

2008

Klamath Basin Potato Variety Development Summary



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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, 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 Aberdeen, Idaho, as well as, Oregon State University (OSU).

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, Western Regional Russet, Red/Specialty PYT- 1, Statewide Specialty, Western Regional Red/Specialty, and a modified Western Regional Chip Trial. A brief summary of weather during the growing season, insect trapping results, single-hill selections, and specialty 4-hill selections are also included in this research summary.

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 3rd, 5th, 7th, and 8th 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 copied 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. 2008. Washington State University Potato Research Group, Pullman, WA. **2008 Potato Cultivar Yield and Postharvest Quality Evaluations.** <http://www.potatoes.wsu.edu>

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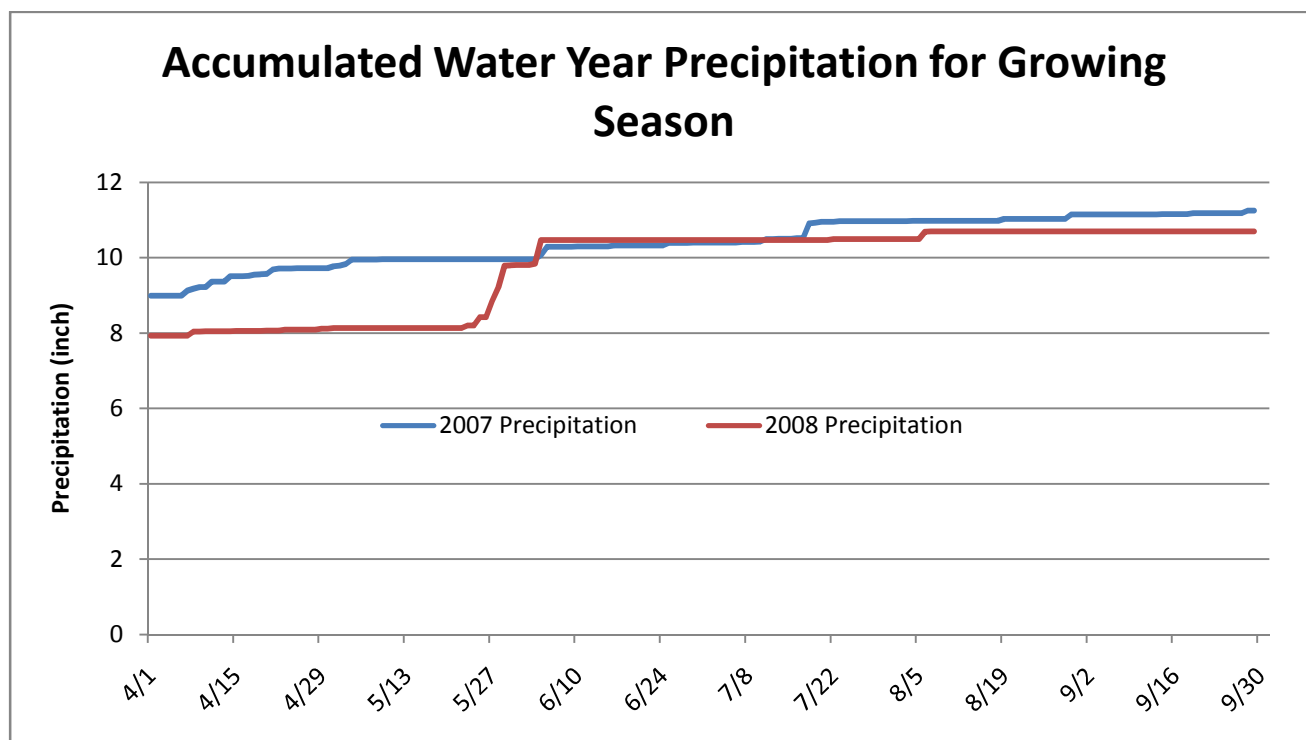
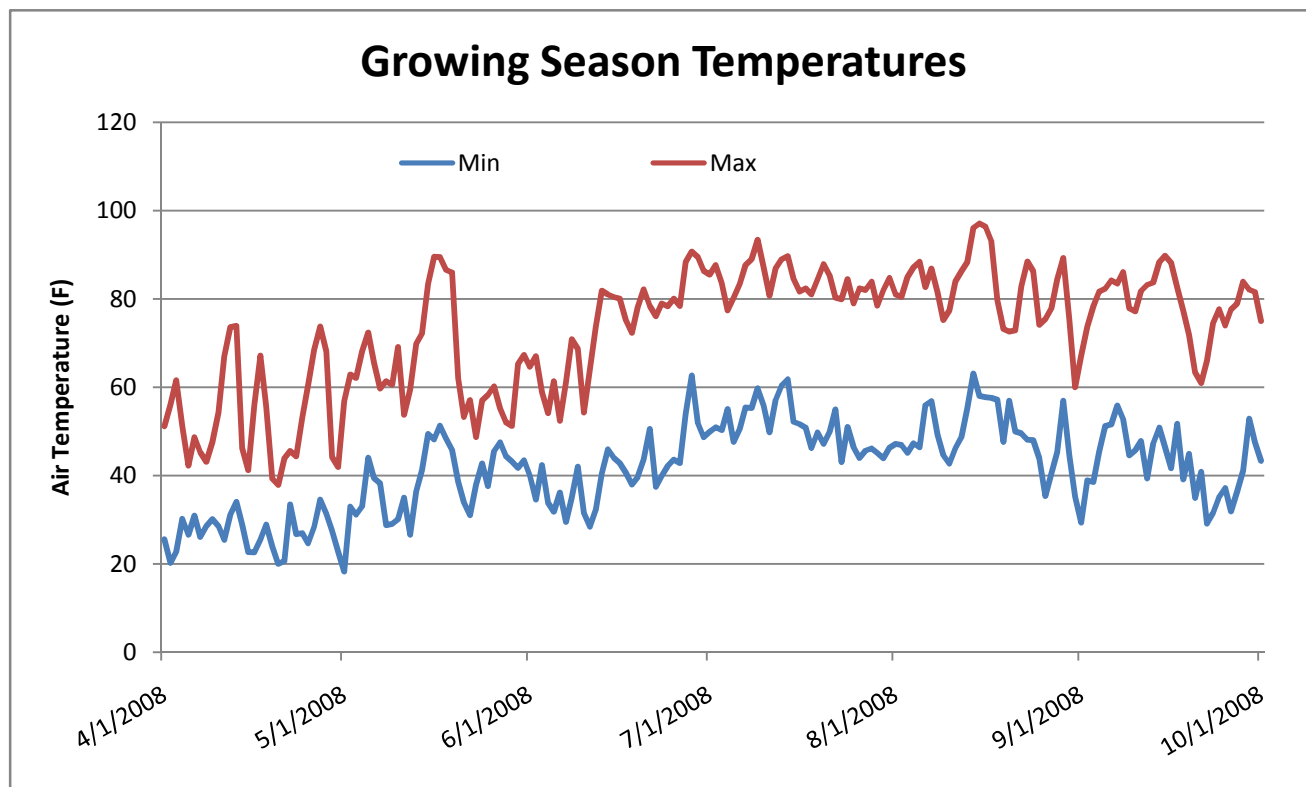
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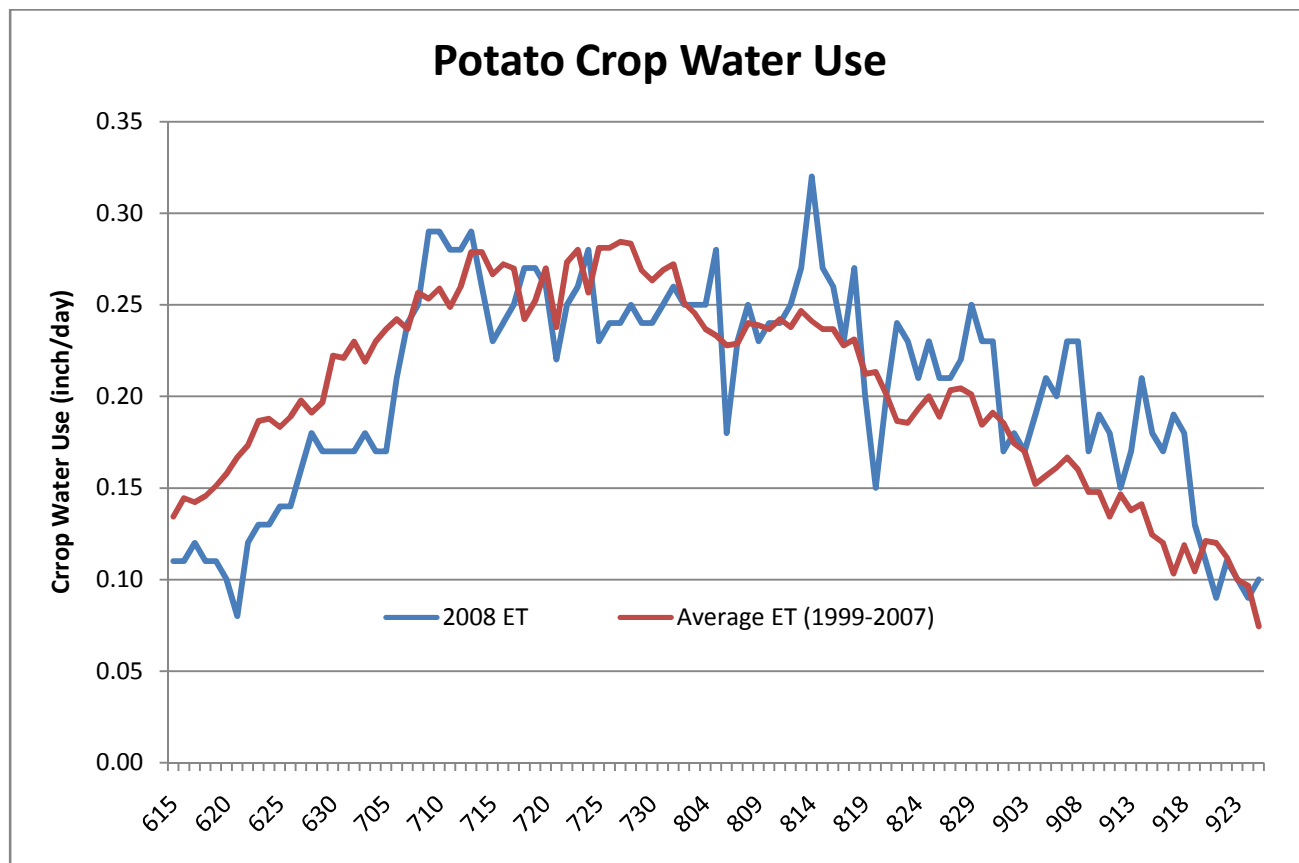
Commissions and Associations

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Weather Data

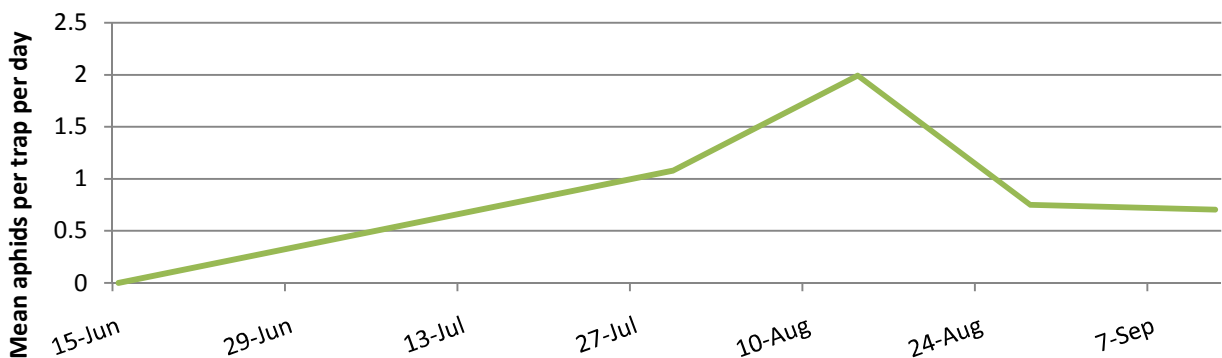




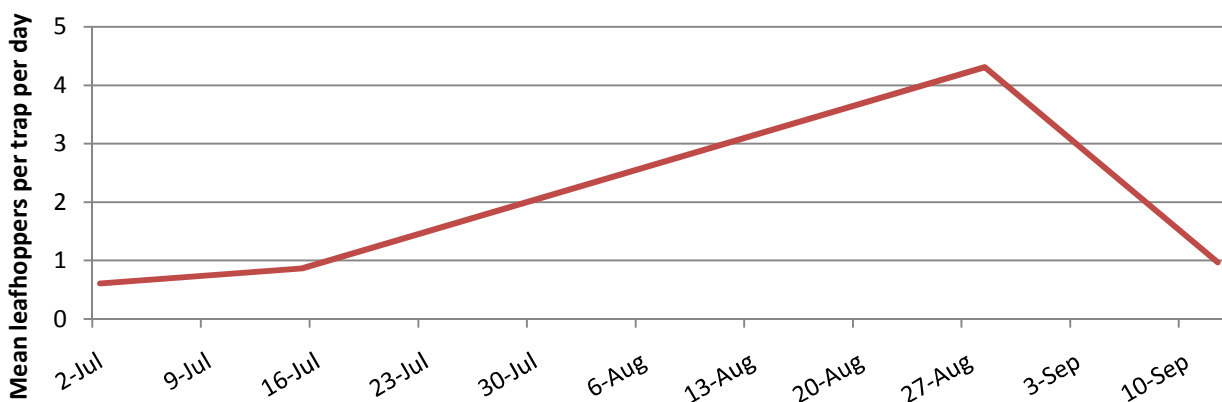
2008 Insect Trapping Results

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 2008, we expanded our trapping efforts to include aphids and leafhoppers. Twenty pheromone Delta traps (tuber moth) and twenty sticky cards (leafhoppers and aphids) were placed in growers' fields shortly after crop emergence. Traps were checked bi-weekly during the growing season and results were tabulated and made available to growers, crop consultants, and other industry personnel electronically via email. Collected data provided Basin producers with pertinent information to improve pest management strategies. Potato tuberworm has not been found despite an extensive four-year trapping program. The following graphs show population dynamic trends for aphids and leafhoppers throughout the growing season. We determined using sticky cards for trapping aphids made them difficult to identify different species and thus we will use water trap pans in 2009.

