2023

Potato Variety Development

In Tulelake, CA

Three variety trials were grown at the Intermountain Research and Extension Center during 2023.

Trials were categorized by their market type and included russet, specialty and chip.

Trial results are summarized in this report.

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RESEARCH REPORT
Number 205, 2023

2023 Annual Progress Report
Potato Variety Development in Tulelake

Rob Wilson: Center Director/Farm Advisor
Email: rgwilson@ucanr.edu
Phone: (530) 667-5117
Fax: (530) 667-5265

Darrin Culp: Superintendent of Agriculture
Email: daculp@ucanr.edu
Phone: (530) 667-5117

Kevin Nicholson: Staff Research Associate II
Email: kwnicholson@ucanr.edu
Prepared Report

Three potato variety trials were conducted at the Intermountain Research and Extension Center (IREC) in Tulelake, CA. Trials were categorized by market type and included a Russet trial with 17 entries, a Specialty trial with 15 entries, and a Chipping trial with 11 entries. Entries included selections from the Western Regional (WR) variety development program, Southwest Regional (SWR) variety development program, and varieties of local interest. Funding for this project was received from the the USDA-NIFA grant # 2021-34141-35449.

Weather data can be found at: http://www.cimis.water.ca.gov Station # 91.

Late Russet Variety Trial

The Late Russet Variety Trial is a combination of sisxteen entries from the Western Regional Variety Trial (WR) and one entry from the Southwest Regional Trial (SWR). Merit scoring and culls were evaluated considering fresh market standards, given most Russets grown in Tulelake, CA are sold for fresh market. Important characteristics for the local area include total yield, percent US No. 1 yield, fresh merit score, tuber shape uniformity, low internal and external defects, and resistance to early-dying. See Tables 1-4 for Russet results and Figure 1 for entry pictures and comments.

Trial Information

Location:	Intermountain Research and Extension Center, Tulelake, CA
Soil Type:	Tulebasin mucky silty clay loam
Planting Date:	May 19th
Vine Kill Date:	August 28th & September 7th
Days to Vine Kill:	111
Harvest Date:	September 26th
Irrigation:	Solid-set sprinklers; applied water + precipitation = 22.6 inches
Plot Length:	18.3 Feet
In-Row Spacing:	10 Inches
Row Spacing:	36 Inches
Number of Reps:	4
# of Fertilizer/Acre:	120-0-300
Seed Treatment:	Maxim 4FS and Fir Bark Dust
Weed Control:	Prowl H20, Outlook, Matrix
Insecticides:	Admire Pro (In-furrow) Vydate (Chemigation)
Fungicides:	Vellum Prime & Quadris (In-furrow), Luna Tranquiltiy & Manzate Max (Chemigation)
Vine Kill Method:	Rolling and Reglone at labeled rates

Table 1. Tuber Yield and Size of Russet Potato Entries.

				Tuber Yield (cwt/A)[1]															
								U.S. No. 1's											
	Trial	%1's		U.S. 1's		Total		>14oz		10-14oz		6-10oz		4-6oz		<4oz		Culls + 2's	
Clearwater Russet	WR	84.1	abcd	364.5	bcde	434.1	bcd	47.7	bcd	85.2	cde	152.7	abcd	78.9	abcdef	47.1	bcdefg	22.6	ab
Ranger Russet	WR	86.5	abc	338.4	cdef	395.3	de	52.7	bcd	81.4	cde	140.4	abcd	63.9	cdefg	41.0	cdefg	15.9	b
Ruset Burbank	WR	75.6	cd	284.6	efgh	382.7	def	6.1	d	43.7	e	130.0	bcd	104.7	ab	87.9	a	10.2	b
A09086-1LB	WR	83.1	abcd	447.5	bc	539.3	b	37.8	cd	90.4	cde	201.7	ab	117.6	a	78.1	ab	13.7	b
A10594-4sto	WR	83.8	abcd	345.4	cdef	411.9	cde	24.8	d	59.3	de	179.8	abcd	81.6	abcde	53.7	bcde	12.8	b
A12169-5	WR	87.2	abc	413.1	bcd	474.6	bcd	131.5	a	111.1	bcd	126.2	bcd	44.3	efgh	22.7	efg	38.8	ab
A12305-2adg	WR	94.9	a	571.0	a	601.2	a	106.8	abc	206.7	a	217.2	a	40.4	fgh	19.3	fg	10.9	b
A13036-12	WR	87.0	abc	222.9	gh	256.7	g	118.5	ab	58.2	de	31.6	e	14.7	h	15.1	g	18.7	ab
AC12090-3RU	WR	71.4	d	194.5	h	273.2	fg	44.3	bcd	50.9	de	59.7	de	39.6	gh	25.8	defg	52.8	a
AFA5661-8	WR	89.4	ab	465.2	b	521.2	abc	72.3	abcd	166.0	ab	177.2	abcd	49.8	defgh	23.0	efg	33.0	ab
AOR11217-3	WR	86.0	abc	468.2	ab	545.7	ab	52.1	bcd	134.4	bc	192.3	b	89.5	abc	52.3	bcdef	25.1	ab
AOR13064-2	WR	85.1	abc	352.9	cde	414.3	cd	50.2	bcd	80.2	cde	139.2	abcd	83.4	abcd	43.9	cdefg	17.6	ab
CO13003-1RU	WR	81.9	abcd	313.6	defg	382.3	def	27.9	d	48.0	de	153.1	abcd	84.5	abcd	63.5	abc	5.3	b
COTX08063-2Ru	WR	86.1	abc	316.4	defg	367.3	defg	31.5	cd	68.9	de	142.1	abcd	73.9	bcdefg	41.7	cdefg	9.2	b
Russet Norkotah	WR	82.8	abcd	318.1	defg	384.0	def	15.9	d	64.5	de	144.6	abcd	93.2	abc	51.7	bcdef	14.2	b
COTX10080-2Ru	WR	83.7	abcd	323.9	defg	386.8	def	14.8	d	62.7	de	150.0	abcd	96.4	abc	57.6	abcd	5.3	b
CO15016-1RUsto	SWR	79.3	bcd	235.7	fgh	296.6	efg	12.8	d	39.9	e	102.1	cde	80.9	abcde	48.3	bcdefg	12.6	b
Mean		**84.0**		**351.5**		**415.7**		**49.9**		**85.4**		**143.5**		**72.8**		**45.4**		**18.7**	

