (21)

Least: Yukon Gold (7), Chieftain (9)

#### ➤ Average Tuber Size (oz.)

Largest: Yukon Gold (6.9), Chieftain (9.3)

Smallest: LaRatte (1.5), Russian Banana (1.7)

#### ➤ C Size Tubers (<1.875 inch diameter and <4 oz.) cwt/Acre

Most: POR11PG7-1 (222), Purple Fiesta (141)

Least: Yukon Gold (4), Chieftain (8)

#### ➤ B Size Tubers (1.875-2.25 inch diameter and <4 oz.) cwt/Acre

Most: POR11PG7-1 (455), Purple Fiesta (141)

Least: Yukon Gold (43), Chieftain (66)

### Yield Data

#### ➤ Total Yield (cwt/Acre)

Highest: POR11PG7-1 (829), Purple Majesty (751)

Lowest: POR12PG69-1 (253), LaRatte (376)



# Klamath Basin Potato Variety Development Summary **2017**

## ➤ US No. 1 Yield (cwt/Acre)

Highest: Chieftain (508), Purple Majesty (412)

Lowest: LaRatte (183), Russian Banana (24)

## Tuber Defect Incidence (10 tuber-samples per 4 reps, 4-6 oz.)

Green: LaRatte (2.5), Russian Banana (2.8)

Entry	Skin Color	Primary skin color (5 dark)	Flesh Color	Primary flesh color (1-5 dark)	Total Yield*		US # 1's > 0-14 oz.	Culls > 0 oz.***	External Defects (1-5 none)		
									Green	Growth crack	Knobs
					(cwt/A)	Stats**	% of Total Yield				
Chieftain	R	2.1	Y	1.0	701	BC	83	17	3.9	3.4	4.6
Yukon Gold	Y	2.3	Y	2.8	563	D	75	25	3.1	4.9	4.9
A06336-2Y	Y	3.3	Y	1.8	722	B	76	24	3.0	5.0	2.1
A06336-5Y	Y	3.1	Y	1.8	575	D	89	11	3.9	4.9	4.8
LaRatte	Y	1.9	Y	2.0	376	E	61	39	2.5	5.0	4.0
POR11PG62-3	R/Y	2.1	Y	2.3	443	E	90	10	4.1	4.5	4.6
POR12PG69-1	Y	3.5	Y	3.8	253	F	84	16	3.4	5.0	5.0
POR11PG7-1	P	4.9	P	4.9	829	A	95	5	5.0	5.0	5.0
Purple Majesty	P	5.0	P	5.0	751	AB	94	6	5.0	5.0	4.6
Purple Fiesta	P	5.0	P	5.0	541	D	90	10	5.0	5.0	4.8
Russian Banana	Y	2.1	Y	2.3	378	E	69	31	2.8	5.0	3.6
COA07365-4RY	R	4.1	Y	2.3	624	CD	95	5	3.8	4.8	5.0
LDS (0.05)						88					

\*Percent values may not total 100% due to rounding

\*\*Entries showing the same letter are not significantly different at the 5% level

\*\*\*Including >14oz. and #2's

\*\*\*\* Internal Defects: HH=hollow heart, SEB=stem end browning, VD= vascular discoloration, IB=impact bruise













Yields are not adjusted for external blemishes or for internal defects. Such defects are noted under comment section.

# Klamath Basin Potato Variety Development Summary **2017**

Entry	US # 1 Yield							Specific Gravity	Internal Defects (%)****			
	(cwt/A)	STATS**	%*						HH	SEB	VD	IB
			C size	B size	4-6 oz.	6-10 oz.	10-14 oz.					
Chieftain	581	A	1	11	19	40	28	1.076	0	0	0	0
Yukon Gold	420	B	1	10	21	33	34	1.082	0	5	0	0
A06336-2Y	546	B	3	29	36	27	5	1.071	0	0	0	0
A06336-5Y	509	C	5	51	30	13	1	1.067	0	0	0	0
LaRatte	229	E	47	45	7	1	0	1.081	0	0	0	0
POR11PG62-3	400	DE	30	57	13	0	0	1.071	0	0	0	0
POR12PG69-1	212	DE	32	48	17	3	0	1.067	0	5	0	8
POR11PG7-1	783	D	29	58	11	2	0	1.072	0	0	0	0
Purple Majesty	705	B	7	34	27	26	6	1.087	0	0	0	0
Purple Fiesta	488	D	29	50	16	5	0	1.076	0	0	0	0
Russian Banana	259	E	35	56	9	0	0	1.083	0	3	0	0
COA07365-4RY	595	B	4	33	36	26	1	1.073	0	0	0	0
LDS (0.05)		77										

\*\*\*\* Internal Defects: HH=hollow heart, SEB=stem end browning, VD= vascular discoloration, IB=impact bruise Yields are not adjusted for external blemishes or for internal defects. Such defects are noted under comment section.