Population Dynamics of Aphids Collected Klamath County, OR 2008



Population Dynamics of Leafhoppers in Klamath County, OR 2008



Guide to Clone Designation

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

Location Codes

Designation	Breeding Program	Selection Program	Other
A	Aberdeen, Idaho	Aberdeen, Idaho	
AO	Aberdeen, Idaho	Oregon	
AOA	Aberdeen, Idaho	Oregon	Aberdeen, Idaho
ATX	Aberdeen, Idaho	Texas	
BTX	Beltsville, Maryland	Texas	
CO	Colorado		
MWTX	Madison, Wisconsin	Texas	
NDA	North Dakota	Aberdeen, Idaho	
NY	New York		
O	Oregon		
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	Chuck B rown's Cross
LS	Low S ugar
P/P	Purple skin/ P urple flesh
R	Red skin
R/R	Red skin/ R ed flesh
R/Y	Red skin/ Y ellow flesh
Ru	Russet
W/Y	W hite skin/ Y ellow flesh
LB	Late B light resistance
PW/Y	Purple skin with W hite eyes/ Y ellow flesh
P/Y	Purple skin/ Y ellow flesh
P/PW	Purple skin/ P urple and W hite flesh

Single Hill Results

Approximately, forty-four thousand (44,000) greenhouse-produced seedling tubers were planted at a remote site in the Yonna Valley area on June 11, 2008. Located about 25 miles east of Klamath Falls, soils are very sandy with approximately 1.0 percent organic matter and a pH of 7.0. The location provides good isolation from other potato production areas and intensively fumigated soils allows us to harvest very clean material for seed increase at Powell Butte, OR. Progeny included 170 families from Oregon State University and 186 from USDA, Aberdeen, Idaho. Several crosses included russet parents with virus, late blight and potato tuber worm resistance. Others included at least one parent with pigmented flesh color.

Tuber families were lifted with a two-row, level-bed digger on October 6. 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 Powell Butte, Oregon for storage at the Central Oregon Agricultural Research Center (COARC) potato facility. 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
Oregon State University	Disease resistance, mixed type	13473
ARS Aberdeen, ID	Disease resistance, russet	30279
	Total	43752
	Number of Progeny Selected	431
	% Selection Rate	1.0

Second-year 4-hill Specialty Screening

Ninty-two (92) selections from 2007 single-hills were planted in 4-hill observational plots at KBREC and 18-hill seed increase plots at Powell Butte, OR. The KBREC site is on a Poe fine sandy loam soil with a pH of 6.8 and an organic matter content of 1.02 percent in the plow layer. Potato tubers were lifted using a single-row, level-bed digger on October 6, 2008. A team of about 15 research and industry personnel selected 18 clones for further evaluation based on market potential and possible disease resistance. Seed of these selections were transported and stored at the Central Oregon Agricultural Research Center (COARC). This material will be evaluated in a Preliminary Yield Trial (PYT-2 Specialty) conducted at KBREC in 2009.

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 \$5.75/cwt. Consultations with several growers and shippers confirmed that these assumptions were valid comparisons to actual prices observed in the Klamath Basin. 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.

KBREC Grade Size	Markets/Packaging ¹	Range of Tuber Sizes for Each Package type	Four Year Klamath Basin Avg. \$/cwt	Packaging and Handling
4-8 oz.	20% to 90 and 100 count	7-9.5 oz.	\$14.52	\$5.75
	80% to 10 lb. poly bags	4-7 oz.	\$11.52	\$5.75
8-12 oz.	70, 80, and 90 count	8.5-12.5 oz.	\$15.97	\$5.75
>12-20 oz.	50 and 60 count	12.5-18 oz.	\$16.63	\$5.75
<4 oz. and culls	bulk culls	<4 and cull	\$1.15	\$5.75
No. 2	100 lb burlap sacks	10-20 oz.	\$9.46	\$5.75

¹Count = tuber number per 50 lb. carton.

2008 Replicated Trial Cultural Information

Location:	Klamath Falls, OR
Planting Date:	May 20 for PYT Specialty and State Specialty, May 21 for PYT Russet, State Russet, Regional Russet, and Regional Specialty
Vine Kill Date:	September 8 by rolling of vines and with labeled rates of Reglone
Harvest Date:	October 2 for PYT Spec., October 3 for Statewide Specialty, October 8 for Statewide Russet, October 9 for Regional Specialty and Russet, and October 10 for PYT Russet
Irrigation:	Solid-set sprinkler + natural precipitation = 17.8 inches
Plot Length:	20 hills for PYT trials, 25 hills for State Russet and Regional Specialty, and 30 hills for State Specialty and Regional Russet
In-row spacing:	9.0 inches
Row spacing:	36 inches
Number of Reps:	4 reps for Statewide and Regional Trials and 2 reps for PYT Trials
Fertilizer:	1 ton/acre gypsum broadcast before bedding = 340 S and 340 Ca 170-75-100-205S + minors banded at bed formation
Weed Control:	Cultivation and Dual Magnum + Prowl H2O + Matrix (pre-emergence)
Insecticides:	Admire Pro (in-furrow at planting)
Fungicides:	Topps MZ (seed trt.) Quadris (in-furrow at planting) Ridomil MZ(aerial applications)
Nematode Control:	Soil fumigation with Vapam and Vydate in irrigation

General Comments:

Environmental conditions were generally favorable even though many growers planted late due to cool wet spring conditions. Yields were below average in fields planted very late, average to above average for fields planted early. Maturity notes were not taken due to early heavy frost. Tuber quality and uniformity were much better than previous years. *Rhizoctonia* pressure was high due to short rotation in trial field. Specific gravities were higher than normal.

2008 Preliminary Yield (PYT-2) Russet Trial

Location: OSU KBREC – Klamath Falls, OR

Planting Date: May 21

Harvest Date: October 10

Fertility: 170-75-100-205S

Vines Kill Date: September 8

Days to Vine kill: 110

In-Row Spacing: 9 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 74 new entries. The Oregon Potato Variety Development Team chose to advance 8 selections to the Statewide Russet Trial in 2009 and discarded the remaining selections due to poor performance. **Only retained selections are listed in the following tables.**

Entry	Total Yield (CWT/A)	US # 1 > 4 oz.	US # 2 > 4 oz.	Culls & <4 oz.	8-12 oz Specific Gravity	KBREC Comments
		% of Total Yield*				
Russet Burbank	582	55	14	31	1.092	lumpy, ugly
Ranger Russet	465	63	14	23	1.091	deep eyes, misshapen
Russet Norkotah	491	67	17	16	1.073	heavy skin, curved
AO99135-3	503	77	8	15	1.091	smooth, fresh, blocky
AO99152-1	496	61	16	23	1.092	misshapen, bottlenecks
AO00131-1	457	75	7	18	1.087	uniform, little plump
AO03420-1	513	66	12	22	1.092	lumpy, heavy russet
OR05039-4	413	75	4	20	1.088	ugly, lenticels scaring, brows
OR05078-1	644	70	7	24	1.075	round, chipper shape
OR05081-1	495	70	13	18	1.093	round, chipper?, irregular skin
POR06V12-3	370	56	2	42	1.100	small, heavy russet, fair

*Percent values may not total 100% due to rounding

Entry	US # 1 Yield				Internal Defects (%)				
	>4 oz. (CWT/A)	%*			8-12 oz. tubers**				
		4-8 oz.	8-12 oz.	>12 oz.	HH	IBS	BS	VD	SEB
Russet Burbank	321	52	32	16	5	0	0	0	0
Ranger	293	30	35	35	0	0	5	5	15
Norkotah	329	33	35	32	25	0	0	5	0
AO99135-3	386	19	32	49	0	0	0	0	0
AO99152-1	302	51	31	18	30	0	0	0	5
AO00131-1	342	43	30	26	0	15	0	5	0
AO03420-1	339	50	42	9	0	15	0	5	0
OR05039-4	312	55	36	10	0	0	0	5	0
OR05078-1	450	66	30	4	10	10	0	0	0
OR05081-1	345	58	40	2	0	0	5	5	0
POR06V12-3	206	76	23	1	0	0	10	10	15

*Percent values may not total 100% due to rounding

**Internal Defects: HH=hollow heart, IBS=internal brown spot, BS=black spot bruise, VD=vascular discoloration, and SEB=stem-end browning

2008 Statewide Russet Trial

Location: OSU KBREC – Klamath Falls, OR

Planting Date: May 21

Harvest Date: October 8

Fertility: 170-75-100-205S

Vine Kill Date: September 9

Days to Vine kill: 110

In-Row Spacing: 9 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. Environmental conditions were generally favorable for the growing season even though many growers planted late due to cool wet spring conditions. Yields were below average in fields planted very late, average to above average for fields planted early. The following is a summary of the Klamath Falls field results.

Stand Counts

➤ 30 Day

Fast emergence: AO03003-3 (84%), OR04057-2 (84%), and Russet Norkotah (81%)

Slow emergence: AO02019-3 (0%), AO02118-2 (10%), AO01114-4 (16%), and AO00057-2 (19%)

➤ 50 Day

Full emergence: All entries above 95% final emergence.

Plant Tuber Growth and Development

➤ Undersized Tubers (<4 oz.) cwt/Acre

Most: AO02183-2 (111), OR04057-2 (95), AO03096-5 (92), and AO98282-5 (92)

Least: OR04018-5 (31), Ranger Russet (39), and AO02019-3 (41)

Yield and Economic Data

➤ Total Yield (cwt/Acre)

Highest: OR03151-4 (522), AO02182-1 (504), and POR05V016-2 (493)

Lowest: AO02019-3 (328), OR04062-1 (347), and AO02183-2 (374)

➤ US No. 1 Yield (cwt/Acre)

Highest: AO01057-5 (379), AO96365-2 (352), AO01114-4 (338), and AO02118-2 (337)

Lowest: AO02019-3 (197), AO02183-2 (199), Russet Burbank (205), and OR04057-2 (208)

➤ Carton Yield (8-20 oz.) cwt/Acre

Highest: AO01057-5 (242), OR04018-5 (239), and AO02182-1 (223)

Lowest: OR04057-2 (57), AO02183-2 (67), and Russet Burbank (74)

Klamath Basin Potato Variety Development Summary **2008**

Tuber Defect Incidence (40 tuber sample of 8-12 oz. tubers)

➤ Hollow Heart

Notable Defects: OR04018-5 (60%), AO98282-5 (33%), and Russet Norkotah (30%)

➤ Vascular Discoloration

Notable Defects: AO03003-3 (10%), AO03096-5 (10%), and OR03151-4 (10%)

➤ Stem-end Browning

Notable Defects: AO02019-3 (13%)

Entry	Total Yield		US # 1's*	US # 2's*	Culls*	Carton Yield	
	(CWT/A)	STATS**	> 4 oz.	> 4 oz.	& <4 oz.	100-50 count (US 1's 8-20 oz)	
Russet Burbank	469	ABCD	44	25	31	16	74
Ranger	415	DEFG	66	16	18	43	181
Norkotah	431	CDEF	65	14	21	41	177
AO96141-3***	429	CDEF	68	14	18	41	177
AO96305-3***	436	BCDEF	70	7	23	30	132
AO96365-2***	491	ABC	72	7	21	39	192
AO98282-5	447	BCDE	57	16	27	25	111
AO00057-2***	472	ABCD	71	11	19	46	215
AO01057-5	477	ABCD	79	7	14	51	242
AO02019-3	328	H	60	16	24	33	107
AO02182-1	504	AB	63	19	18	44	223
AO02183-2***	374	FGH	53	10	37	18	67
AO01114-4***	421	DEF	80	6	14	43	182
AO02060-3***	427	CDEF	71	8	21	48	204
AO02118-2***	430	CDEF	78	7	14	45	196
AO03003-3	475	ABCD	62	12	26	37	174
AO03096-5	381	EFGH	65	8	27	22	82
OR03085-5	485	ABCD	63	14	23	34	167
OR03151-4	522	A	53	19	28	28	145
OR04018-5	475	ABCD	66	14	21	50	239
OR04057-2***	377	FGH	55	17	28	15	57
OR04062-1	347	GH	63	7	30	23	81
POR05V016-2	493	ABC	67	13	20	38	187

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Entry	US # 1 Yield					8-12 oz Specific gravity	Internal Defects (%) 8-12 oz. tubers****			
	>4 oz. (CWT/A)	STATS**	%				HH	IBS	VD	SEB
			4-8 oz.	8-12 oz.	>12 oz.					
Russet Burbank	205	H	64	28	8	1.087	0	0	0	5
Ranger	274	DEFG	34	35	31	1.092	8	0	3	3
Norkotah	280	CDEFG	37	45	19	1.078	30	0	3	0
AO96141-3***	293	BCDEF	40	39	22	1.097	23	3	3	0
AO96305-3***	307	BCDEF	57	34	9	1.090	3	0	0	3
AO96365-2***	352	AB	46	33	21	1.090	0	0	5	3
AO98282-5	254	EFGH	56	32	11	1.097	33	0	3	0
AO00057-2***	333	ABCD	36	39	26	1.089	3	0	3	3
AO01057-5	379	A	36	33	30	1.082	3	0	0	0
AO02019-3	197	H	46	42	13	1.087	0	0	0	13
AO02182-1	319	ABCD	30	35	35	1.080	0	0	5	0
AO02183-2***	199	H	66	27	7	1.092	0	0	5	3
AO01114-4***	338	ABC	46	35	19	1.097	13	0	0	0
AO02060-3***	302	BCDEF	32	44	24	1.092	0	3	0	3
AO02118-2***	337	ABC	42	43	15	1.087	0	0	0	0
AO03003-3	296	BCDEF	41	39	20	1.084	0	0	10	0
AO03096-5	248	FGH	67	29	4	1.106	0	0	10	3
OR03085-5	305	BCDEF	45	37	18	1.096	15	5	0	0
OR03151-4	275	DEFG	47	37	16	1.091	13	0	10	3
OR04018-5	312	BCDE	23	37	39	1.089	60	0	3	0
OR04057-2***	208	H	73	24	3	1.086	3	0	0	0
OR04062-1	220	GH	63	27	9	1.090	0	0	0	0
POR05V016-2	330	ABCD	43	40	17	1.083	3	3	8	0