[1]Mean comparisons were performed using Tukey's-Kramer HSD; means with the same letter within columns are not significantly different

Table 2. External Tuber Characteristics of Russet Potato Entries.

	Trial	Merit Score[1]	Russeting[2]	Eye Depth[3]	Shape Uniformity[4]	Length/Depth Ratio[5]	Length/Width Ratio[5]
Clearwater Russet	WR	3.5	4.0	4.0	4.0	2.18	1.77
Ranger Russet	WR	3.0	3.0	3.0	3.5	2.58	2.18
Ruset Burbank	WR	3.0	4.0	3.0	3.0	2.43	1.93
A09086-1LB	WR	2.5	2.5	2.5	3.0	2.07	1.76
A10594-4sto	WR	3.0	2.5	3.5	4.0	2.05	1.69
A12169-5	WR	3.0	3.0	3.0	2.5	1.97	1.67
A12305-2adg	WR	4.0	4.0	3.5	4.0	2.00	1.80
A13036-12	WR	2.5	4.0	2.5	1.5	1.80	1.50
AC12090-3RU	WR	2.5	4.0	4.5	2.0	2.36	2.07
AFA5661-8	WR	3.0	2.5	3.0	3.0	2.07	1.69
AOR11217-3	WR	3.5	4.0	3.0	4.0	2.05	1.81
AOR13064-2	WR	3.0	3.5	3.5	2.5	1.77	1.53
CO13003-1RU	WR	4.0	4.5	4.0	3.0	1.98	1.66
COTX08063-2Ru	WR	2.5	2.5	3.0	3.0	2.18	1.88
Russet Norkotah	WR	3.5	4.0	3.0	3.5	2.03	1.80
COTX10080-2Ru	WR	3.5	3.5	3.5	3.5	2.31	2.00
CO15016-1RUsto	SWR	3.0	4.0	4.5	3.5	2.04	1.78
Mean		**3.1**	**3.5**	**3.4**	**3.1**	**2.11**	**1.80**

[1] 1=Worst, 5=Best - Fresh Market Russet Merit Score takes into account multiple factors including tuber shape, eye depth, russeting, and shape uniformity
[2] 1=Light,5=Heavy
[3] 1=Deep, 5=Shallow
[4] 1= Non Uniform, 5=Very Uniform
[5] Ratio of 10 tubers measured from each plot, 8-14 oz size class.

Table 3. Tuber Defects of Russet Potato Entries.