Entry	Stand %	Average Tuber		Rhizoc (1-5none)	Russetting (1-5 hvy)	Shape (1-5 long)	Size Uniformity (1-5 best)	Shape Uniformity (1-5 best)	Eye Depth (1-5 shal.)
		Wt. (oz.)	Number tubers/plant						
Chieftain	97	6.6	9	4.3	1.6	3.5	2.5	2.8	3.4
Yukon Gold	93	6.9	8	3.3	1.0	2.9	2.5	3.3	4.1
A06336-2Y	100	4.3	15	2.1	1.0	3.4	3.0	1.6	3.6
A06336-5Y	100	3.2	15	4.5	1.6	2.0	4.4	4.0	4.0
LaRatte	100	1.5	21	4.5	1.4	5.0	3.1	3.0	4.6
POR11PG62-3	97	2.1	18	5.0	1.0	5.0	4.4	4.3	4.3
POR12PG69-1	95	1.9	12	4.4	1.1	5.0	3.5	4.3	4.4
POR11PG7-1	100	2.0	36	5.0	2.6	2.9	3.9	3.1	4.3
Purple Majesty	94	3.8	18	5.0	3.1	3.8	2.9	3.4	3.9
Purple Fiesta	92	2.4	21	5.0	2.5	4.8	3.3	3.5	4.3
Russian Banana	100	1.7	19	4.0	1.5	5.0	2.8	2.0	4.4
COA07365-4RY	100	3.9	14	4.5	2.1	2.5	4.0	4.0	4.5

Entry	2017 KBREC- Tri-State specialty Comments	Entry	2017 KBREC- Tri-State Specialty Comment
<b>Chieftain</b>		<b>Yukon Gold</b>	
	skinning (x4), big (x2), erratic size, misshaped, growth cracks		dingy, impact bruise, misshaped, green, FBE, erratic size (x2), big
<b>A06336-2Y</b>		<b>A06336-5Y</b>	
	pears (x4), pointy stem end (x2), knobs, drop, rhizoc (x2)		4 rotten, uniform (x2), pretty, nice, keep (x2), nice skin (x2), orangish (x2)
<b>LaRatte</b>		<b>POR11PG62-3</b>	
	knobs (x2), culls are greens, lenticel scarring, erratic size, green, misshaped, 2's, popeyes		turning purple (x2), uniform (x2), nice skin (x3), keep, CRS, erratic purple and pink, blemish free
<b>POR12PG69-1</b>		<b>POR11PG7-1</b>	
	green stem end, uniform (x2), nice skin, smooth skin		bad skin, turning purple, sticky stolon (x2), russet patches (x2), some round and oblong, bronzed, skinned
<b>Purple Majesty</b>		<b>Purple Fiesta</b>	
	skin issues (x2), russetting patches (x3), misshaped, some round, some oblong and pointy, erratic size, sticky stolon, bronzing		bronzing (x4), russetting (x3), erratic shape, mechanical damage
<b>Russian Banana</b>		<b>COA07365-4RY</b>	
	green, misshaped (x3), dingy, 2's (x3), erratic shape, knobs		uniform (x2) nice skin, dingy and soft, some skinning

**2017 Preliminary Yield (PYT-2) Chip Trial**

Location: OSU KBREC – Klamath Falls, OR

Planting Date: May 23

Harvest Date: October 6

Fertility: 180-125-250-265 Sulfur

Vine Kill Date: August 30

Days to Vine kill: 92

In-Row Spacing: 9.25 inch

The PYT-2 Chip Trial evaluates recently selected clones, often only two years removed from single-hill selection. Retained entries are further evaluated in replicated trials at several Oregon locations before advancing (if applicable) to the Tri-State trial which includes testing locations in Washington and Idaho. 16 selections were evaluated with 8 retained for further evaluation.