Klamath Basin Potato Variety Development Summary **2008**

Entry	Stand %	Vine vigor (1-5 large)	Skin color (1-5 dark)	Russetting (1-5 hvy)	Shape (1-5 long)	Uniformity (1-5 ex.)	Eye Depth (1-5 shal.)	Growth cracks (1-5 none)
Russet Burbank	100	5.0	3.9	4.4	3.8	2.9	2.8	3.9
Ranger	98	4.3	2.8	3.0	4.9	2.9	1.4	4.1
Norkotah	99	4.0	4.0	4.5	3.8	3.5	2.5	5.0
AO96141-3***	98	4.0	3.0	3.8	4.9	3.6	2.3	4.9
AO96305-3***	98	4.3	2.8	2.5	4.5	4.0	3.3	4.9
AO96365-2***	99	4.5	3.8	4.0	3.0	3.5	3.1	4.4
AO98282-5	100	4.8	3.5	4.4	3.9	2.8	2.9	4.6
AO00057-2***	100	4.5	3.4	3.4	3.3	3.8	3.3	5.0
AO01057-5	99	5.0	3.0	3.8	3.4	4.1	2.9	5.0
AO02019-3	98	3.3	2.9	2.8	4.1	3.3	4.3	4.8
AO02182-1	98	4.3	3.1	3.1	3.9	2.8	4.3	5.0
AO02183-2***	98	4.5	3.6	4.1	4.5	3.5	3.0	5.0
AO01114-4***	99	5.0	3.8	3.6	3.6	4.0	2.8	4.5
AO02060-3***	97	4.0	3.5	4.0	4.8	4.1	3.3	4.5
AO02118-2***	95	4.0	4.6	4.4	3.3	4.3	3.3	4.9
AO03003-3	100	4.8	4.3	4.5	4.0	3.0	2.9	3.6
AO03096-5	99	4.3	3.5	3.6	2.4	3.4	2.9	4.9
OR03085-5	96	4.3	3.9	4.8	2.8	2.4	2.6	3.6
OR03151-4	98	4.5	2.0	2.0	3.0	2.5	3.0	4.8
OR04018-5	99	3.8	3.5	3.9	4.1	3.0	2.4	5.0
OR04057-2***	100	5.0	2.8	3.9	4.1	3.4	3.8	5.0
OR04062-1	98	4.3	1.5	1.5	3.5	4.0	4.0	5.0
POR05V016-2	99	4.5	2.6	2.5	3.5	3.5	2.6	5.0

*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 2009

****Internal Defects: HH=hollow heart, BC=brown center, IBS=internal brown spot, SEB=stem end browning, VD=vascular discoloration, HB=hard bite, CRS=corky ring-spot

Entries Retained for Further Evaluation in 2009

Entry	2008 KBREC-Statewide Russet Comment	Entry	2008 KBREC-Statewide Russet Comment
Russet Burbank		AO00057-2	
	Bottle, deep eyes, ugly		Flat, blocky, fair
Ranger Russet		AO02183-2	
	Lumpy, deep eyes, banana		Long, skinny, sticky stolons, lots of eyes
Russet Norkotah		AO01114-4	
	Good size, little curved, heavy skin, fair		Uniform, nice shape, fresh
AO96141-3		AO02060-3	
	Long, misshapen, many eyes		Long, skinny, lots of eyes, uniform

AO96305-3		AO02118-2	
	Skinning, uniform, fair		Blocky, best of trial, fat, heavy skin,
AO96365-2		OR04057-2	
	Peeping eyes, blocky, nice skin		Flat, irregular shapes, skinning

2008 Western Regional Russet Trial

Location: OSU KBREC – Klamath Falls, OR

Planting Date: May 21

Harvest Date: October 8

Fertility: 170-75-100-205S

Vine Kill Date: September 9

Days to Vine kill: 110

In-Row Spacing: 9 inch

Regional Trials are evaluated at multiple locations in Oregon, Washington, Idaho, Colorado, Texas, and California. Entries graduating from Tri-state and Southwestern (CO, TX, CA) trials are included in this trial. Entry disposition is determined by the Western Regional Technical Committee. Entries are typically evaluated for three years (if applicable) before graduating. Upon graduation, sponsoring states (state making initial selection) determine if the selection will be eligible for commercial release and assume the lead role in acquiring Plant Variety Protection (PVP). This trial included three standard varieties and 10 new clones at the KBREC location. In most circumstances, a period of 12 to 15 years is required to release a variety following the actual breeding cross and advancement through the Regional Trial. Environmental conditions were generally favorable for the growing season even though many growers planted late due to cool wet spring conditions. Yields were below average in fields planted very late, average to above average for fields planted early. The following is a summary of the Klamath Falls field results.

Stand Counts

➤ 30 Day

Fast emergence: Russet Burbank (90%), Ranger Russet (89%) and Russet Norkotah (83%).
Slow emergence: AC96052-1RU (12%), CO97087-2RU (12%) and A97066-42LB (17%).

➤ 50 Day

Full emergence: Russet Norkotah, A0008-1TE, CO97087-2RU and CO98067-7RU.
Poor emergence: All entries had greater than 90% emergence.

Plant and Tuber Growth and Development

➤ Undersized Tubers (<4 oz.) cwt/Acre

Most: AC96052-1RU (110), CO98368-7RU (98) and CO98368-2RU (83).
Least: AOTX95265-4RU (37), Ranger Russet (38) and PA99N82-4 (38).

Yield and Economic Data

➤ Total Yield (cwt/Acre)

Highest: CO98067-7RU (581), PA99N82-4 (494) and PA99N2-1 (487).
Lowest: AC96052-1RU (349), CO98368-2RU (384) and A97066-42LB (416).

➤ US No. 1 Yield (cwt/Acre)

Highest: CO98067-7RU (437), AOTX95265-4Ru (389) and Russet Norkotah (386).
Lowest: AC96052-1RU (229), CO98368-2RU (251) and Russet Burbank (279).

➤ **Percent US No. 1**

Highest: AOTX95265-4Ru (81%), A0008-1TE (80%) and Russet Norkotah (79%).
Lowest: Russet Burbank (59%), CO98368-2RU (65%) and AC96052-1RU (66%).

➤ **Carton Yield (8-20 oz.) cwt/Acre**

Highest: AOTX95265-4Ru (251), Russet Norkotah (241) and Ranger Russet (232).
Lowest: AC96052-1RU (52), CO98368-2RU (71) and CO97087-2RU (92).

➤ **Gross Return (\$/acre)**

Fresh Market Highest: AOTX95265-4Ru, Russet Norkotah, and Ranger Russet.
Fresh Market Lowest: AC96052-1RU, CO98368-2RU and Russet Burbank.

Tuber Defect Incidence (40 tuber sample of 8-12 oz. tubers)

➤ **Hollow Heart**

Notable Defects: PA99N82-4 (40%), PA99N2-1 (23%) and Russet Norkotah (20%).

➤ **Vascular Discoloration**

Notable Defects: Ranger Russet (10%).

➤ **Notable External Defects:** PA99N82-4 and Russet Burbank had a high number of tubers with growth cracks.

Entry	Total Yield		US # 1's* > 4 oz.	US # 2's* > 4 oz.	Culls* & <4 oz.	Carton Yield 100-50 count (US 1's 8-20 oz)	
	(CWT/A)	STATS**	% of Total Yield			% of Total Yield	(CWT/A)
Ranger Russet	471	BCD	76	13	11	49	232
Russet Burbank	476	BCD	59	16	25	23	109
Russet Norkotah	485	BC	79	8	13	50	241
A0008-1TE	443	BCDE	80	6	13	45	197
A97066-42LB	416	DE	67	10	22	29	121
AC96052-1RU	349	F	66	2	33	15	52
AO96141-3	445	BCDE	74	10	16	42	186
AOTX95265-4Ru	481	BCD	81	7	12	52	251
CO97087-2RU	428	CDE	68	10	22	21	92
CO98067-7RU	581	A	75	6	19	31	182
CO98368-2RU	384	EF	65	11	23	18	71
PA99N2-1	487	BC	73	9	18	39	190
PA99N82-4	494	B	72	11	17	38	187

*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 **2008**

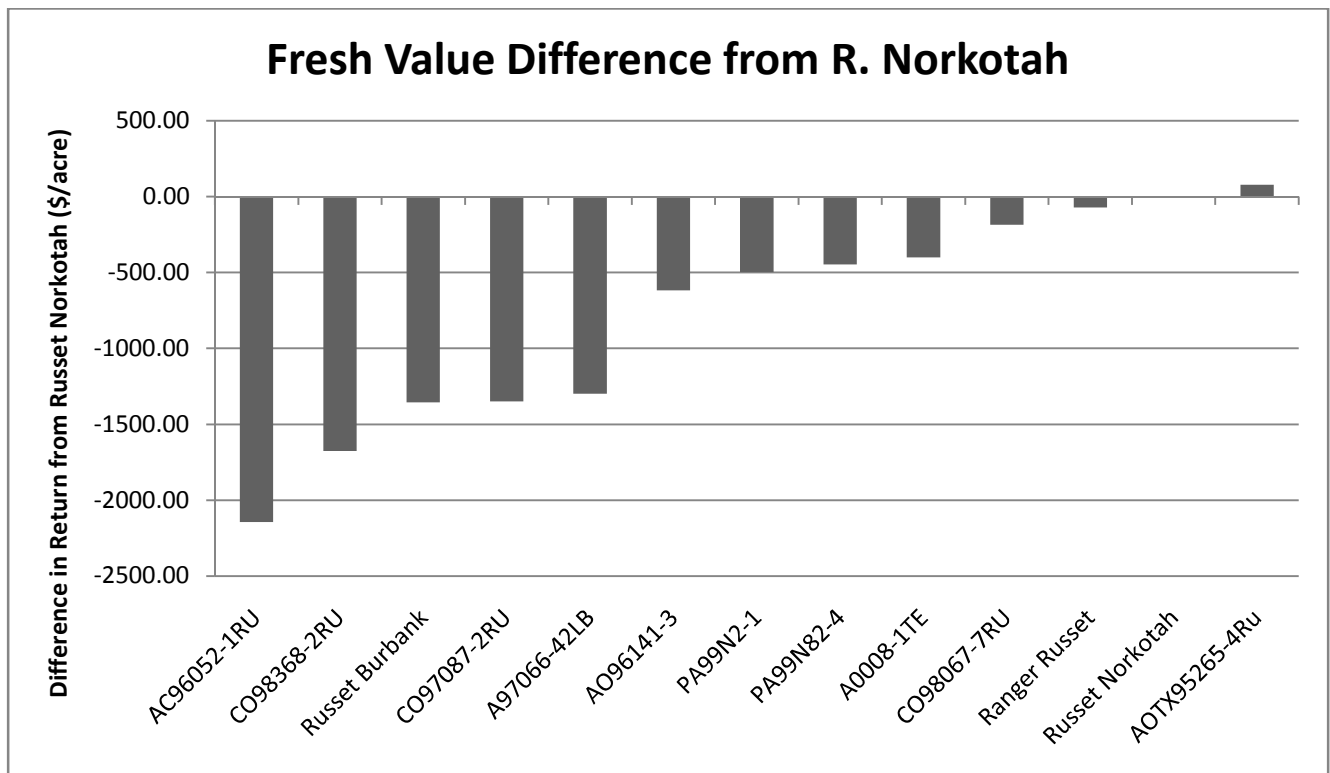
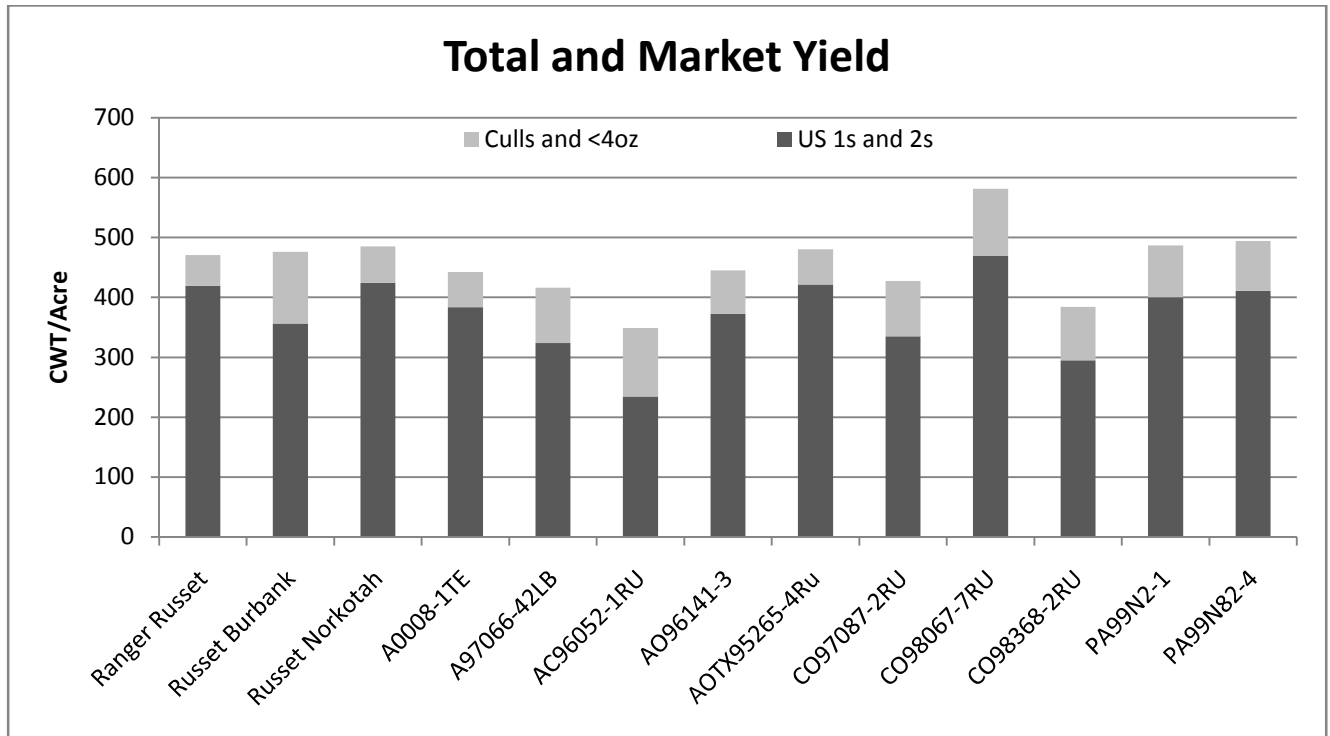
Entry	US # 1 Yield					8-12 oz Specific gravity	Internal Defects (%) 8-12 oz. tubers			
	>4 oz. (CWT/A)	STATS**	%				HH	IBS	VD	SEB
			4-8 oz.	8-12 oz.	>12 oz.					
Ranger Russet	356	BC	35	33	32	1.088	0	0	10	0
Russet Burbank	279	EF	61	29	10	1.082	0	3	3	0
Russet Norkotah	386	AB	38	39	24	1.072	20	0	0	0
A0008-1TE	355	BCD	45	34	22	1.080	13	0	0	0
A97066-42LB	280	DEF	57	33	10	1.094	3	0	0	0
AC96052-1RU	229	F	77	20	3	1.086	0	0	5	0
AO96141-3	328	BCDE	43	34	23	1.091	18	0	5	0
AOTX95265-4Ru	389	AB	35	29	35	1.073	10	3	0	0
CO97087-2RU	291	CDEF	69	25	6	1.088	5	0	0	0
CO98067-7RU	437	A	58	31	11	1.073	3	0	0	0
CO98368-2RU	251	F	72	25	3	1.074	0	0	3	0
PA99N2-1	356	BCD	46	34	19	1.081	23	0	5	0
PA99N82-4	358	BC	48	34	19	1.081	40	0	0	3

*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, IBS=internal brown spot, SEB=stem end browning, VD=vascular discoloration, HB=hard bite, CRS=corky ring-spot

Entry	Stand %	Vine vigor (1-5 large)	Skin color (1-5 dark)	Russetting (1-5 hvv)	Shape (1-5 long)	Uniformity (1-5 ex.)	Eye Depth (1-5 shal.)	Growth cracks (1-5 none)
Ranger Russet	98	2.5	3.5	2.9	5.0	2.9	1.6	4.8
Russet Burbank	99	3.8	4.0	4.1	3.9	3.0	2.9	3.3
Russet Norkotah	100	3.4	4.0	4.0	4.0	4.3	2.8	5.0
A0008-1TE	100	2.8	2.5	3.5	3.9	4.1	3.9	4.5
A97066-42LB	98	2.9	1.5	1.5	3.8	2.8	3.9	5.0
AC96052-1RU	99	3.3	4.0	4.4	3.8	4.5	3.9	5.0
AO96141-3	99	3.1	2.8	4.1	5.0	3.6	2.6	4.9
AOTX95265-4Ru	97	3.8	3.8	4.0	4.0	4.0	2.9	5.0
CO97087-2RU	100	3.5	3.6	3.5	3.4	3.5	3.8	4.8
CO98067-7RU	100	4.0	3.3	4.3	3.1	3.3	3.0	5.0
CO98368-2RU	90	3.3	3.6	3.3	3.8	2.4	4.1	5.0
PA99N2-1	99	3.4	3.5	4.9	2.4	2.0	4.0	4.5
PA99N82-4	98	3.6	4.1	5.0	1.6	3.3	3.5	3.1



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 white-colored bars may not appeal to fresh market consumers due to the undesirable shape or appearance. Refer to page 11 for parameters used to collect gross return to growers.