	Trial	Hollow Heart[1]	Stem-end Necrosis[1]	Vascular Discoloration[1]	Knobs[2]	Growth Crack[2]	Irregular Shaped[2]	Greening[2]
		%	%	%	%	%	%	%
Clearwater Russet	WR	0.0	0.0	6.7	2.8 b	0.0 b	0.5 a	0.5 a
Ranger Russet	WR	0.0	0.0	13.3	2.0 b	0.8 b	0.8 a	0.3 a
Ruset Burbank	WR	0.0	6.7	6.7	1.0 b	0.0 b	1.0 a	0.0 a
A09086-1LB	WR	0.0	0.0	6.7	1.0 b	0.0 b	0.5 a	0.5 a
A10594-4sto	WR	0.0	6.7	6.7	1.5 b	0.3 b	0.5 a	0.0 a
A12169-5	WR	0.0	0.0	16.7	2.0 b	2.8 a	1.5 a	0.0 a
A12305-2adg	WR	0.0	3.3	6.7	1.0 b	0.0 b	0.3 a	0.3 a
A13036-12	WR	10.0	3.3	6.7	4.3 b	0.5 b	2.3 a	1.3 a
AC12090-3RU	WR	7.0	3.3	3.3	13.8 a	0.0 b	0.0 a	1.0 a
AFA5661-8	WR	0.0	6.7	10.0	3.0 b	0.0 b	0.5 a	0.5 a
AOR11217-3	WR	0.0	0.0	13.3	2.0 b	0.0 b	0.5 a	0.5 a
AOR13064-2	WR	33.0	0.0	6.7	2.3 b	0.0 b	1.0 a	0.0 a
CO13003-1RU	WR	0.0	0.0	3.3	0.5 b	0.3 b	0.3 a	0.5 a
COTX08063-2Ru	WR	0.0	0.0	13.3	1.5 b	0.0 b	0.3 a	0.8 a
Russet Norkotah	WR	7.0	0.0	3.3	2.0 b	0.0 b	0.8 a	0.3 a
COTX10080-2Ru	WR	0.0	0.0	0.0	0.8 b	0.0 b	1.0 a	0.5 a
CO15016-1RUsto	SWR	0.0	0.0	3.3	1.5 b	0.0 b	0.8 a	0.0 a
Mean		**3.0**	**1.8**	**7.5**	**2.5**	**0.3**	**0.7**	**0.4**

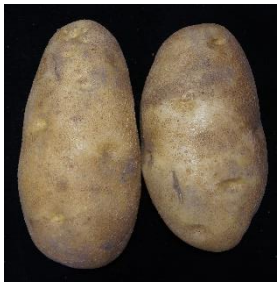
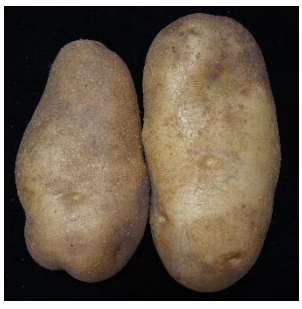
[1] Thirty, 8 to 14 oz. tubers were evaluated from each plot.
[2] Percent of total tubers.

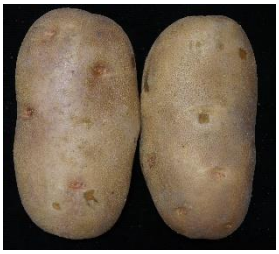
Table 4. Stand, Tuber Set, Average Tuber Size and Specific Gravity of Russet Potato Entries.

	Trial	% Stand	Tubers per Plant	Average Tuber Size	Specific Gravity	Early Dying[1] (A.U.D.P.C.)
Clearwater Russet	WR	90 ab	6.8 abcd	6.6 cde	1.076 bcde	184
Ranger Russet	WR	93 a	5.7 bcde	6.9 cd	1.078 bcde	321
Ruset Burbank	WR	93 a	7.5 ab	5.1 f	1.070 efg	1281
A09086-1LB	WR	94 a	8.7 a	6.1 def	1.082 b	645
A10594-4sto	WR	94 a	6.6 bcde	6.2 de	1.072 cdef	1610
A12169-5	WR	91 ab	5.3 de	9.2 ab	1.080 bcd	315
A12305-2adg	WR	92 a	6.7 bcd	9.0 b	1.078 bcde	321
A13036-12	WR	94 a	2.5 f	10.0 a	1.072 cdef	532
AC12090-3RU	WR	75 b	4.7 e	7.3 c	1.072 defg	285
AFA5661-8	WR	98 a	5.8 bcde	8.5 b	1.081 bc	195
AOR11217-3	WR	99 a	7.3 abc	6.9 cd	1.082 ab	640
AOR13064-2	WR	93 a	6.2 bcde	6.6 cde	1.080 bcd	915
CO13003-1RU	WR	91 ab	6.8 abcd	5.7 ef	1.078 bcde	485
COTX08063-2Ru	WR	95 a	5.5 cde	6.5 cde	1.091 a	670
Russet Norkotah	WR	99 a	6.0 bcde	6.0 def	1.067 fg	2032
COTX10080-2Ru	WR	92 a	6.7 bcd	5.8 ef	1.063 g	480
CO15016-1RUsto	SWR	91 ab	5.2 de	5.7 ef	1.070 efg	885
Mean		**93**	**6.1**	**6.9**	**1.076**	**694**

[1]Area Under Disease Progress Curve based on foliar early-dying ratings taken 60, 67, 76, 82 and 91 days after planting. Higher value is more susceptible

Figure 1. 2022 Late Russet Trial Entries.