Clone	Female Parent	Male Parent
<b>AOR13125-2</b>	MSR061-1	CO02321-4W
<b>AOR13125-9</b>	MSR061-1	CO02321-4W
<b>AOR13136-4</b>	Sinora	CO02321-4W
<b>NYOR14Q9-5</b>	Eva	H25-4
<b>NYOR14Q9-9</b>	Eva	H25-4
<b>NYOR14Q12-1</b>	NY140	J100-6
<b>COOR13270-2</b>	CO02321-4W	CO02024-9W
<b>COOR13428-1</b>	Wischip	CO02321-4W

## 2017 Statewide Chip Trial

Location: OSU KBREC – Klamath Falls, OR

Planting Date: May 22

Vine Kill Date: September 7

Harvest Date: September 26th

Days to Vine kill: 107

Fertility: 180-125-250-265 Sulfur

In-Row Spacing: 9.25 inch

Chipping potatoes comprise a significant portion of Klamath Basin acreage and identification of public varieties suitable for export remains a high priority for Basin producers. Trials were initiated in 2008 and 2009 with funding from the Oregon Potato Commission to identify acceptable chipping varieties for export markets using advanced selections and recently released varieties from the Tri-State, Southwest, North-central, and Eastern breeding programs and have continued annually. In 2016, seven varieties and advanced chipping selections were evaluated for yield, grade, processing quality, and storability to determine their suitability to meet existing export demands for raw product. All field data was collected at the KBREC site. Tubers from each replication were placed in both short and long-term commercial storage with processing evaluations conducted by Baley-Trotman Farms. Results for 2017 are listed below.

### Stand Counts

#### ➤ 30 Day

Slow emergence: All entries had greater than 96% emergence at 30 days.

### Plant and Tuber Growth and Development

#### ➤ Average Tuber Number Per Plant

Most: AOR12197-2 (17), AOR11488-1 (11)

Least: AOR11484-2 (8), Atlantic (8)

#### ➤ Average Tuber Size (oz.)

Largest: AOR11484-2 (7.0), Atlantic (6.4)

Smallest: AOR12197-2 (4.7), AOR11470-1 (4.8)

#### ➤ Undersized Tubers (<4 oz.) cwt/Acre

Most: AOR12197-2 (304), AOR11488-1 (151)

Least: AOR11484-2 (40), Snowden (75)

### Yield Data

#### ➤ Total Yield (cwt/Acre)

Highest: AOR11484-2 & AOR12197-2 (666), Atlantic (588)

Lowest: AOR11470-1 (441), AOR11488-1 (542)

#### ➤ Marketable Yield >4 oz. (cwt/Acre)

Highest: Snowden (398), AOR11488-1 (351)

Lowest: AOR11470-1 (263), Atlantic (312)

## Tuber Defect Incidence (10 tuber-samples per 4 reps, 6-10 oz.)

### ➤ External Defects:

**Rhizoc:** AOR11470-1, AOR12197-4

**Shatter:** AOR11484-2

**Green:** AOR12197-4

### ➤ Internal Defects

**Hollow Heart:** AOR11484-2

**Hard Bite:** Atlantic

**Impact Bruise:** Snowden

Entry	Total Yield		> 4 oz.	< 4 oz.	Culls	Oversize > 10 oz.	Skin color (1-5 dark)
	(cwt/A)	STATS**	% of Total Yield*				
Atlantic	588	B	53	15	9	24	2.4
Snowden	582	B	68	13	5	14	2.6
AOR11484-2	666	B	50	6	5	38	2.4
AOR11488-1	542	B	65	28	2	6	1.5
AOR11470-1	441	B	60	34	6	1	2.6
AOR12197-2	666	A	48	46	5	1	2.4
AOR12197-4	570	B	57	17	13	12	2.1
LSD (0.05)		108					

Entry	Yield US # 1 (>4 oz.)				External Defects (1-5 none)			
	(cwt/A)	STATS**	%*		Green	Growth crack	Rhizoc	Shatter
			4-6 oz.	6-10 oz.				
Atlantic	312	AB	29	71	3.0	4.0	2.6	3.6
Snowden	398	A	38	62	3.6	4.5	2.6	4.0
AOR11484-2	335	AB	25	75	3.9	3.6	2.4	2.1
AOR11488-1	351	A	45	55	4.0	4.6	4.4	2.3
AOR11470-1	263	B	61	39	4.0	4.6	1.4	2.9
AOR12197-2	320	AB	60	40	3.5	4.5	3.8	4.4
AOR12197-4	328	AB	36	64	2.1	3.4	1.5	2.6
LSD (0.05)		86						