Klamath Basin Potato Variety Development Summary **2008**

Entry	2008 KBREC- Regional Russet Comment	Entry	2008 KBREC- Regional Russet Comment
Ranger Russet		Russet Burbank	
	Long, lumpy, curved, fair, check		Irregular, growth cracks, fair
Russet Norkotah		A0008-1TE	
	Uniform, nice, keep		Nice, blocky, shatter, fresh, keep
A97066-42LB		AC96052-1RU	
	Skinning, bulgy eyes, ugly, drop		Small, blocky, uniform, keep

Klamath Basin Potato Variety Development Summary **2008**

AO96141-3		Long, process, keep	AOTX95265-4Ru		Russet Norkotah look alike, uniform, nice, keep
CO97087-2RU		Smooth, flat, some pear, fair	CO98067-7RU		Elephant hide, large yield, roundish, keep
CO98368-2RU		Pears, skinning, flat, drop	PA99N2-1		Ugly, junk, drop
PA99N82-4		Round, elephant hide, chip?, drop			

2008 Preliminary Yield (PYT-2) Specialty Trial

Location: OSU KBREC – Klamath Falls, OR

Planting Date: May 21

Harvest Date: October 2

Fertility: 170-75-100-205S

Vine Kill Date: September 9

Days to Vine kill: 110

In-Row Spacing: 9 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 14 new entries. The Oregon Potato Variety Development Team chose to advance 6 selections to the Statewide Specialty Trial in 2009 and discarded the remaining selections due to poor performance. **Only retained selections are listed in the following tables.**

Entry	Skin Color	Primary Skin Color Rating (1-5 dark)	Flesh Color	Primary Flesh Color Rating (1-5 dark)	Total Yield (cwt/A)	US # 1's > 0 oz.	Culls > 0 oz.	Specific Gravity
						% of Total Yield		
Yukon Gold	Yellow	3.0	Yellow	3.0	451	90	10	1.090
All Blue	Purple	5.0	Purple	4.0	343	95	5	1.080
OR04198-1	Yellow	4.5	Yellow	4.5	306	98	2	1.072
OR05020-1	Red	3.0	White	1.5	485	97	3	1.066
OR05045-1	Yellow	2.5	White	2.0	557	98	2	1.067
OR05112-1	Yellow	3.5	Yellow	2.8	454	88	12	1.068
POR06PG24-2	Yellow	2.5	Yellow	3.0	331	94	6	1.080
POR06PG57-2	Purple	4.0	Purple	2.5	550	92	8	1.080

Entry	US # 1 Yield					Russetting (1-5 hvy.)	Tuber Shape (1-5 long)	Size/ Shape Uniformity (1-5 ex.)	Eye Depth (1-5 shallow)
	(cwt/A)	%							
		B size	4-6 oz.	6-10 oz.	>10 oz.				
Yukon Gold	408	6	17	33	44	1.5	2.0	4.3	4.5
All Blue	325	55	31	14	1	1.0	4.0	2.3	2.0
OR04198-1	301	67	27	5	0	1.0	1.0	4.3	3.3
OR05020-1	470	38	34	26	1	1.0	1.5	4.3	4.3
OR05045-1	546	76	23	1	0	1.0	1.0	4.8	4.0
OR05112-1	398	64	24	11	1	1.5	5.0	4.0	4.0
POR06PG24-2	312	93	7	0	0	1.0	5.0	3.8	4.0
POR06PG57-2	505	25	34	37	3	1.0	2.3	3.8	3.5

Entries Retained for Further Evaluation in 2009

Entry	2008 KBREC-PYT-2 Specialty Comment	Entry	2008 KBREC-PYT-2 Specialty Comment
Yukon Gold		All Blue	
	Large, smooth, uniform		Lumpy, dark, irregular
OR04198-1		OR05020-1	
	100% sprouts, smooth, good color, keep?		Smooth, round, nice, keep
OR05045-1		OR05112-1	
	Round, small, very uniform, keep		Fingerling, smooth, pointy ends, keep?
POR06PG24-2		POR06PG57-2	
	Fingerling w/pink eye, smooth, keep		Smooth, nice color, keep

2008 Statewide Specialty Trial

Location: OSU KBREC – Klamath Falls, OR

Planting Date: May 21

Harvest Date: October 3

Fertility: 170-75-100-205S

Vine Kill Date: September 9

Days to Vine kill: 110

In-Row Spacing: 9 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. . Environmental conditions were generally favorable for the growing season even though many growers planted late due to cool wet spring conditions. Yields were below average in fields planted very late, average to above average for fields planted early. The following is a summary of the Klamath Falls field results.

Stand Counts

➤ 30 Day

Fast emergence: POR02PG12-1 (97%), POR04PG01-2 (93%) and POR05PG26-11 (93%).

Slow emergence: Yukon Gold (48%), OR04036-7 (52%) and POR03PG80-2 (63%).

➤ 50 Day

Full emergence: All Blue, POR02PG12-1 and POR05PG56-1.

Poor emergence: All entries had greater than 93% emergence.

Plant and Tuber Growth and Development

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

Most: POR05PG56-1 (280), POR05PG26-11 (271) and OR04031-2 (209).

Least: Yukon Gold (19), POR03PG80-2 (49) and OR04036-5 (98).

➤ % B Size Tubers of US #1's

Highest: POR02PG12-1 (99%), POR05PG26-11 (78%) and POR05PG56-1 (77%).

Lowest: Yukon Gold (5%), POR03PG80-2 (12%) and OR04036-5 (20%).

Yield Data

➤ Total Yield (cwt/Acre)

Highest: OR04036-5 (508), POR04PG01-2 (497) and POR03PG80-2 (447).

Lowest: POR02PG12-1 (217), OR04131-2 (298) and POR04PG11-2 (306).

➤ US No. 1 Yield (cwt/Acre)

Highest: OR04036-5 (492), POR04PG01-2 (477) and POR03PG80-2 (407).

Lowest: POR02PG12-1 (207), POR04PG11-2 (291) and OR04131-2 (294).

Klamath Basin Potato Variety Development Summary | 2008

➤ % U.S. #1s

Highest: OR04131-2 (99%), POR05PG56-1 (99%) and POR05PG26-11 (98%).

Lowest: OR04036-7 (91%), POR03PG80-2 (91%) and Yukon Gold (91%).

Tuber Defect Incidence (40 tuber sample)

➤ **External Defects:** POR04PG11-2 and All Blue have relatively deep eyes.

➤ **Internal Defects**

Hallow Heart: Yukon Gold (15%).

Vascular Discoloration: Yukon Gold (13%).

Entry	Skin Color	Primary Skin Color Rating (1-5 dark)	Flesh Color	Primary Flesh Color Rating (1-5 dark)	Total Yield		US # 1's > 0 oz.	Culls > 0 oz.	External Defects (1-5 none)		
					(cwt/A)	STATS**	% of Total Yield*	Green	Growth crack	Knobs	
Yukon Gold	Yellow	3.0	Yellow	3.0	384	C	92	8	4.1	4.1	5.0
All Blue	Purple	5.0	Purple	4.0	361	C	93	7	4.8	4.9	4.6
OR04036-5***	Yellow	3.0	Yellow	3.5	508	A	97	3	4.6	5.0	5.0
OR04036-7	White	1.3	White	1.5	389	C	91	9	4.3	5.0	4.9
OR04131-2***	Red	3.5	White	1.4	298	E	99	1	5.0	5.0	5.0
POR02PG12-1***	White	1.4	Yellow	2.5	217	F	95	5	4.8	5.0	4.6
POR03PG80-2***	Purple	2.8	Yellow	3.0	447	B	91	9	4.8	4.6	4.9
POR04PG01-2	Purple	3.8	Yellow	2.1	497	AB	96	4	4.4	4.9	4.8
POR04PG03-9	Red	2.5	Red	1.5	373	C	97	3	5.0	5.0	4.8
POR04PG11-2***	Red	3.1	Yellow	3.1	306	DE	95	5	5.0	4.9	5.0
POR05PG26-11***	Yellow	2.8	Purple	3.3	356	CD	98	2	4.6	5.0	5.0
POR05PG56-1***	Purple	3.1	Purple	3.4	370	C	99	1	4.5	5.0	5.0

Klamath Basin Potato Variety Development Summary **2008**

Entry	US # 1 Yield					Specific Gravity	Internal Defects (%)****			
	(cwt/A)	%*					HH	IBS	SEB	VD
		B size	4-6 oz.	6-10 oz.	>10 oz.					
Yukon Gold	355	5	12	38	44	1.091	15	0	8	13
All Blue	335	48	35	17	1	1.083	0	0	0	0
OR04036-5***	492	20	23	39	18	1.063	0	0	0	3
OR04036-7	355	44	31	22	3	1.067	0	0	0	0
OR04131-2***	294	71	27	2	0	1.071	0	0	0	0
POR02PG12-1***	207	99	1	0	0	1.083	0	0	0	0
POR03PG80-2***	407	12	23	45	19	1.072	0	0	0	0
POR04PG01-2	477	26	35	36	3	1.087	0	0	0	0
POR04PG03-9	363	50	41	9	0	1.077	0	0	0	0
POR04PG11-2***	291	64	29	6	0	1.089	0	0	0	0
POR05PG26-11***	348	78	18	4	0	1.084	0	0	0	5
POR05PG56-1***	364	77	20	3	0	1.080	0	0	0	0

Entry	Stand %	Vine Vigor (1-5 large)	Russetting (1-5 hvy)	Shape (1-5 long)	Size/ Shape Uniformity (1-5 ex.)	Eye Depth (1-5 shal.)	Rhizoctonia Rating (1-5 none)
Yukon Gold	97	5.0	1.5	2.4	4.0	4.4	3.3
All Blue	100	4.5	1.0	4.0	2.4	2.0	3.9
OR04036-5***	98	3.8	1.4	3.8	3.8	3.4	3.8
OR04036-7	93	4.0	1.1	1.5	3.6	3.3	3.6
OR04131-2***	98	3.8	1.0	1.0	4.8	3.5	4.4
POR02PG12-1***	100	4.3	1.0	1.9	3.6	3.3	3.4
POR03PG80-2***	97	4.3	1.4	4.0	3.4	3.1	4.1
POR04PG01-2	98	5.0	1.0	2.0	2.5	2.3	4.4
POR04PG03-9	95	5.0	1.0	1.9	3.9	4.1	3.1
POR04PG11-2***	98	4.1	1.0	2.3	3.3	1.9	3.4
POR05PG26-11***	98	4.0	1.0	2.6	3.8	3.5	2.8
POR05PG56-1***	100	5.0	1.0	2.3	4.1	3.4	3.6

*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 2009

****Internal Defects: HH=hollow heart, BC=brown center, IBS=internal brown spot, SEB=stem end browning, VD=vascular discoloration, HB=hard bite, CRS=corky ring-spot

All Statewide Specialty entries pictured below. Only starred (***) entries were kept for evaluation in 2009.

Entry	2008 KBREC- Statewide Specialty Comment	Entry	2008 KBREC- Statewide Specialty Comment
Yukon Gold		All Blue	
	Large, smooth, pink eyes		Lumpy, bronzing, dark, irregular shape
OR04036-5***		OR04036-7	
	Smooth, russet shape, nice		Ugly, pinkish hue, uniform, drop
OR04131-2***		POR02PG12-1***	
	Best of trial, round, uniform, nice, keep		Small, round, high tuber set, keep?

POR03PG80-2***		POR04PG01-2	
	Oblong shape, true purple, purpose?		Irregular skin color, some bicolor, sprouting, drop
POR04PG03-9		POR04PG11-2***	
	Sprouts, smooth skin, semi-flat, round, irregular bicolor		nice bicolor, sprouts, smooth, keep
POR05PG26-11***		POR05PG56-1***	
	Pink eyes, smooth, small, keep		Unique purple, smooth, uniform, keep

2008 Regional Specialty Trial

Location: OSU KBREC – Klamath Falls, OR

Planting Date: May 21

Harvest Date: October 9

Fertility: 170-75-100-205S

Vine Kill Date: September 9

Days to Vine kill: 110

In-Row Spacing: 9 inch

Regional Trials are evaluated at multiple locations in Oregon, Washington, Idaho, Colorado, Texas, and California. Entries graduating from the Tri-state (ID, OR, WA) and Southwestern (CO, TX, CA) regions are included in this trial. Entry disposition is determined by the Western Regional Technical Committee. Entries are typically evaluated for three years (if applicable) before graduating. Upon graduation, sponsoring states (state making initial selection) determine if the selection will be eligible for commercial release and assume the lead role in acquiring Plant Variety Protection (PVP). This trial included four standard varieties and 18 new clones at the KBREC location. Environmental conditions were generally favorable for the growing season even though many growers planted late due to cool wet spring conditions. Yields were below average in fields planted very late, average to above average for fields planted early. The following is a summary of the Klamath Falls field results.

Stand Counts

➤ 30 Day

Fast emergence: OR00068-11 (87%), ATTX961014-1R/Y (84%) and POR02PG37-2 (79%).

Slow emergence: CO97215-2P/P (2%), CO97222-1R/R (13%) and NDA7985-1R (33%).

➤ 50 Day

Emergence: All entries had greater than 95% emergence.

Plant and Tuber Growth and Development

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

Most: OR00068-11 (208), POR01PG45-5 (206) and CO97227-2P/PW (202).

Least: Yukon Gold (24), Red LaSoda (41) and Dark Red Norland (50).