Clearwater Russet	Ranger Russet	Russet Burbank
		
• Check	• Check	• Check
A09086-1LB	**A10594-4sto**	**A12169-5**
		
• Light russeting with splotches of heavy russeting • Some lumpy tubers	• Shape desirable for fresh market	• Irregular shaped
A12305-2adg	**A13036-12**	**AC12090-3RU**
		
• Shape desirable for fresh market	• Poor uniformity • Lumpy • Significant black leg in all reps mid-season	• Pink eyes, lumpy

AFA5661-8	AOR11217-3	AOR13064-2
		
• Light russeting • Shape desirable for fresh market	• Uniform shape	• Low uniform score
CO13003-1RU	**COTX08063-2Ru**	**Russet Norkotah**
		
• Heavy russeting	• Pink eyes/discoloration on skin	• Check
COTX10080-2Ru	**CO15016-1RUsto**	
		
• Nice fresh market shape	• Skins easily • Shallow eyes	

Red/Specialty Variety Trial

The Red/Specialty Trial included fourteen entries from the Western Regional Variety Trial (WR) and one entry from the South West Region Variety Trial (SWR). Important vine and tuber characteristics for fresh market red/specialty types include: skin and flesh color, fresh merit score, tuber shape, tuber uniformity, tubers per plant, and average tuber size. See Tables 5-9 for Red/Specialty trial results and Figure 2 for entry pictures and comments.

Trial Information

Location:	Intermountain Research and Extension Center, Tulelake, CA
Soil Type:	Tulebasin mucky silty clay loam
Planting Date:	May 19th
Vine Kill Date:	August 28th & September 7th
Days to Vine Kill:	111
Harvest Date:	September 27th
Irrigation:	Solid-set sprinklers; applied water + precipitation = 22.6 inches
Plot Length:	18.3 Feet
In-Row Spacing:	10 Inches
Row Spacing:	36 Inches
Number of Reps:	4
# of Fertilizer/Acre:	120-0-300
Seed Treatment:	Maxim 4FS and Fir Bark Dust
Weed Control:	Prowl H20, Outlook, Matrix
Insecticides:	Admire Pro (In-furrow) Vydate (Chemigation)
Fungicides:	Vellum Prime & Quadris (In-furrow), Luna Tranquiltiy & Manzate Max (Chemigation)
Vine Kill Method:	Rolling and Reglone at labeled rates

Table 5. Skin and Flesh Characteristics of Specialty Potato Entries.

Clone / Variety	Trial	Skin Color	Skin Color Rating[1]	Flesh Color	Flesh Color Rating[1]
Chieftain	**WR**	Red	2.0	White	2.0
Modoc	**WR**	Red	4.0	White	2.0
A08122-9RY	**WR**	Red	2.0	Yellow	3.5
A11582-1R	**WR**	Red	4.0	White	2.0
Yukon Gold	**WR**	Yellow	1.5	Yellow	3.5
A11573-5RYsto	**WR**	Red	3.0	Yellow	3.0
AC10376-2012-1W/Y	**WR**	Red	1.5	Yellow	4.0
AORTX09037-5W/Y	**WR**	Yellow	1.5	White	1.5
NDTX081451CB-1Y/Y	**WR**	Yellow	1.5	Yellow	3.0
POR16PG34-1	**WR**	Yellow	1.5	Yellow	3.5
Purple Majesty	**WR**	Purple	5.0	Purple	5.0
COTX08365f-3P/P	**WR**	Purple	5.0	Purple	4.0
POR16PG25-2	**WR**	Purple	5.0	Purple	5.0
POR189G54-1	**WR**	Purple	5.0	Purple	5.0
CO15084-4R	**SWR**	Red	4.0	White	2.0

[1]1=Light, 5=Dark; Reds and purples were rated using red/purple color scale. Yellows were rated using a white/yellow color scale. All varieties were rated using the same internal flesh darkness scale.

Table 6. Tuber Yield and Size of Specialty Potato Entries.