\*Percent values may not total 100% due to rounding








\*\*Entries showing the same letter are not significantly different at the 5% level

Entry	Stand %	Average Tuber		Specific Gravity	Internal Defects (%)***					
		Wt. (oz.)	Number tubers/plant		HH	BC	SEB	VD	HB	IB
<b>Atlantic</b>	100	6.5	8	1.092	5	0	5	0	10	5
<b>Snowden</b>	99	6.2	9	1.094	13	5	0	8	0	10
<b>AOR11484-2</b>	96	7.0	8	1.084	20	0	0	0	8	5
<b>AOR11488-1</b>	100	5.4	11	1.093	18	0	0	0	3	0
<b>AOR11470-1</b>	99	4.9	10	1.111	8	0	5	3	5	5
<b>AOR12197-2</b>	100	4.8	17	1.093	18	3	0	3	5	0
<b>AOR12197-4</b>	100	5.3	10	1.091	0	0	0	0	0	0

\*\*\*Internal Defects: HH=hollow heart, BC= brown center, SEB=stem end browning, VD= vascular discoloration, HB= hard bite, IB= impact bruise

Entry	Rhizoc (1-5 best)	Russeting (1-5 hvy)	Shape (1-5 long)	Size uniformity (1-5 best)	Shape uniformity (1-5 best)	Eye Depth (1-5 shal.)
<b>Atlantic</b>	2.6	2.4	3.0	2.4	3.4	3.8
<b>Snowden</b>	2.6	2.9	2.5	3.9	3.6	3.0
<b>AOR11484-2</b>	2.4	2.1	2.6	3.1	3.5	4.1
<b>AOR11488-1</b>	4.4	1.1	2.3	4.3	4.4	4.6
<b>AOR11470-1</b>	1.4	3.0	2.8	4.1	2.5	4.3
<b>AOR12197-2</b>	3.8	2.4	2.0	4.6	4.5	4.0
<b>AOR12197-4</b>	1.5	1.5	2.1	4.1	4.4	4.6



Entry	2017 KBREC- Statewide Chip Comment	Entry	2017 KBREC- Statewide Chip Comment
<b>Atlantic</b>		<b>Snowden</b>	
	3 rot (x2), lenticel scarring, 11 rot (x2), erratic size (x3), FBE, erratic shape		FBE (x3), lenticel scarring, chicken tracks, impact bruise, rootknot, uniform size, dry rot?
<b>AOR11484-2</b>		<b>AOR11488-1</b>	
	drop, rootknot, erratic size (x2), big, nice, skinning, flat, shatter bruise (x2), 2 rot, uniform size		5 rot, keep, nice (x2), nice skin, shiny (x2), shatter bruise, lenticel scarring, pointy stem end
<b>AOR11470-1</b>		<b>AOR12197-2</b>	
	pink (x2), small (x3), uniform, rootknot, pointy, erratic shape, erratic size (x2), pointy stem end (x2), shatter bruise, 4 rot		small (x4), CRS (x3), uniform (x2)
<b>AOR12197-4</b>			
	growth crack, impact bruise (x2), green, small, sticky stolon (x2), rhizoc (x2), shatter bruise, uniform size, not bad, dry rot?		



## 2017 Regional Chip Trial

Location: OSU KBREC – Klamath Falls, OR

Planting Date: May 22

Harvest Date: September 26

Fertility: 180-125-250-265 Sulfur

Vine Kill Date: September 7

Days to Vine kill: 107

In-Row Spacing: 9.25 inch

Chipping potatoes comprise a significant portion of Klamath Basin acreage and identification of public varieties suitable for export remains a high priority for Basin producers. Trials were initiated in 2008 and 2009 with funding from the Oregon Potato Commission to identify acceptable chipping varieties for export markets using advanced selections and recently released varieties from the Tri-State, Southwest, North-central, and Eastern breeding programs and have continued annually. In 2016 seven varieties and advanced chipping selections were evaluated for yield, grade, processing quality, and storability to determine their suitability to meet existing export demands for raw product. All field data was collected at the KBREC site. Tubers from each replication were placed in both short and long-term commercial storage with processing evaluations conducted by Baley-Trotman Farms.

### Stand Counts

#### 30 Day

Slow emergence: All entries had greater than 97% emergence.

#### ➤ 45 Day

Slow emergence: All entries had greater than 99% final emergence.