➤ % B Size Tubers of US #1's

Highest: CO97227-2P/PW (72%), Purple Majesty (60%) and POR03PG23-1 (54%).

Lowest: Yukon Gold (6%), Red LaSoda (10%) and Dark Red Norland (11%).

Yield Data

➤ Total Yield (cwt/Acre)

Highest: ATTX961014-1R/Y (531), Dark Red Norland (521) and Red LaSoda (512).

Lowest: CO97227-2P/PW (312), CO97215-2P/P (331) and Purple Majesty (333).

➤ US No. 1 Yield (cwt/Acre)

Highest: ATTX961014-1R/Y (483), Dark Red Norland (472) and POR02PG26-5 (434).

Lowest: CO97227-2P/PW (280), CO97215-2P/P (295) and Purple Majesty (309).

Klamath Basin Potato Variety Development Summary **2008**

➤ % U.S. #1s

Highest: POR03PG23-1 (97%) and AC99330-1P/Y (96%).

Lowest: Red LaSoda (76%) and CO97222-1R/R (85%).

Tuber Defect Incidence (40 tuber sample)

➤ **External Defects:** Red LaSoda had a high amount of tubers with growth cracks.

➤ **Internal Defects (Percent)**

Hallow Heart: POR02PG37-2 (20%) and CO99045-1W/Y (13%).

Internal Brown Spot: PA96RR1-193 (15%).

Vascular Discoloration: PA96RR1-193 (25%) and AC99330-1P/Y (23%).

Brown Center: AC99329-7PW/Y (10%).

Entry	Skin Color	Primary skin color rating (1-5 dark)	Flesh Color	Primary flesh color rating (1-5 dark)	Total Yield		US # 1's* > 0 oz.	Culls* > 0 oz.	External Defects (1-5 none)		
					(cwt/A)	STATS**			Green	Growth crack	Knobs
Dark Red Norland	Red	1.8	White	1.6	521	AB	91	9	4.3	5.0	4.4
Red LaSoda	Red	1.9	White	1.5	512	ABC	76	24	4.0	2.1	3.1
CO98012-5R	Red	3.5	White	1.5	461	ABCDEF	92	8	4.6	3.5	5.0
NDA7985-1R	Red	3.3	White	1.5	436	CDEFG	93	7	4.8	5.0	4.4
A99331-2RY	Red	2.4	Yellow	3.1	404	EFGH	93	7	4.5	5.0	4.8
AC99329-7PW/Y	Purple	3.0	Yellow	3.3	446	BCDEF	93	7	4.5	4.5	4.8
AC99330-1P/Y	Purple	3.9	Yellow	4.1	390	FGHI	96	4	5.0	5.0	4.9
ATTX961014-1R/Y	Red	3.4	Yellow	2.8	531	A	91	9	4.6	5.0	4.9
ATTX98500-2P/Y	Purple	4.1	Yellow	3.9	452	ABCDEF	95	5	5.0	5.0	4.8
POR01PG45-5	Purple	2.9	Yellow	2.4	453	ABCDEF	95	5	4.9	4.6	5.0
CO97222-1R/R	Red	4.5	Red	4.4	417	DEFG	85	15	4.8	4.4	4.9
PA96RR1-193	Red	4.4	Red	2.5	397	EFGH	95	5	4.9	4.8	4.9
POR03PG23-1	Red	4.5	Red	4.0	357	GHI	97	3	4.9	5.0	4.9
Purple Majesty	Purple	5.0	Purple	4.3	333	HI	93	7	5.0	5.0	4.8
CO97215-2P/P	Purple	5.0	Purple	4.4	331	HI	89	11	5.0	3.9	5.0
CO97227-2P/PW	Purple	5.0	Purple	5.0	312	I	90	10	5.0	4.1	4.9
OR00068-11	Purple	4.5	Purple	3.1	419	DEFG	95	5	5.0	5.0	4.5
Yukon Gold	Yellow	3.0	Yellow	3.1	436	CDEFG	92	8	4.5	4.8	4.9
A00293-2Y	Yellow	3.8	Yellow	3.9	399	EFGH	95	5	4.9	5.0	4.6
CO99045-1W/Y	Yellow	3.0	Yellow	3.6	494	ABCD	87	13	3.6	5.0	4.6
POR02PG26-5	Yellow	3.1	Yellow	3.4	477	ABCDE	91	9	4.3	5.0	4.6
POR02PG37-2	Yellow	3.4	Yellow	3.5	452	ABCDEF	91	9	4.1	5.0	4.8

*Percent values may not total 100% due to rounding

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

Entry	US # 1 Yield					Specific Gravity	Internal Defects (%) ***			
	(cwt/A)	%*					HH	IBS	VD	BC
		B size	4-6 oz.	6-10 oz.	>10 oz.					
Dark Red Norland	472	11	23	51	16	1.074	5	0	3	0
Red LaSoda	390	10	19	45	26	1.078	5	8	5	0
CO98012-5R	424	30	32	34	4	1.083	8	0	0	0
NDA7985-1R	408	16	26	39	19	1.066	3	0	3	0
A99331-2RY	378	48	33	17	2	1.083	0	0	0	0
AC99329-7PW/Y	414	22	28	39	10	1.090	0	3	5	10
AC99330-1P/Y	374	52	30	17	2	1.078	0	0	23	0
ATTX961014-1R/Y	483	19	24	39	19	1.082	3	0	20	0
ATTX98500-2P/Y	431	24	37	33	6	1.079	0	0	0	0
POR01PG45-5	430	48	34	16	3	1.093	0	3	13	0
CO97222-1R/R	353	37	32	27	5	1.070	0	0	10	0
PA96RR1-193	379	49	35	16	1	1.086	0	15	25	0
POR03PG23-1	346	54	25	20	1	1.067	3	0	15	0
Purple Majesty	309	60	28	12	1	1.085	0	0	0	0
CO97215-2P/P	295	46	31	20	3	1.073	0	0	0	0
CO97227-2P/PW	280	72	25	3	0	1.087	0	0	0	0
OR00068-11	396	52	31	16	1	1.092	0	0	0	0
Yukon Gold	401	6	17	43	34	1.090	8	0	0	0
A00293-2Y	380	41	32	25	2	1.093	0	0	20	0
CO99045-1W/Y	431	20	20	38	22	1.095	13	18	0	3
POR02PG26-5	434	28	31	33	8	1.079	0	13	5	0
POR02PG37-2	411	26	30	37	7	1.087	20	8	0	0

*Percent values may not total 100% due to rounding

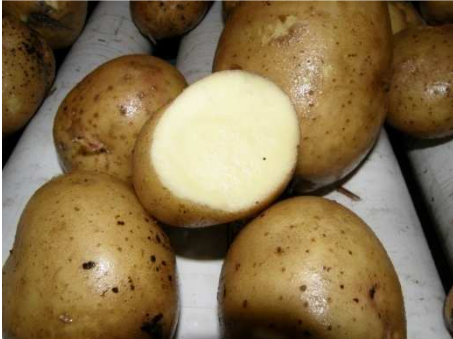
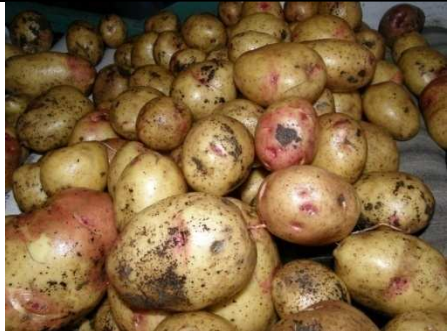
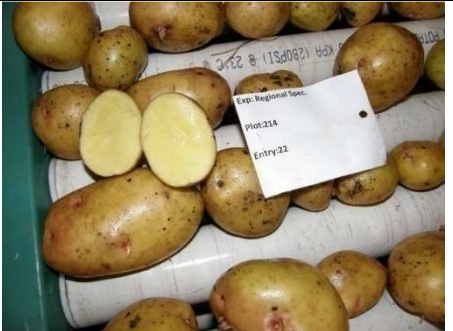
**Entries showing the same letter are not significantly different at the 5% level

***Internal Defects: HH=hollow heart, BC=brown center, IBS=internal brown spot, SEB=stem end browning, VD=vascular discoloration, HB=hard bite, CRS=corky ring-spot

Entry	Stand %	Vine Vigor (1-5 large)	Russeting (1-5 hvy)	Shape (1-5 long)	Size/ Shape Uniformity (1-5 ex.)	Eye Depth (1-5 shal.)	Shatter Bruise (1-5 none)	<i>Rhizoctonia</i> Rating (1-5 none)
Dark Red Norland	100	4.0	1.4	2.3	3.6	3.0	4.5	3.6
Red LaSoda	99	3.0	1.0	2.5	2.0	1.3	5.0	4.0
CO98012-5R	99	3.5	1.0	1.5	4.0	3.4	5.0	4.0
NDA7985-1R	100	3.8	1.0	2.0	3.8	3.5	4.6	3.6
A99331-2RY	100	4.0	1.0	1.6	3.8	2.8	5.0	3.5
AC99329-7PW/Y	100	5.0	1.0	1.6	4.3	2.0	5.0	3.9
AC99330-1P/Y	99	4.0	1.0	1.5	4.3	3.4	5.0	3.9
ATTX961014-1R/Y	100	4.0	1.0	2.5	3.5	3.5	5.0	3.9
ATTX98500-2P/Y	95	4.0	1.0	1.5	4.1	3.5	5.0	4.5
POR01PG45-5	97	3.5	1.0	3.0	3.6	3.8	5.0	4.0
CO97222-1R/R	100	3.0	1.1	2.9	2.4	1.4	4.8	4.3
PA96RR1-193	98	3.3	1.0	1.1	4.5	3.1	5.0	3.8
POR03PG23-1	96	3.0	1.0	2.1	3.5	4.0	5.0	3.8
Purple Majesty	98	4.0	1.0	3.0	3.3	3.9	5.0	4.1
CO97215-2P/P	96	2.8	1.0	2.3	3.4	3.6	5.0	4.3
CO97227-2P/PW	98	4.0	1.0	3.8	3.0	3.1	5.0	4.3
OR00068-11	100	4.0	1.0	2.0	3.6	3.1	5.0	3.9
Yukon Gold	99	4.0	1.5	2.0	4.3	4.5	5.0	3.4
A00293-2Y	100	3.8	1.1	3.1	3.9	4.4	5.0	3.1
CO99045-1W/Y	100	4.0	2.1	4.6	3.3	4.1	4.1	3.8
POR02PG26-5	100	3.8	1.1	2.3	3.6	3.9	4.9	2.4
POR02PG37-2	96	3.3	1.3	1.9	4.0	4.1	5.0	3.6

Entry	2008 KBREC- Regional Specialty Comment	Entry	2008 KBREC- Regional Specialty Comment
Dark Red Norland		Red LaSoda	
	Light red, smooth skin, fair		Growth cracks, folded bud- end, lumpy, drop
CO98012-5R		NDA7985-1R	
	Round, smooth, uniform, keep		Smooth, lots of size distribution, nice, keep
A99331-2RY		AC99329-7PW/Y	
	More solid than bicolor, round, smooth skin, drop because of color		Smooth, sprouts, sticky stolons, nice bicolor, keep
AC99330-1P/Y		ATTX961014-1R/Y	
	Nice, round, uniform, keep		large, pointy, some sprouts, fair

ATTX98500-2P/Y		POR01PG45-5	
	Chip?, round, smooth, keep		Oblong, lighter purple, nice, keep
CO97222-1R/R		PA96RR1-193	
	Lumpy, ugly shape, eyebrow, drop		Uniform, round, smooth, keep
POR03PG23-1		Purple Majesty	
	Dark bicolor, smooth, nice, keep		Peeping eyes, smooth, pear
CO97215-2P/P		CO97227-2P/PW	
	Dry rot, better than CO97227-2P/PW, dark		Dry rot, irregular shapes, fair

OR00068-11		Yukon Gold	
	Small, smooth, uniform, keep		Uniform, large, keep
A00293-2Y		CO99045-1W/Y	
	Smooth, bright yellow, nice, keep		yellow russet, road mapping, drop
POR02PG26-5		POR02PG37-2	
	Blotchy pink eyes, smooth, irregular shapes, POR02PG37-2 nicer		Pink eyes, smooth, Yukon Gold look alike, keep

2008 Chip Trial

Location: OSU KBREC – Klamath Falls, OR

Planting Date: May 21

Harvest Date: October 2

Fertility: 170-75-100-205S

Vine Kill Date: September 9

Days to Vine kill: 110

In-Row Spacing: 9 inch

Chipping potatoes comprise a significant portion of Klamath Basin acreage and identification of public varieties suitable for export has become a high priority for Basin producers. Trials were initiated in 2008 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. In 2008 eighteen 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. Sixty tubers from all four replications and thirty tubers were each placed in both short and long-term commercial storage with processing evaluations conducted by Baley-Trotman Farms. Results for 2008 are listed below.

Stand Counts

➤ 30 Day

Fast emergence: Snowden (94%), Marcy (88%) and Atlantic (83%).

Slow emergence: MN99380-1 (2%), MSJ316A (46%) and ND8304-2 (46%).

➤ 50 Day

Full emergence: Atlantic, Ivory Crisp, CO97065-7W, Marcy, ND8277B-5 and ND8307C-3.

Poor emergence: Kalkaska (77%).

Plant and Tuber Growth and Development

➤ Undersized Tubers (<4 oz.) cwt/Acre

Most: ND8307C-3 (139), Snowden (121) and Kalkaska (110).

Least: Beacon Chip (36), Chipeta (48) and Ivory Crisp (58).

➤ Oversized Tubers (>10 oz.) cwt/Acre

Most: Beacon Chip (167), CO97043-14W (123) and Ivory Crisp (118).

Least: MN99380-1 (4), ND8307C-3 (4), Kalkaska (19) and ND8277B-5 (19).

Yield Data

➤ Total Yield (cwt/Acre) – no statistical differences

Highest: Marcy (518), CO97043-14W (505) and Snowden (497).

Lowest: MN99380-1 (318), ND8277B-5 (332) and ND8307C-3 (340).

➤ Marketable Yield >4 oz. (cwt/Acre)

Highest: Marcy (443), Chipeta (429) and CO97043-14W (416).

Lowest: ND8307C-3 (189), MN99380-1 (194) and ND8277B-5 (230).

➤ **% Marketable Yield >4 oz.**

Highest: Chipeta (87%), Beacon Chip (86%) and Marcy (85%).

Lowest: ND8307C-3 (56%), MN99380-1 (61%) and ND8304-2 (67%).

Tuber Defect Incidence (40 tuber sample)

➤ **External Defects:**

ND8307C-3 and Beacon Chip had a high incidence of shatter bruise.

➤ **Internal Defects**

Hollow Heart: CO97065-7W (25%), Atlantic (18%) and Marcy (18%).

Brown Center: Dakota Pearl (8%).