		Tuber Yield (cwt/A)[1]															
Clone / Variety	Trial	Total Yield		10-14 oz		6-10 oz		4-6 oz		< 4oz		> 14 oz		Undersize		Culls	
Chieftain	WR	500.6	abcde	109.4	a	140.0	ab	68.0	cde	40.9	fg	107.2	a	17.1	fg	18.1	bc
Modoc	WR	404.3	de	28.4	bcd	123.2	abcd	113.8	abcde	95.5	de	6.8	bc	25.0	fg	11.6	c
A08122-9RY	WR	466.7	abcde	0.0	d	88.4	bcde	142.7	abc	155.0	bc	0.0	c	67.3	cde	13.2	c
A11582-1R	WR	539.3	abcd	7.0	cd	82.8	bcde	162.3	a	184.2	b	0.0	c	79.9	cde	23.2	bc
Yukon Gold	WR	340.5	e	62.0	ab	113.5	bcd	55.5	de	42.5	fg	48.6	b	9.4	g	9.2	c
A11573-5RYsto	WR	600.9	ab	2.6	cd	77.4	bcde	164.3	a	240.4	a	0.0	c	108.2	bc	8.0	c
AC10376-2012-1W/Y	WR	621.8	a	0.0	d	51.8	cde	156.0	ab	276.3	a	0.0	c	126.9	b	10.8	c
AORTX09037-5W/Y	WR	432.1	cde	1.4	cd	53.0	cde	115.8	abcd	189.0	b	0.0	c	69.0	cde	4.0	c
NDTX081451CB-1Y/Y	WR	588.0	abc	0.0	d	31.0	e	93.0	abcde	278.2	a	0.0	c	182.7	a	3.2	c
POR16PG34-1	WR	393.7	de	0.0	d	44.5	de	81.3	bcde	153.9	bc	0.0	c	87.3	bc	26.7	bc
Purple Majesty	WR	437.5	cde	48.4	bcd	127.4	abc	95.2	abcde	82.5	ef	10.3	bc	25.3	fg	48.5	b
COTX08365f-3P/P	WR	509.7	abcd	4.0	cd	120.9	bcd	144.9	ab	141.5	bcd	0.0	c	80.6	cde	17.9	bc
POR16PG25-2	WR	570.2	abc	51.3	bc	203.4	a	150.1	ab	108.9	cde	1.7	c	42.6	efg	12.3	c
POR189G54-1	WR	447.7	bcde	104.5	a	147.4	ab	38.2	e	25.6	g	43.1	bc	4.8	g	84.2	a
CO15084-4R	SWR	426.1	cde	6.6	cd	84.0	bcde	123.9	abcd	144.0	bcd	0.0	c	57.2	def	10.4	c
Mean		**485.3**		**28.4**		**99.2**		**113.7**		**143.9**		**14.5**		**65.6**		**20.1**	

[1]Mean comparisons were performed using Tukey's-Kramer HSD; means with the same letter within columns are not significantly different

Table 7. External Tuber Characteristics of Specialty Potato Entries.

Clone / Variety	Trial	Merit[1]	Eye Depth[2]	Tuber Shape[3]	Shape Uniformity[4]	Length/ Depth Ratio[5]	Length/ Width Ratio[5]
Chieftain	**WR**	3.0	3.5	3.0	3.0	1.46	1.14
Modoc	**WR**	3.0	4.0	3.0	3.5	1.39	1.13
A08122-9RY	**WR**	3.5	3.0	1.5	4.0	1.17	1.01
A11582-1R	**WR**	3.0	3.0	3.0	2.5	1.45	1.18
Yukon Gold	**WR**	3.0	3.5	2.5	2.5	1.27	1.04
A11573-5RYsto	**WR**	3.5	3.0	2.5	3.5	1.10	0.90
AC10376-2012-1W/Y	**WR**	1.0	3.0	3.0	3.0	1.33	1.13
AORTX09037-5W/Y	**WR**	3.0	3.5	2.0	3.5	1.23	1.06
NDTX081451CB-1Y/Y	**WR**	3.5	4.0	3.0	2.5	1.52	1.23
POR16PG34-1	**WR**	3.0	3.0	1.5	3.5	1.18	1.07
Purple Majesty	**WR**	3.0	3.0	4.0	3.0	2.13	1.79
COTX08365f-3P/P	**WR**	3.0	3.5	5.0	4.0	2.60	2.55
POR16PG25-2	**WR**	3.0	3.5	2.0	2.5	1.45	1.29
POR189G54-1	**WR**	2.5	3.0	2.0	2.0	1.27	1.11
CO15084-4R	**SWR**	3.0	4.0	3.0	3.0	1.30	1.07
Mean		**2.9**	**3.4**	**2.7**	**3.1**	**1.46**	**1.25**

[1] 1=Worst, 5=Best - Specialty Merit Score takes into account important appearance factors of the Specialty market including tuber shape, eye depth, and shape uniformity
[2] 1=Deep, 5=Shallow
[3] 1=Round, 5=Oblong
[4] 1= Poor uniformity, 5=Very Uniform
[5] Ratio of 10 tubers measured from the 10-14 oz category in each plot

Table 8. Tuber Defects of Specialty Potato Entries.