### Plant and Tuber Growth and Development

#### ➤ Average Tuber Number Per Plant

Most: AOR09034-3 (14), OR09256-2 (14)

Least: Snowden (7), Atlantic (7)

#### ➤ Average Tuber Size (oz.)

Largest: Atlantic (6.5), Snowden (6.2)

Smallest: OR09256-2 (3.8), NDTX081648CB-13W (4.2)

#### ➤ Undersized Tubers (<4 oz.) cwt/Acre

Most: OR09256-2 (216), ACO144-1W (685)

Least: Atlantic (46), Snowden (62)

### Yield Data

#### ➤ Total Yield (cwt/Acre)

Highest: AOR09034-3 (803), ACO1144-1W (685)

Lowest: Snowden (518), NDA081453CAB-2C (546)

#### ➤ Marketable Yield >4 oz. (cwt/Acre)

Highest: AOR09034-3 (581), NDTX081648CB-13W (439)

Lowest: Snowden (290), Atlantic (298)

➤ **% Marketable Yield >4 oz.**

**Highest:** AOR09034-3 (72%), NDTX081648CB-13W (70%)

**Lowest:** Atlantic (52%), Snowden (56%)

**Tuber Defect Incidence (10 tuber-samples per 4 reps, 6-10 oz.)**

➤ **External Defects:**

AOR09034-3 had a high incidence of shatter bruise

➤ **Internal Defects**

**Hard Bite:** Atlantic (20%)

**Hollow Heart:** Atlantic (20%), Snowden (13%)

Entry	Total Yield		> 4 oz.	< 4 oz.	Culls	Oversize > 10 oz.	Skin color (1-5 dark)
	(cwt/A)	STATS**	% of Total Yield*				
Atlantic	571	CD	52	8	8	32	2.1
Snowden	518	D	56	12	4	28	2.9
AC01144-1W	685	B	63	25	5	7	1.4
AOR09034-3	802	A	72	18	5	5	1.6
NDA081453CAB-2C	546	CD	66	15	3	16	1.5
NDTX081648CB-13W	630	BC	70	24	2	5	1.5
OR09256-2	634	BC	61	34	2	3	2.9
LSD (0.05)		91					

Entry	Yield US # 1 (>4 oz.)				External Defects (1-5 none)			
	(cwt/A)	STATS**	%*		Green	Growth crack	Knobs	Shatter
			4-6 oz.	6-10 oz.				
Atlantic	256	D	31	69	2.9	4.5	4.8	3.9
Snowden	248	D	36	64	4.0	4.6	5.0	4.3
AC01144-1W	388	BC	48	52	3.4	4.6	4.5	4.5
AOR09034-3	539	A	46	54	3.9	3.6	5.0	1.9
NDA081453CAB-2C	319	CD	43	57	4.1	4.4	4.6	3.5
NDTX081648CB-13W	400	B	56	44	4.0	4.9	4.9	4.5
OR09256-2	352	BC	65	35	4.0	4.9	4.5	4.4
LSD (0.05)		73						





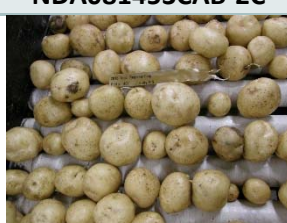


\*Percent values may not total 100% due to rounding

\*\*Entries showing the same letter are not significantly different at the 5% level

Entry	Stand %	Average Tuber		Specific Gravity	Internal Defects (%)***					
		Wt. (oz.)	Number tubers/plant		HH	BC	SEB	VD	HB	IB
<b>Atlantic</b>	99	6.6	7	1.097	20	0	0	0	20	0
<b>Snowden</b>	100	6.3	7	1.091	13	8	0	3	3	0
<b>AC01144-1W</b>	100	4.5	13	1.074	3	0	3	0	5	0
<b>AOR09034-3</b>	100	4.8	14	1.096	0	0	0	0	3	0
<b>NDA081453CAB-2C</b>	100	5.3	9	1.095	0	5	0	0	5	0
<b>NDTX081648CB-13W</b>	100	4.2	13	1.094	3	5	0	0	3	0
<b>OR09256-2</b>	100	3.9	14	1.093	5	3	0	0	3	0

\*\*\*Internal Defects: HH=hollow heart, BC=brown center, SEB=stem end browning, VD=vascular discoloration, HB=hard bite, IB=impact bruise