Entry	Total Yield		> 4 oz.*	< 4 oz.*	Culls*	Skin Color Rating (1-5 dark)	Rhizoctonia Rating (1-5 none)
	(cwt/A)	STATS**	% of Total Yield				
Atlantic	444	NS	78	17	5	1.9	2.9
Chipeta	493	NS	87	10	3	1.5	3.1
Ivory Crisp	478	NS	83	12	5	1.3	3.4
CO97043-14W	505	NS	82	13	5	1.0	4.0
CO97065-7W	371	NS	79	19	2	2.0	3.8
MSJ316A	421	NS	80	16	4	1.3	3.9
Kalkaska (MSS036-A)	414	NS	69	27	4	1.8	2.0
Beacon Chip	448	NS	86	8	6	2.0	3.1
Snowden	497	NS	74	24	1	2.8	3.4
Marcy	518	NS	85	12	2	2.5	4.0
NY140	469	NS	84	13	3	1.9	4.1
MN99380-1	318	NS	61	30	9	2.3	3.4
Dakota Pearl	457	NS	75	20	5	1.1	4.0
Dakota Crisp	475	NS	77	18	5	1.4	3.6
Dakota Diamond	491	NS	78	15	7	1.1	2.9
ND8277B-5	332	NS	69	27	4	1.1	4.3
ND8304-2	354	NS	67	24	9	1.3	3.5
ND8307C-3	340	NS	56	41	4	1.4	2.8

*Percent values may not total 100% due to rounding

**Numbers followed by the same letter are not significantly different at the 5% level

Klamath Basin Potato Variety Development Summary **2008**

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.	>10 oz.				
Atlantic	345	ABCD	37	43	20	4.4	4.8	4.6	4.6
Chipeta	429	A	25	54	21	4.6	4.9	4.9	5.0
Ivory Crisp	397	AB	29	41	30	4.3	4.8	5.0	3.4
CO97043-14W	416	A	25	45	30	4.0	5.0	5.0	4.9
CO97065-7W	293	ABCD	42	43	14	4.3	5.0	5.0	4.8
MSJ316A	337	ABCD	33	47	20	4.4	4.9	5.0	4.6
Kalkaska (MSS036-A)	286	ABCD	49	44	6	3.9	4.8	5.0	4.9
Beacon Chip	387	ABC	17	40	43	4.0	4.9	5.0	3.8
Snowden	368	ABC	47	44	9	4.8	5.0	5.0	5.0
Marcy	443	A	34	53	13	4.8	5.0	5.0	5.0
NY140	395	ABC	29	51	20	4.4	5.0	5.0	4.8
MN99380-1	194	D	52	46	2	4.1	5.0	5.0	4.9
Dakota Pearl	341	ABCD	45	46	10	4.1	5.0	5.0	4.4
Dakota Crisp	366	ABC	40	45	15	4.4	5.0	4.9	4.9
Dakota Diamond	383	ABC	42	45	13	4.6	3.8	5.0	4.3
ND8277B-5	230	CD	40	51	8	4.6	4.4	5.0	4.6
ND8304-2	237	BCD	42	48	10	3.8	5.0	5.0	5.0
ND8307C-3	189	D	74	24	2	4.4	4.6	5.0	2.4

*Percent values may not total 100% due to rounding

**Numbers followed by the same letter are not significantly different at the 5% level

Entry	Stand %	Internal Defects (%)*						
		HH	BC	IBS	SEB	VD	BS	CRS
Atlantic	100	18	0	0	0	0	0	0
Chipeta	99	0	0	0	0	0	0	0
Ivory Crisp	100	13	0	0	0	0	0	0
CO97043-14W	99	3	0	0	0	0	0	0
CO97065-7W	100	25	0	0	0	0	0	0
MSJ316A	94	3	0	0	0	0	0	0
Kalkaska (MSS036-A)	77	15	0	0	0	0	3	0
Beacon Chip	99	8	3	0	0	0	0	0
Snowden	99	8	0	0	0	3	0	0
Marcy	100	18	0	0	0	3	0	0
NY140	96	8	0	0	0	0	0	0
MN99380-1	93	0	0	0	0	0	0	0
Dakota Pearl	99	10	8	5	0	0	0	0

Klamath Basin Potato Variety Development Summary **2008**

Dakota Crisp	99	5	0	0	0	5	0	0
Dakota Diamond	99	5	3	3	0	0	0	0
ND8277B-5	100	0	0	0	0	0	0	0
ND8304-2	96	5	3	0	0	0	0	0
ND8307C-3	100	0	0	3	0	0	0	0

*Internal Defects: HH=hollow heart, BC=brown center, IBS=internal brown spot, SEB=stem end browning, VD=vascular discoloration, HB=hard bite, CRS=corky ring-spot

Entry	Vine Vigor (1-5 large)	Russetting (1-5 hvy)	Shape (1-5 long)	Size/ Shape Uniformity (1-5 ex.)	Eye Depth (1-5 shal.)
Atlantic	4.0	2.3	1.8	3.5	3.3
Chipeta	5.0	2.0	2.3	3.8	3.4
Ivory Crisp	5.0	1.5	1.1	4.0	3.6
CO97043-14W	5.0	1.1	1.3	4.0	3.9
CO97065-7W	4.0	2.1	1.1	4.1	3.5
MSJ316A	4.3	1.1	1.9	3.8	3.4
Kalkaska (MSS036-A)	4.8	1.8	1.4	3.8	3.8
Beacon Chip	4.5	1.8	1.6	3.1	2.9
Snowden	5.0	2.8	1.3	4.3	3.0
Marcy	4.3	2.4	1.6	4.4	3.4
NY140	4.3	1.5	1.8	4.1	3.1
MN99380-1	3.0	1.0	1.4	4.1	3.4
Dakota Pearl	4.3	1.1	1.4	4.3	4.0
Dakota Crisp	4.3	1.4	1.1	4.0	3.3
Dakota Diamond	5.0	1.4	2.3	3.5	3.6
ND8277B-5	4.8	1.0	1.5	4.0	3.9
ND8304-2	4.0	1.3	1.5	3.3	3.1
ND8307C-3	5.0	1.0	1.3	3.8	4.1

Entry	Specific Gravity ¹			TDF % ²		Sugars ³			
	Field	Short-term Storage	Long-term Storage	Dec.	Apr.	dextrose		sucrose	
Atlantic	1.106	1.099	1.105	4.3	17.5	0.008	0.041	0.475	0.113
Chipeta	1.088	1.084	1.089	9.2	1.7	0.015	0.013	0.631	0.097
Ivory Crisp	1.104	1.102	1.095	11.8	2.9	0.010	0.013	0.498	0.072
CO97043-14W	1.089	1.091	1.093	10.8	4.9	0.000	0.009	0.343	0.107
CO97065-7W	1.090	1.093	1.095	14.4	3.2	0.014	0.013	0.342	0.070
MSJ316A	1.089	1.092	1.097	1.3	2.4	0.002	0.000	0.353	0.066
Kalkaska (MSS036-A)	1.097	1.097	1.096	6.3	5.9	0.004	0.103	0.413	0.162
Beacon Chip	1.087	1.088	1.087	2.3	8.5	0.010	0.013	0.466	0.144
Snowden	1.094	1.097	1.094	1	2.8	0.013	0.002	0.548	0.083
Marcy	1.094	1.085	1.096	7.5	8.1	0.568	0.008	0.363	0.101

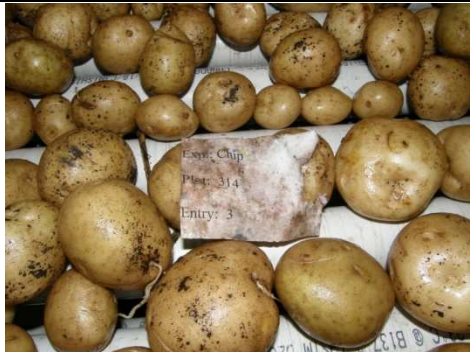
Klamath Basin Potato Variety Development Summary **2008**

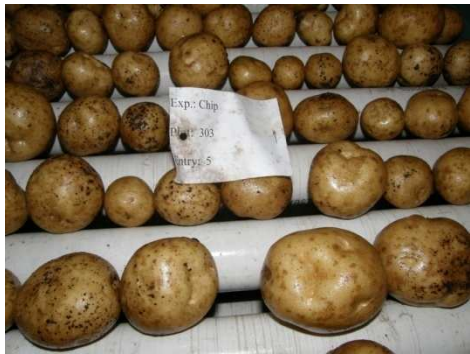
NY140	1.085	1.085	1.090	25.7	3.4	0.004	0.000	0.514	0.112
MN99380-1	1.077	1.080	1.077	6.1	11.7	0.013	0.042	0.439	0.173
Dakota Pearl	1.084	1.087	1.086	5.7	3.1	0.000	0.002	0.530	0.201
Dakota Crisp	1.081	1.084	1.085	2.7	2.7	0.080	0.021	0.682	0.111
Dakota Diamond	1.095	1.100	1.096	8.1	7.6	0.025	0.015	0.639	0.117
ND8277B-5	1.092	1.086	1.090	2.6	56.6	0.016	0.120	0.519	0.123
ND8304-2	1.080	1.080	1.080	4.1	1.9	0.031	0.042	0.578	0.179
ND8307C-3	1.102	1.105	1.105	1.9	4.4	0.011	0.013	0.639	0.108

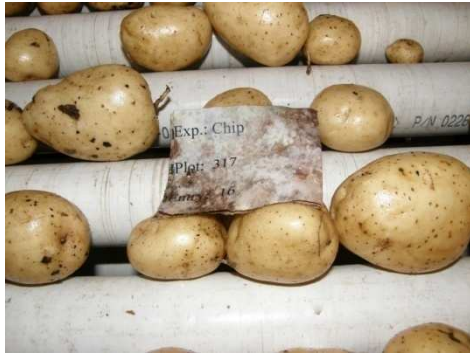
¹Specific gravity measured out of field and after storage for 2 and 6 months at 50° F.

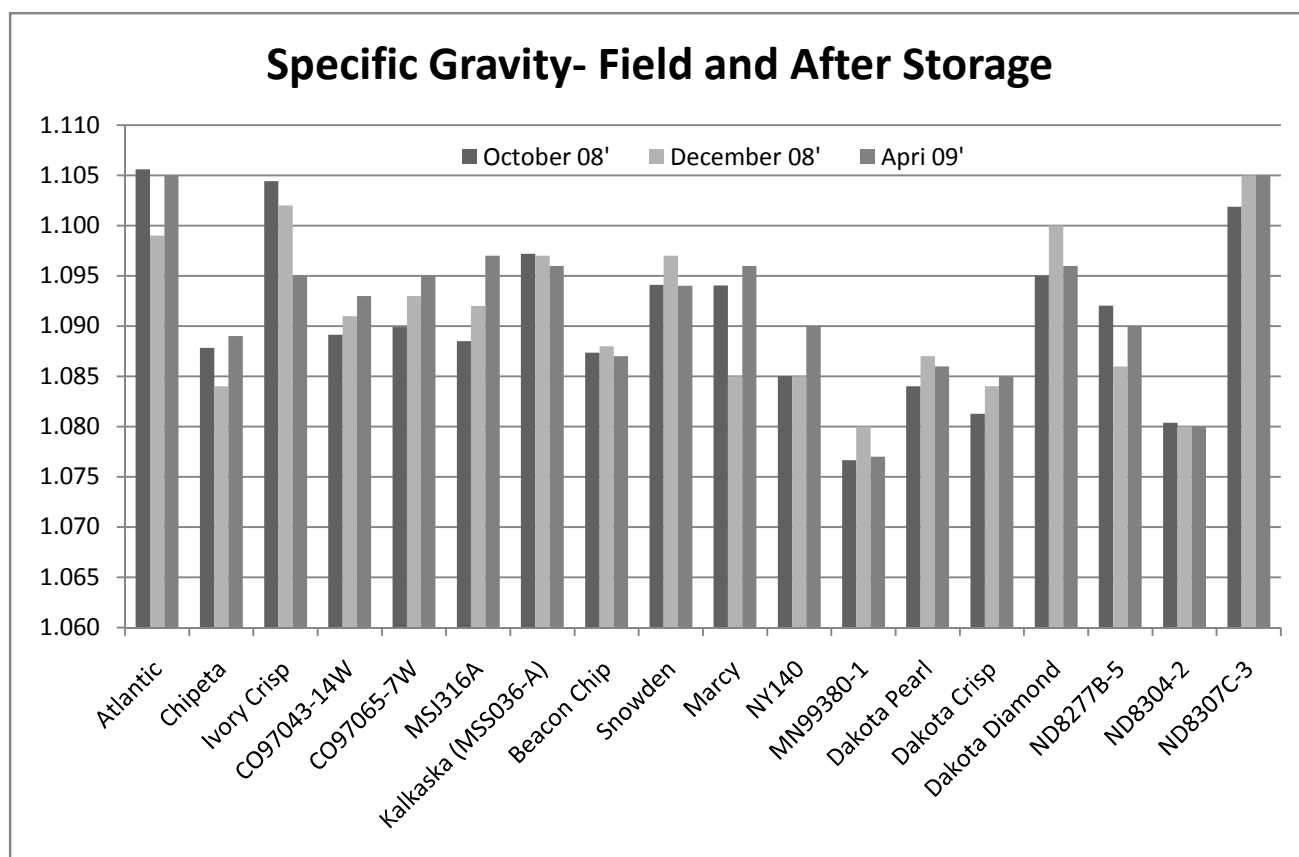
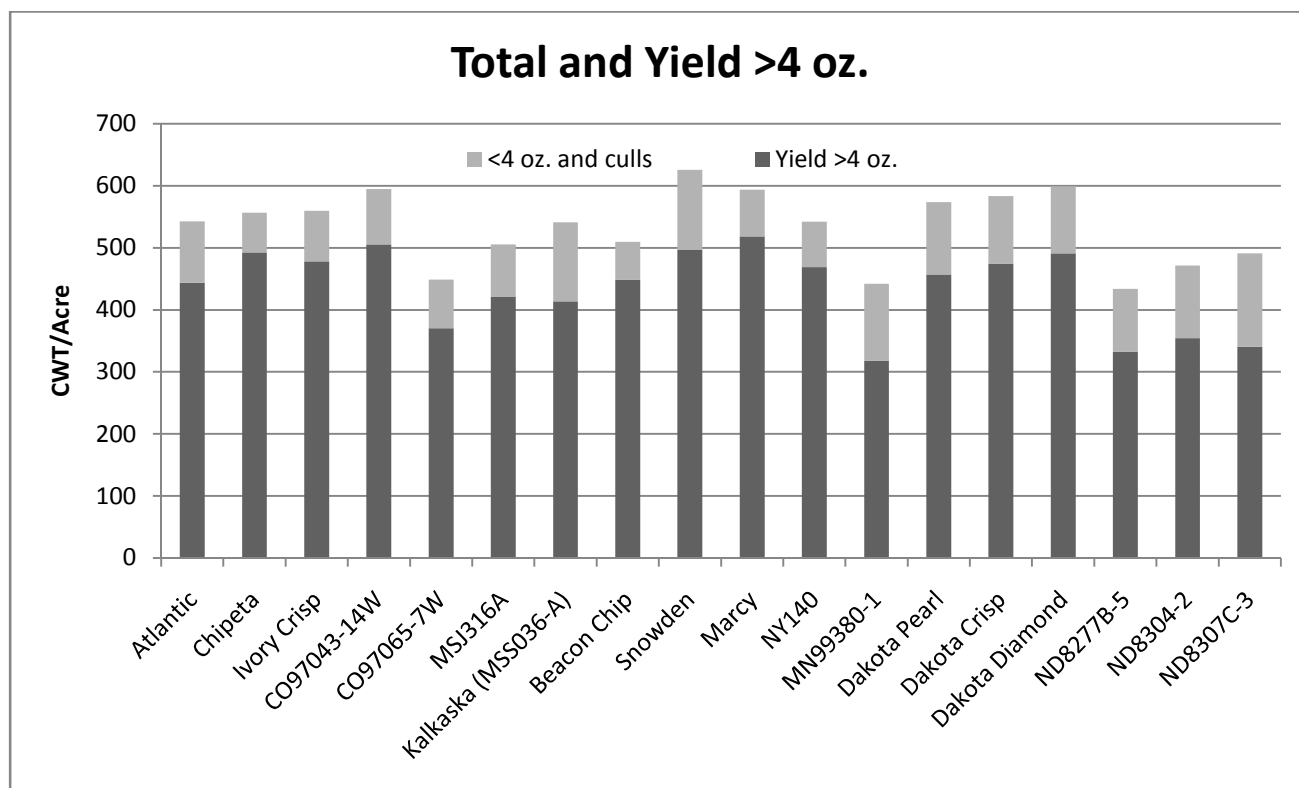
²% Total Defects = % of finished chips out of grade; includes internal & external defects (e.g. HH, Green, Dark Color, etc.)