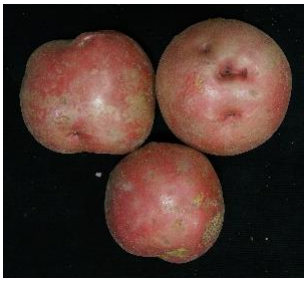
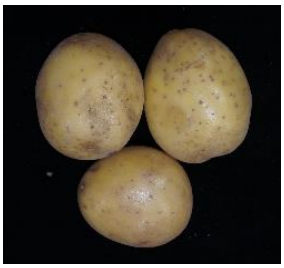
Clone / Variety	Trial	Stem End Necrosis[1]	Vascular Dicoloration[1]	Knobs[2]		Growth Crack[2]		Undersize[3]	
		%	%	%		%		%	
Chieftain	**WR**	3.3	0.0	1.0	b	1.3	b	3.4	fgh
Modoc	**WR**	3.3	0.0	1.0	b	0.5	b	6.2	efgh
A08122-9RY	**WR**	0.0	16.7	0.5	b	0.8	b	13.9	bcdef
A11582-1R	**WR**	0.0	16.7	2.5	ab	0.0	b	14.7	bcde
Yukon Gold	**WR**	3.3	3.3	1.0	b	0.0	b	3.2	gh
A11573-5RYsto	**WR**	0.0	13.3	0.3	b	0.0	b	18.0	bcd
AC10376-2012-1W/Y	**WR**	3.3	13.3	0.0	b	0.0	b	21.0	abc
AORTX09037-5W/Y	**WR**	0.0	3.3	0.5	b	0.0	b	16.1	bcde
NDTX081451CB-1Y/Y	**WR**	0.0	13.3	0.0	b	0.0	b	31.5	a
POR16PG34-1	**WR**	3.3	0.0	2.8	ab	1.5	b	24.0	ab
Purple Majesty	**WR**	0.0	3.3	3.0	ab	1.8	ab	5.8	efgh
COTX08365f-3P/P	**WR**	6.7	6.7	1.5	b	0.3	b	16.1	bcde
POR16PG25-2	**WR**	13.3	6.7	1.0	b	0.0	b	7.5	defgh
POR189G54-1	**WR**	0.0	6.7	0.6	a	4.5	a	1.0	h
CO15084-4R	**SWR**	0.0	16.7	1.3	b	0.0	b	13.4	cdefg
Mean		**2.4**	**8.0**	**1.5**		**0.7**		**13.0**	

[1] Thirty, 6-10oz. tubers were evaluated from each entry.
[2] Percent of total tubers.
[3] Percent of total CWT.

Table 9. Stand, Tuber Set, Average Tuber Size and Specific Gravity of Specialty Potato Entries.

Clone / Variety	Trial	% Stand		Tubers/Plant		Average Size (oz)		Specific Gravity		Early Dying[1] (A.U.D.P.C.)
Chieftain	**WR**	80	bc	9.0	fg	6.6	ab	1.071	abc	914
Modoc	**WR**	91	ab	9.6	efg	4.3	de	1.068	bc	1184
A08122-9RY	**WR**	95	ab	13.7	de	3.4	ef	1.072	abc	1034
A11582-1R	**WR**	100	a	15.5	cd	3.2	ef	1.070	abc	785
Yukon Gold	**WR**	88	ab	5.9	g	6.2	bc	1.076	abc	1478
A11573-5RYsto	**WR**	95	ab	19.1	bc	3.0	ef	1.084	a	485
AC10376-2012-1W/Y	**WR**	100	a	20.7	ab	2.8	f	1.072	abc	1410
AORTX09037-5W/Y	**WR**	93	ab	14.4	d	3.0	ef	1.077	ab	1045
NDTX081451CB-1Y/Y	**WR**	93	ab	24.1	a	2.4	f	1.085	a	1128
POR16PG34-1	**WR**	98	ab	13.8	de	2.7	f	1.075	abc	1348
Purple Majesty	**WR**	63	c	14.0	de	4.9	cd	1.076	abc	950
COTX08365f-3P/P	**WR**	100	a	12.9	def	3.7	def	1.076	abc	324
POR16PG25-2	**WR**	97	ab	12.4	def	4.4	de	1.080	ab	413
POR189G54-1	**WR**	98	ab	5.2	g	8.0	a	1.061	c	1210
CO15084-4R	**SWR**	95	ab	12.4	def	3.3	ef	1.071	abc	1408
Mean		**92**		**13.5**		**4.1**		**1.074**		**1007**

[1]Area Under Disease Progress Curve based on foliar early-dying ratings taken 60, 67, 76, 82 and 91 days after planting. Higher value is more susceptible

Cheiftain	Modoc	A08122-9RY
 • Check	 • Check	 • Resistant to skinning • Above avg russeting
A11582-1R	**Yukon Gold**	**A11573-5RYsto**
 • Nice color • Susceptible to black dot	 • Susceptible to black dot tuber blemish	 • Smooth skin • Powdery scab on tubers
AC10376-2012-1W/Y	**AORTX09037-5W/Y**	**NDTX081451CB-1Y/Y**
 • Inconsistent color splotches on skin • Unacceptable skin appearance for fresh market	 • Heavy russeting • Severe shatter bruise	 • A lot of ruptured lenticils

POR16PG34-1	Purple Majesty	COTX08365f-3P/P
 • Very susceptible to black dot • Nice round shape	 • Check	 • Fish netting on skin • Susceptible to black dot
POR16PG25-2	**POR189G54-1**	**CO15084-4R**
 • Fish netting on skin	 • Apple shape • Susceptible to black dot • Fish netting on skin	 • Loss of turgor in storage • Deep red color

Chipping Potato Variety Trial

The 2020 Chipping Trial included ten entries from the Western Regional Variety Trial (WR) and one entry from the Southwest Region (SWR). Important characteristics for processing chippers include: total yield, tubers per plant, tuber shape, tuber uniformity, average tuber size, and specific gravity. See Tables 10-13 for Chipping Trial results and Figure 3 for entry pictures and comments.