Entry	Rhizoc (1-5 best)	Russeting (1-5 hvy)	Shape (1-5 long)	Size uniformity (1-5 best)	Shape uniformity (1-5 best)	Eye Depth (1-5 shal.)
<b>Atlantic</b>	2.6	2.1	2.8	2.5	3.5	3.4
<b>Snowden</b>	3.8	2.9	2.4	2.5	3.4	2.8
<b>AC01144-1W</b>	4.1	1.5	2.3	4.1	3.9	3.5
<b>AOR09034-3</b>	1.6	1.5	2.3	4.3	3.6	3.8
<b>NDA081453CAB-2C</b>	2.4	1.3	2.5	3.1	3.4	4.1
<b>NDTX081648CB-13W</b>	3.5	1.5	2.9	3.5	3.3	3.9
<b>OR09256-2</b>	4.1	2.9	2.4	4.5	4.1	3.5

Entry	2017 KBREC- Regional Chip Comment	Entry	2017 KBREC- Regional Chip Comment
<b>Atlantic</b>		<b>Snowden</b>	
	erratic shape, erratic size (x2), 8 rotten, big (x2), impact bruise, green, 10 rotten, misshaped, Fussarium?		erratic size (x2), FBE (x2), lenticel scarring, chicken tracks, dark, lumpy, scab?
<b>AC01144-1W</b>		<b>AOR09034-3</b>	
	impact bruise (x2), sticky stolon (x2), nice, 2 rotten, knobs on stem end, bulgy eyes, small, uniform, nice skin		uniform (x2), nice, rhizoc (x3), 6 rot, growth cracks, shatter bruise, impact bruise, growth cracks
<b>NDA081453CAB-2C</b>		<b>NDTX081648CB-13W</b>	
	nice skin (x2), keep, someoblong some long, erratic size, 2 rot, lenticel scarring, 3 rot		nice skin, not bad, flat (x2), dented, small, CRS (x2), rhizoc, NTN?
<b>OR09256-2</b>			
	small (x4), uniform (x3), 4 rotten, knobs, russetting		

## 2016 Regional Chip Processing Results

2015 Chip processing data from storage was included in the 2016 report. The processing results of the 2016 Chip Variety Trial are included in the following graphs. Potatoes were processed in April 2017.

*Likewise, 2017 processing data will be included in the 2018 report.*

Entry	Specific Gravity Field <sup>1</sup>	Specific Gravity <sup>1</sup>	FL Solids	TDF % <sup>2</sup>	Potato Temp. F	Sugars	
						Glucose	Sucrose
Atlantic	1.106	1.108	21.687	25.633	59.47	0.099	0.286
Snowden	1.098	1.102	20.658	1.650	60.43	0.000	0.183
AC05153-1W	1.094	1.099	20.168	0.000	59.35	0.004	0.129
AOR09034-3	1.104	1.105	21.287	36.233	57.90	0.086	0.187
CO07070-10W	1.107	1.114	22.800	14.600	58.00	0.040	0.296
CO07070-13W	1.095	1.118	19.960	28.975	58.58	0.366	0.235
NDA081453CAB-2C	1.098	1.098	20.035	50.025	59.08	0.354	0.307
NDTX071109C-01W	1.080	1.079	16.690	3.200	59.98	0.012	0.118
NDTX081648CB-13W	1.097	1.096	19.678	26.725	59.05	0.138	0.221
NDTX091908AB-02W	1.092	1.091	18.670	14.575	58.95	0.034	0.292
OR09256-2	1.094	1.100	20.280	52.625	58.08	0.341	0.216
OR09253-1	1.109	1.110	22.038	47.075	59.03	0.373	0.347
TX09396-1W	1.108	1.102	20.675	2.950	57.70	0.000	0.335

## 2016 State Chip Processing Results

Entry	Specific Gravity Field <sup>1</sup>	Specific Gravity <sup>1</sup>	FL Solids	TDF % <sup>2</sup>	Potato Temp. F	Sugars	
						Glucose	Sucrose
Atlantic	1.100	1.101	20.600	64.850	57.63	0.243	0.274
Snowden	1.095	1.097	19.740	8.750	57.98	0.013	0.172
AOR09033-2	1.099	1.100	20.313	7.325	57.58	0.033	0.165
AOR11484-2	1.094	1.094	19.195	1.775	58.58	0.003	0.121
OR12479-5	1.084	1.090	18.515	98.075	59.08	0.933	0.324
AOR11488-1	1.105	1.104	21.040	20.550	59.13	0.147	0.360
AOR11455-4	1.103	1.107	21.618	10.775	58.75	0.108	0.260
AOR11470-1	1.123	1.127	25.228	28.700	58.30	0.185	0.257

<sup>1</sup>Specific gravity measured out of field and after storage for 2 months at 50<sup>0</sup> F.