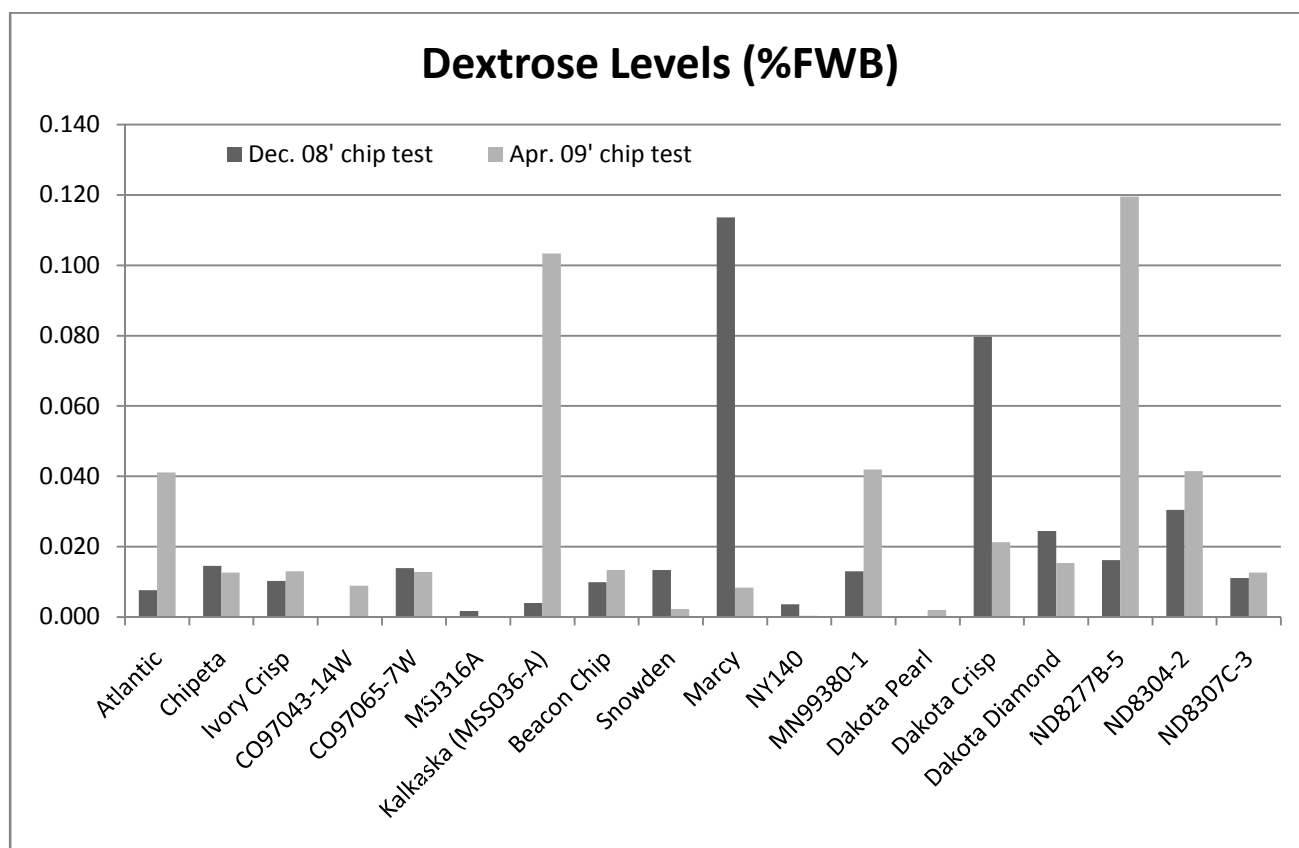
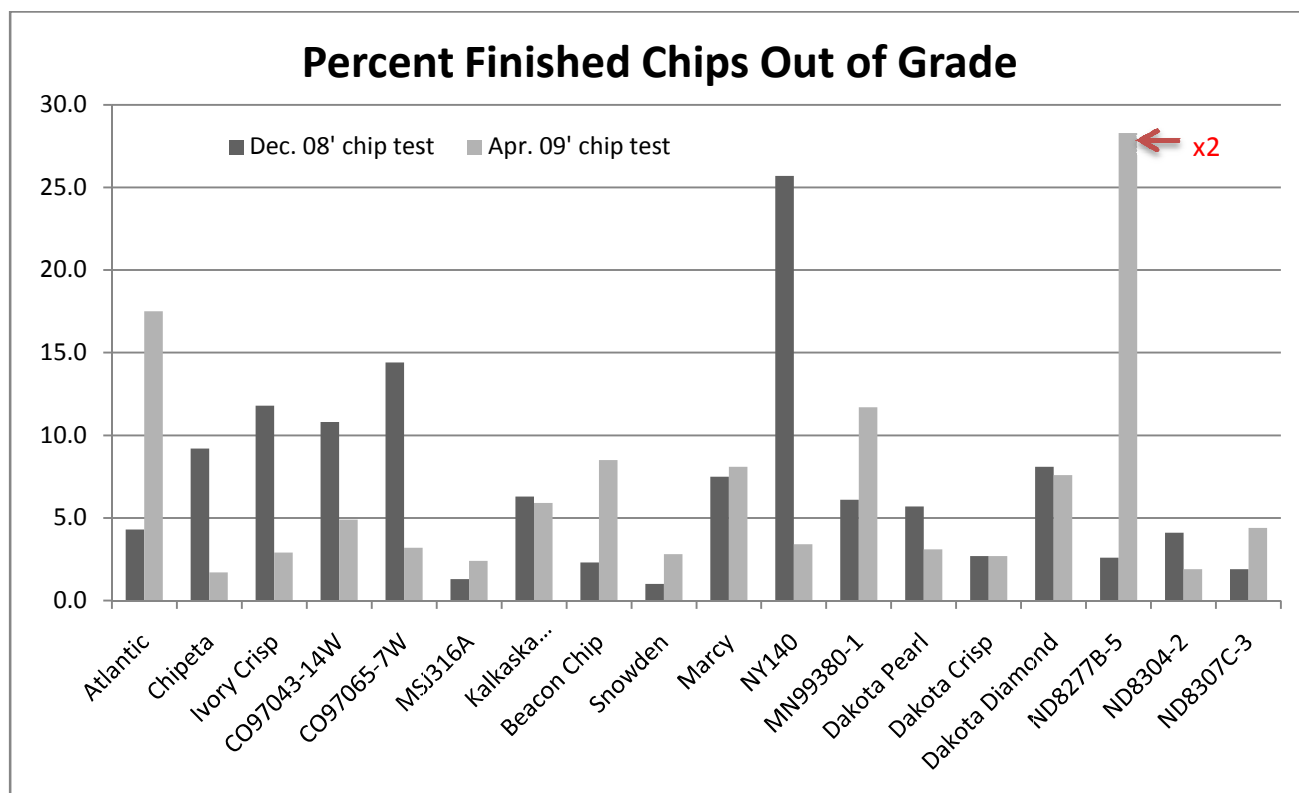
³Percent fresh weight basis measured after storage for 2 and 6 months at 50° F.

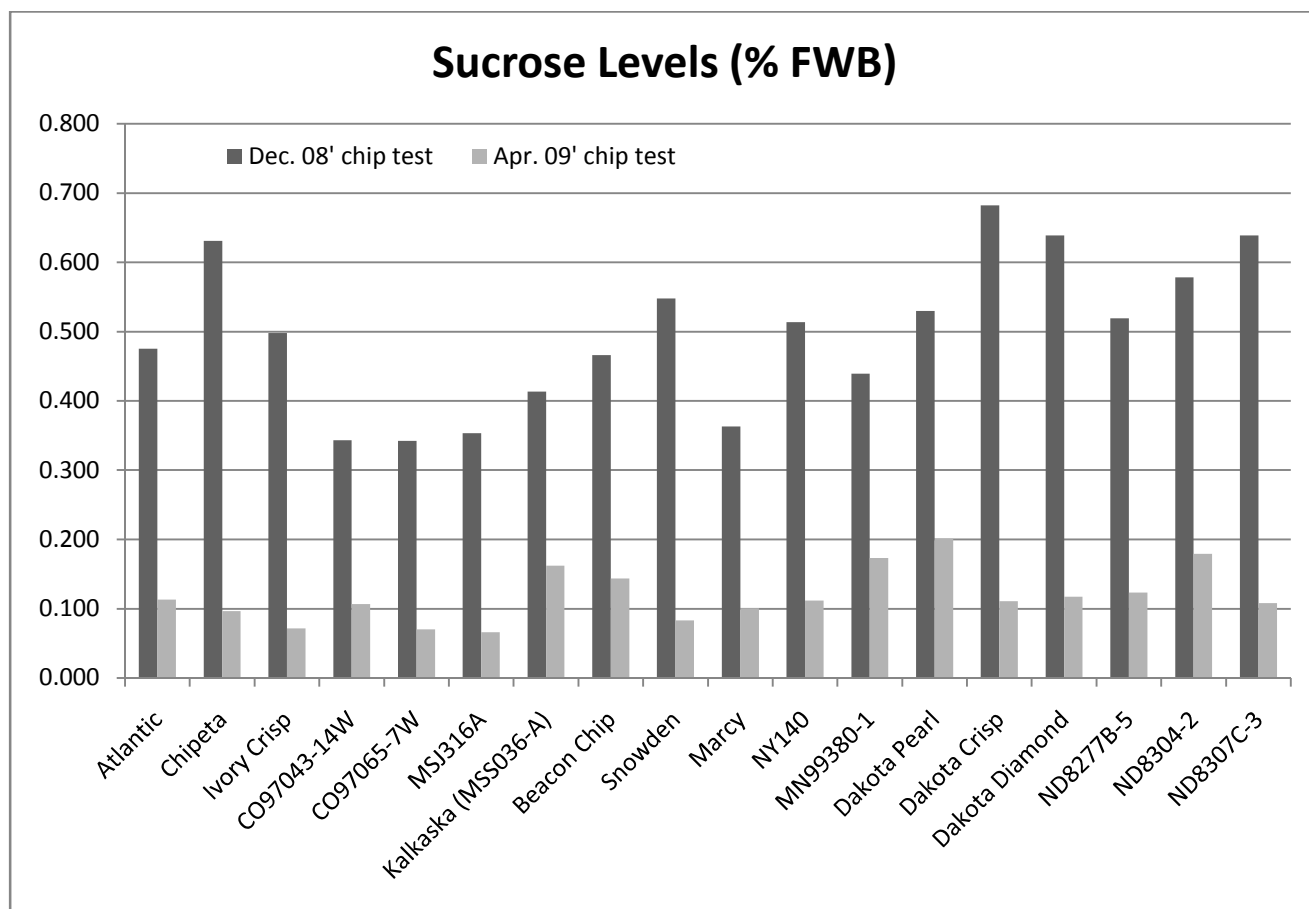
Entry	2008 KBREC-Chip Variety Trial Comment	Entry	2008 KBREC-Chip Variety Trial Comment
Atlantic		Chipeta	
	Flaky skin, russetting, fair		Uniform size, light russetting, fair-good
Ivory Crisp		CO97043-14W	
	Skin checking, round, nice		Folded bud-end, nice color, nice

CO97065-7W		MSJ316A	
 Exp.: Chip Plot: 303 Entry: 5	Small, folded bud-end, uniform	 Exp.: Chip Plot: 318 Entry: 6	Good size, fair
Kalkaska (MSS036-A)		Beacon Chip	
 Exp.: Chip Plot: 307 Entry: 7	Small, uniform, fair	 Exp.: Chip Plot: 306 Entry: 8	Some sprouting, large size
Snowden		Marcy	
 Exp.: Chip Plot: 312 Entry: 9	Russetting, uniform, good yield, flaky skin	 Exp.: Chip Plot: 309 Entry: 10	Very uniform, russetting, nice, keep
NY140		MN99380-1	
 Exp.: Chip Plot: 305 Entry: 11	Uniform size, sticky stolons, square shape	 Exp.: Chip Plot: 301 Entry: 12	100% sprouted, yellow, smooth

Dakota Pearl		Dakota Crisp	
	Best of trial, light color, uniform, smooth		Peeping eyes, round, nice
Dakota Diamond		ND8277B-5	
	Smooth skin, nice color, fair		Nice, small, smooth
ND8304-2		ND8307C-3	
	Round, low yield, sprouts		Shatter, small, drop







Russet Cultivar Spacing Trial

In 2008 five promising advanced russet-type selections from the Tri-State breeding program were evaluated against Russet Norkotah under three different in-row seed spacing regimes (6.75, 9.25, and 12.5 inches). Results will help commercial growers choosing to trial these cultivars optimize yield and grade for highest economic returns. Trial was analyzed as a split-plot design by spacing.