Trial Information

Location:	Intermountain Research and Extension Center, Tulelake, CA
Soil Type:	Tulebasin mucky silty clay loam
Planting Date:	May 19th
Vine Kill Date:	August 28th & September 7th
Days to Vine Kill:	111
Harvest Date:	October 3rd
Irrigation:	Solid-set sprinklers; applied water + precipitation = 22.6 inches
Plot Length:	18.3 Feet
In-Row Spacing:	10 Inches
Row Spacing:	36 Inches
Number of Reps:	4
# of Fertilizer/Acre:	120-0-300
Seed Treatment:	Maxim 4FS and Fir Bark Dust
Weed Control:	Prowl H20, Outlook, Matrix
Insecticides:	Admire Pro (In-furrow) Vydate (Chemigation)
Fungicides:	Vellum Prime & Quadris (In-furrow), Luna Tranquiltiy & Manzate Max (Chemigation)
Vine Kill Method:	Rolling and Reglone at labeled rates

Table 10. Tuber Yield and Size of Chipping Potato Entries.

			Tuber Yield (cwt/A)[1]											
Clone / Variety	Trial	Total	>14 oz		10-14 oz		6-10oz		4-6 oz		<4 oz		Culls	
Atlantic	**WR**	418.9	b	56.9	ab	65.7	bcd	140.8	c	77.1	cd	61.1	cde	17.4	bc
Lamoka	**WR**	534.1	ab	26.2	b	144.1	ab	223.9	abc	81.7	cd	36.0	ef	22.3	b
Snowden	**WR**	411.3	b	11.1	b	36.9	cd	147.2	c	120.7	abc	93.0	ab	2.3	c
A13125-3C	**WR**	612.8	a	33.8	b	100.6	bcd	259.4	ab	124.5	abc	52.6	cdef	41.9	a
AC13126-1Wadg	**WR**	488.8	ab	27.2	b	107.1	bc	215.6	abc	90.5	bcd	42.7	def	5.7	bc
CO12235-3W	**WR**	423.0	b	5.3	b	27.9	d	150.2	c	129.1	abc	104.6	a	6.0	bc
CO12293-1W	**WR**	613.7	a	7.4	b	79.4	bcd	292.4	a	160.4	a	71.1	bcd	3.0	c
COOR13270-2	**WR**	541.2	ab	34.5	ab	93.7	bcd	202.1	bc	113.1	abcd	81.4	abc	16.3	bc
NYOR14Q9-5	**WR**	562.3	ab	111.8	a	196.7	a	165.9	c	59.8	d	24.6	f	3.5	c
NYOR14Q9-9	**WR**	624.8	a	71.0	ab	98.1	bcd	223.6	abc	146.5	ab	70.8	bcd	14.9	bc
AC13125-5W	**SWR**	513.2	ab	41.6	ab	94.2	bcd	190.3	bc	105.9	abcd	65.9	bcde	15.4	bc
Mean		**522.2**		**38.8**		**94.9**		**201.0**		**109.9**		**64.0**		**13.5**	

[1]Mean comparisons were performed using Tukey's-Kramer HSD; means with the same letter within columns are not significantly different

Table 11. Merit Score and Tuber Characteristics of Chipping Potato Entries

Clone / Variety	Trial	Merit[1]	Eye depth[2]	Tuber Shape[3]	Shape Uniformity[4]	Length/Depth Ratio[5]	Length/Width Ratio[5]
Atlantic	**WR**	3.5	3.5	2.0	3.5	1.00	1.04
Lamoka	**WR**	3.5	3.5	2.0	3.5	1.00	1.08
Snowden	**WR**	3.5	4.0	2.0	4.0	1.00	0.96
A13125-3C	**WR**	3.5	4.0	2.0	4.0	1.00	1.08
AC13126-1Wadg	**WR**	3.5	4.0	2.0	3.0	1.00	0.97
CO12235-3W	**WR**	3.5	4.0	2.0	4.0	1.00	1.04
CO12293-1W	**WR**	3.5	4.0	1.5	3.5	1.00	1.03
COOR13270-2	**WR**	3.5	4.0	2.0	3.0	1.00	1.06
NYOR14Q9-5	**WR**	3.0	4.0	2.0	3.0	1.00	0.95
NYOR14Q9-9	**WR**	3.5	4.0	2.0	3.5	1.00	0.96
AC13125-5W	**SWR**	4.0	4.0	2.0	4.0	1.00	1.00
Mean		**3.5**	**3.9**	**2.0**	**3.5**	**1.00**	**1.02**

[1] 1=Worst, 5=Best - Chipper Merit Score takes into account multiple factors including tuber shape, eye depth, and shape uniformity
[2] 1=Deep, 5=Shallow
[3] 1=Round, 5=Oblong
[4] 1= No Uniformity, 5=Very Uniform
[5] Ratio of 10 tubers measured from 10-14 oz size category.