<sup>2</sup>% Total Defects = % of finished chips out of grade; includes internal & external defects (e.g. HH, Green, Dark Color, etc.)

<sup>3</sup>Percent fresh weight basis measured after storage for 2 months at 50<sup>0</sup> F.

## DuPont Rhizoc Trial

Location: OSU KBREC – Klamath Falls, OR

Planting Date: May 22

Harvest Date: September 26

Fertility: 180-125-250-265 Sulfur

Vine Kill Date: September 7

Days to Vine kill: 107

In-Row Spacing: 9.25 inch

Treatment	US No. 1's				B's <sup>1</sup>	>14oz	#2's	Culls	Total
	4-6 oz.	6-10 oz.	10-14 oz.	Total					
Vertisan 65 DAP	118	135	49	536	116	15	33	70	536
Vertisan 85 DAP	97	155	55	537	108	26	32	64	537
Vertisan 65 & 85 DAP	137	170	59	579	119	8	26	60	579
Vertisan IF	111	132	65	566	129	28	35	66	566
Vertisan IF + 65 DAP	130	167	52	593	137	11	36	59	593
Vertisan IF + 85 DAP	111	143	57	538	117	21	28	68	538
Vertisan IF + 65 & 85 DAP	142	153	52	579	122	20	20	70	579
Vertisan (1.5 pt) 85 DAP	118	136	54	577	100	50	49	70	577
Quadris	114	147	67	546	114	23	19	63	546
Untreated Check	129	176	80	640	102	31	38	85	640
Mean	121	151	59	569	116	23	32	68	569
LSD (0.05)	NS	NS	NS	NS	NS	NS	NS	NS	NS

<sup>1</sup> B's - tubers less than 4 oz

Entry	Rhozoc Incidence	Rhozoc Severity <sup>2</sup>	Rhozoc Severity <sup>3</sup>	Specific Gravity <sup>6</sup>	Hollow Heart <sup>7</sup>	Brown Center <sup>7</sup>
Vertisan 65 DAP	79	2.04	2.28	1.080	0.00	2.50
Vertisan 85 DAP	75	2.07	2.43	1.081	5.00	0.00
Vertisan 65 & 85 DAP	45	1.58	2.23	1.082	2.50	0.00
Vertisan IF	41	1.55	2.24	1.082	0.00	5.00
Vertisan IF + 65 DAP	44	1.58	2.30	1.083	2.50	0.00
Vertisan IF + 85 DAP	58	1.80	2.40	1.081	2.50	2.50
Vertisan IF + 65 & 85 DAP	67	1.88	2.28	1.081	0.00	0.00
Vertisan (1.5 pt) 85 DAP	61	1.75	2.23	1.081	0.00	0.00
Quadris	57	1.74	2.32	1.080	0.00	2.50
Untreated Check	57	1.68	2.16	1.078	0.00	0.00
Mean	58	1.76	2.29	1.081	1.25	1.25
LSD (0.05)	NS	NS	NS	0.005	NS	NS

<sup>2</sup> Includes Asymptomatic Scores

<sup>3</sup> Excludes Asymptomatic Scores

<sup>6</sup> Weight in Air x Weight in Water Method

<sup>7</sup> Internal Defects

Entry	Avg Tuber Wt	Tubers/Plant	30 Day Emergence	45 Day Emergence
Vertisan 65 DAP	4.4	10.5	80	86
Vertisan 85 DAP	5.0	9.3	83	89
Vertisan 65 & 85 DAP	4.6	10.9	83	88
Vertisan IF	4.5	10.7	87	91
Vertisan IF + 65 DAP	4.3	11.7	83	86
Vertisan IF + 85 DAP	4.5	10.4	78	87
Vertisan IF + 65 & 85 DAP	4.3	11.4	88	91
Vertisan (1.5 pt) 85 DAP	4.8	10.2	86	87
Quadris	4.6	10.2	76	86
Untreated Check	4.9	11.2	88	93
Mean	4.6	10.6	83	88
LSD (0.05)	NS	NS	NS	NS

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