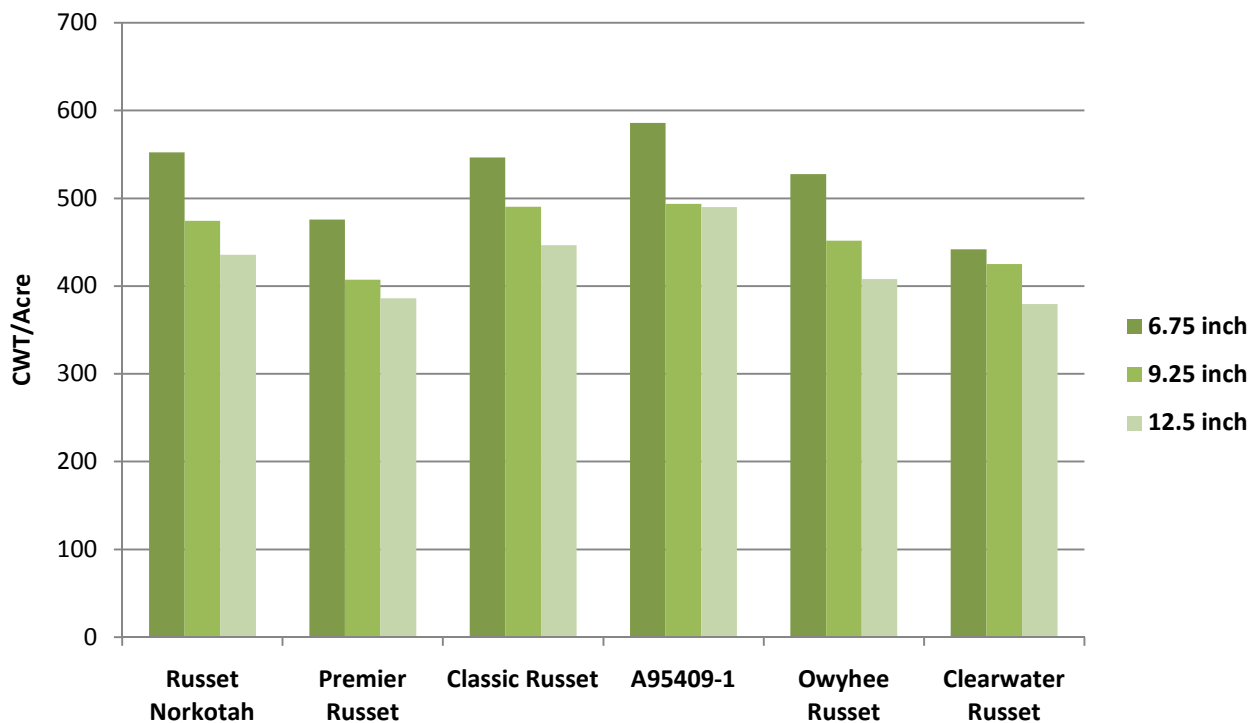
Variety	Trt. ¹	Yield U.S. No. 1s				Yield			Total
		4-8 oz	8-12 oz	> 12 oz	Total	< 4 oz	No. 2's	culls	
		cwt/acre							
Russet Norkotah	1	168	148	66	382	84	54	33	552
	2	113	129	100	342	59	42	32	474
	3	130	97	79	306	49	46	35	436
Premier Russet	1	152	106	45	301	84	40	51	476
	2	125	118	53	296	53	35	24	407
	3	107	91	62	260	43	45	38	386
Classic Russet	1	202	162	34	399	86	42	21	547
	2	159	159	49	367	53	50	21	491
	3	144	152	18	315	47	60	26	447
A95409-1	1	174	127	76	376	78	70	62	586
	2	126	104	84	315	67	73	39	494
	3	141	111	53	305	78	71	37	490
Owyhee Russet	1	188	138	53	379	95	34	20	528
	2	174	98	50	322	87	28	15	452
	3	137	125	48	311	64	16	18	408
Clearwater Russet	1	198	90	22	310	105	12	15	442
	2	172	106	40	317	77	18	13	425
	3	147	93	24	264	80	25	11	380
Variety Main Effect:									
Russet Norkotah		137	125	81	343	64	47	33	487
Premier Russet		128	105	53	286	60	40	37	423
Classic Russet		168	158	34	360	62	50	22	495
A95409-1		147	114	71	332	74	71	46	523
Owyhee Russet		166	120	50	337	82	26	18	462
Clearwater Russet		172	96	29	297	87	18	13	416
Mean		153	120	53	326	71	42	28	468
CV (%)		14	19	44	11	20	46	41	8
LSD (0.05)		17	19	19	29	12	16	10	31
Spacing Main Effect:									
1		180	128	49	358	89	42	34	522
2		145	119	63	326	66	41	24	457
3		134	111	47	293	60	44	27	424
CV (%)		7	14	29	9	15	23	31	6
LSD (0.05)		18	NS	NS	NS	18	NS	NS	46

Variety	Trt. ¹	Specific Gravity	Internal Defects ²		
			HH	VD	SEB
			%		
Russet Norkotah	1	1.080	35	3	0
	2	1.079	63	0	0
	3	1.077	40	0	0
Premier Russet	1	1.093	45	0	0
	2	1.094	43	0	0
	3	1.091	38	0	0
Classic Russet	1	1.088	3	3	0
	2	1.088	0	0	0
	3	1.088	3	0	0
A95409-1	1	1.090	0	0	0
	2	1.091	0	0	0
	3	1.088	0	0	0
Owyhee Russet	1	1.094	0	10	15
	2	1.090	0	10	8
	3	1.093	0	5	8
Clearwater Russet	1	1.089	10	3	0
	2	1.092	13	0	3
	3	1.089	13	0	0
Variety Main Effect:					
Russet Norkotah		1.079	46	1	0
Premier Russet		1.092	42	0	0
Classic Russet		1.088	2	1	0
A95409-1		1.089	0	0	0
Owyhee Russet		1.092	0	8	10
Clearwater Russet		1.090	12	1	1
CV (%)		0.195	97	267	285
LSD (0.05)		0.002	14	4	4
Spacing Main Effect:					
1		1.089	16	3	3
2		1.089	20	2	2
3		1.088	16	1	1
CV (%)		0.0001	37	95	123
LSD (0.05)		NS	NS	NS	NS

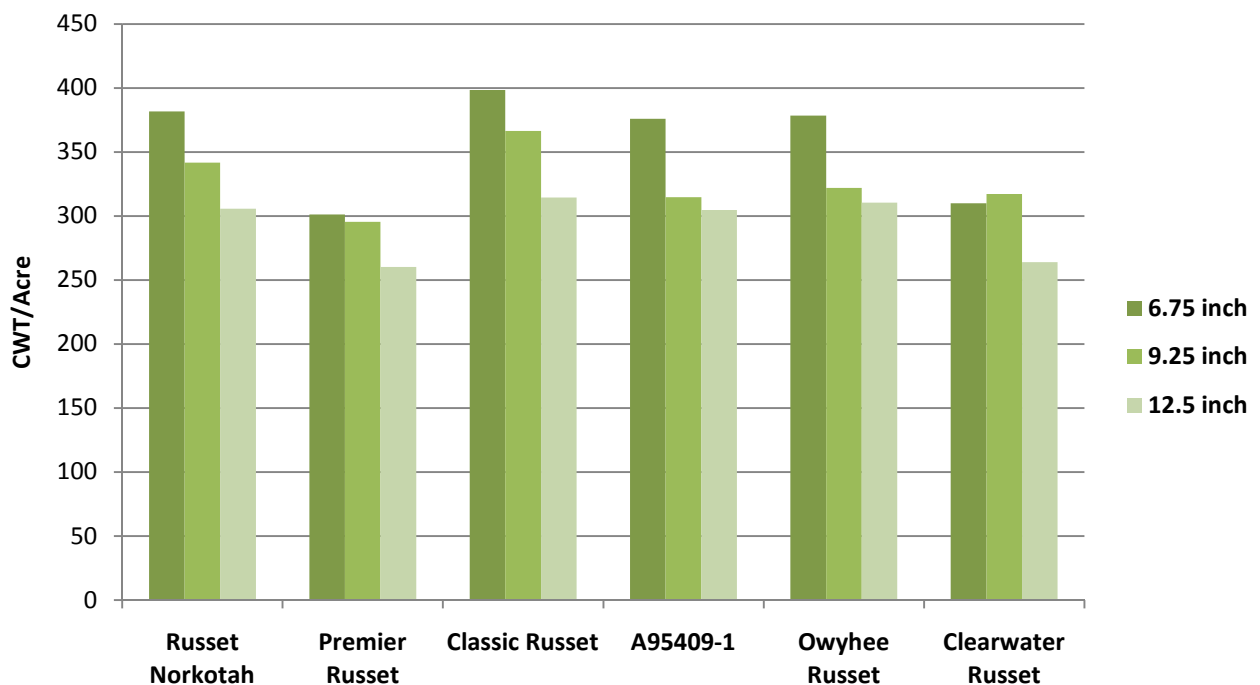
^{1/}Treatment seed spacing: 1 = 6.75 inch, 2 = 9.25 inch, 3 = 12.5 inch

^{2/}Internal defects: HH=hallow heart, BC=brown center, IBS=internal brown spot, HB=hard bite

Total Yield at Three Different Plant Spacings

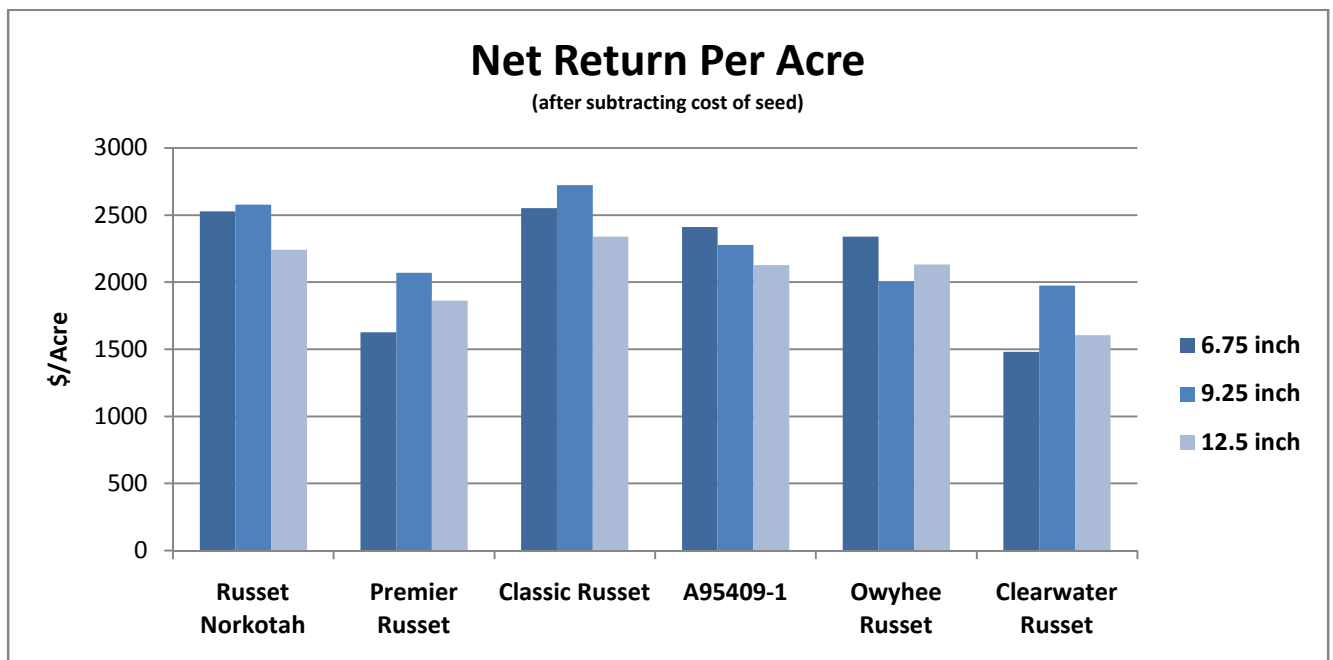
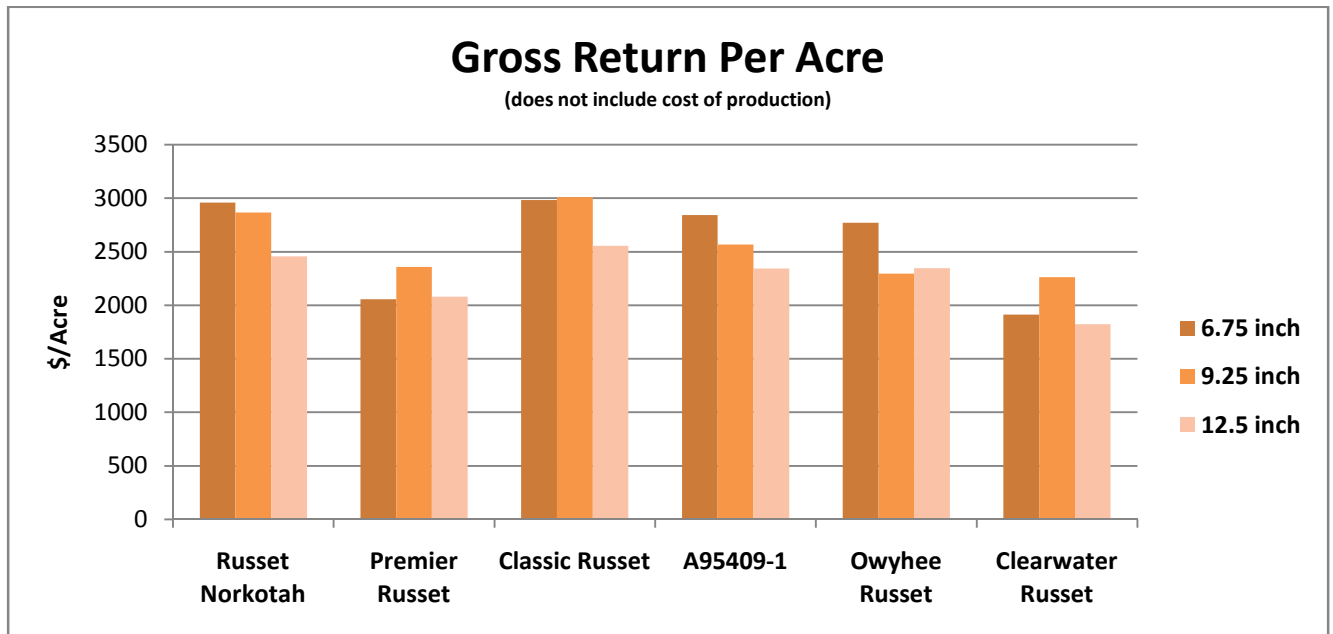


US #1 Yield >4 oz.



➤ Seed Spacing Economics

The following returns per acre are an estimate of gross returns per acre following the parameters outlined on page 11 of this publication. **They do not take into account the cost of production per acre.** As expected, pack types and prices vary from one packing shed to another and this was our best effort at estimating average returns basin wide over 4 years. The second bar graph takes the cost of buying seed at different plant populations and subtracts it from the gross return.



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