Table 12. Tuber Defects of Chipping Potato Entries.

Clone / Variety	Trial	Hollow Heart[1]	Vascular Discoloration[1]	Stem End Necrosis[1]	Knobs[2]	Growth Crack[2]	Greening[2]
		%	%	%	%	%	%
Atlantic	**WR**	0.0	3.3	0.0	0.0 a	1.7 ab	1.1 a
Lamoka	**WR**	0.0	3.3	0.0	1.3 a	0.8 ab	1.8 a
Snowden	**WR**	0.0	3.3	0.0	0.0 a	0.0 b	0.6 a
A13125-3C	**WR**	0.0	10.0	10.0	0.1 a	3.0 a	2.8 a
AC13126-1Wadg	**WR**	0.0	16.7	0.0	0.7 a	0.4 b	0.2 a
CO12235-3W	**WR**	0.0	3.3	6.7	0.8 a	0.3 b	0.2 a
CO12293-1W	**WR**	0.0	3.3	0.0	0.2 a	0.0 b	0.8 a
COOR13270-2	**WR**	0.0	3.3	6.7	0.3 a	0.0 b	2.5 a
NYOR14Q9-5	**WR**	6.7	10.0	0.0	0.0 a	0.0 b	1.2 a
NYOR14Q9-9	**WR**	0.0	6.7	0.0	0.7 a	0.1 b	1.4 a
AC13125-5W	**SWR**	0.0	10.0	0.0	0.7 a	0.0 b	2.3 a
Mean		**0.6**	**6.7**	**2.1**	**0.4**	**0.6**	**1.3**

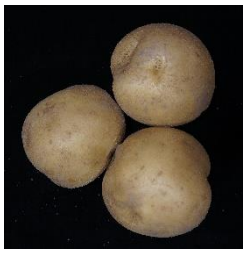
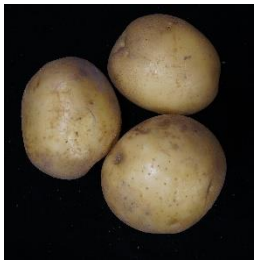
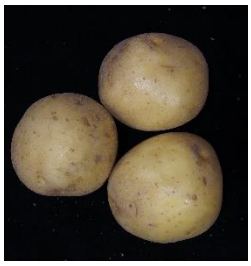
[1]Thirty, 6-10oz tubers were evaluated from each entry.
[2] Percent of total tubers.

Table 13. Stand, Tuber Set, Average Tuber Size and Specific Gravity of Chipping Potato Entries.

Clone / Variety	Trial	% Stand	Tubers per Plant	Average Tuber Size (oz)	Specific Gravity	Early Dying[1] (A.U.D.P.C.)
Atlantic	**WR**	90 a	6.6 b	6.4 b	1.095 a	1215
Lamoka	**WR**	82 a	8.1 ab	7.2 b	1.094 a	535
Snowden	**WR**	91 a	8.5 ab	5.1 c	1.090 a	1580
A13125-3C	**WR**	95 a	8.7 ab	6.7 b	1.092 a	108
AC13126-1Wadg	**WR**	84 a	8.0 ab	6.9 b	1.090 a	368
CO12235-3W	**WR**	92 a	8.7 ab	5.0 c	1.092 a	323
CO12293-1W	**WR**	87 a	10.3 a	6.1 bc	1.091 a	128
COOR13270-2	**WR**	87 a	9.6 a	6.1 bc	1.092 a	301
NYOR14Q9-5	**WR**	91 a	6.5 b	9.0 a	1.088 a	286
NYOR14Q9-9	**WR**	90 a	10.1 a	6.5 b	1.090 a	520
AC13125-5W	**SWR**	81 a	8.7 ab	6.4 b	1.081 a	243
Mean		**88**	**8.5**	**6.5**	**1.091**	**510**

[1]Area Under Disease Progress Curve based on foliar early-dying ratings taken 60, 67, 76, 82 and 91 days after planting. Higher value is more susceptible

Figure 3. 2022 Chipping Trial Entries

Atlantic	Lamoka	Snowden
		
• Check	• Flat tuber shape	• Check
A13125-3C	**AC13126-1Wadg**	**CO12235-3W**
		
• Susceptible to rhizoctonia	• High % vascular discoloration	• Skins easily
CO12293-1W	**COOR13270-2**	**NYOR14Q9-5**
		
• Skins easily	• Red splash around eyes	• Inconsistent shape

NYOR14A9-9	AC13125-5W	
		
• Flat shape	• Nice round shape	