

RECCS

A stylized landscape graphic featuring rolling hills in shades of orange, green, and blue. In the foreground, there are several white, pointed shapes representing potato leaves or stems.

2016 POTATO VARIETY DEVELOPMENT IN TULELAKE, CA

Three variety trials were grown at the Intermountain Research and Extension Center during 2016. Trials were categorized by their market type and included russet, specialty and chip. Trial results are summarized in this report.

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2016 Annual Progress Report Potato Variety Development in Tulelake

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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 18 entries, a Specialty trial with 17 entries, and a Chipping trial with 14 entries. Entries included selections from the Western Regional (WR) variety development program, Southwest Regional (SWR) variety development program, and varieties of local interest.

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 15 entries from the Western Regional Variety Trial (WR) and three entries 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. Data was collected for several vine and tuber characteristics. Important characteristics for the local area include total and 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 18 th 2016
Vine Kill Date:	September 8 th 2016
Days to Vine Kill:	113
Harvest Date:	September 28 th 2016
Irrigation:	Solid-set sprinklers; applied water + precipitation = 20.94 inches
Plot Length:	18.3 Feet
In-Row Spacing:	10 Inches
Row Spacing:	36 Inch
Number of Reps:	4
# of Fertilizer/Acre:	185-0-100
Seed Treatment:	Maxim 4FS and Fir Bark Dust
Weed Control:	Roundup PowerMax, Prowl H2O, and Outlook (pre-emergence) Matrix (early post-emergence)
Insecticides:	Vydate
Fungicides:	Quadris (in-furrow) and Tanos (Chemigate)
Vine Kill Method:	Rolling and Reglone at labeled rates

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

	Trial	Tuber Yield (cwt/A)								
		Total	U.S. No. 1's (cwt)					Culls + 2's		
			U.S. 1's	%1's	>14oz	10-14oz	6-10oz		4-6oz	<4oz
Ranger Russet	WR	436.4 ab	355.0 abc	81.3 abc	19.4 def	59.7 cdef	170.8 ab	105.2 abc	58.5 cde	1.0 a
Russet Burbank	WR	439.3 ab	301.7 cd	68.3 e	7.4 ef	37.9 efg	156.5 abc	99.9 bcd	63.1 cde	5.0 a
Russet Norkotah	WR	391.9 ab	285.2 cde	72.6 de	32.3 cdef	70.7 bcde	116.3 bcde	65.8 def	52.3 de	5.1 a
A03141-6	WR	479.5 a	412.3 a	85.9 a	181.2 a	121.7 a	87.1 de	22.3 g	16.9 f	6.4 a
A03921-2	WR	407.1 ab	343.1 abc	84.2 ab	68.1 b	80.2 bcd	129.9 abcd	64.9 def	36.7 def	0.1 a
A06021-1T	WR	359.1 b	304.1 cd	84.6 ab	35.4 cde	94.8 abc	120.0 bcde	53.9 fg	40.7 def	0.9 a
AO03123-2	WR	399.8 ab	319.1 abcd	79.9 abcd	22.8 cdef	58.9 cdef	143.5 abc	94.0 bcde	53.8 de	0.1 a
AO06191-1	WR	409.3 ab	311.6 bcd	76.8 bcde	16.3 ef	58.5 cdefg	157.0 abc	79.8 bcdef	54.0 de	1.5 a
CO04220-7RU	WR	464.8 ab	333.8 abcd	71.7 de	4.3 ef	35.0 efg	157.2 abc	137.3 a	124.9 a	0.0 a
CO05068-1RU	WR	443.6 ab	369.7 abc	83.3 abc	50.1 bcd	98.8 ab	150.2 abc	70.7 cdef	40.0 def	0.1 a
CO05152-5RU	WR	443.9 ab	316.5 abcd	71.3 de	2.6 f	34.2 efg	177.2 a	102.4 abc	66.8 cd	1.8 a
CO05175-1RU	WR	373.1 ab	311.9 bcd	83.4 abc	51.9 bc	65.6 bcde	135.0 abcd	59.3 ef	34.1 ef	1.7 a
COTX09022-3RuRE/Y	WR	485.9 a	402.8 ab	82.8 abc	53.3 bc	81.8 bcd	175.3 a	92.5 bcde	59.6 cde	1.0 a
COTX09052-2Ru	WR	351.9 b	242.6 de	68.7 e	4.5 ef	22.4 fg	109.4 cde	106.3 abc	106.7 ab	0.0 a
TX08352-5Ru	WR	426.7 ab	204.3 e	48.0 f	15.5 ef	20.1 g	71.7 e	97.0 bcd	118.9 a	3.0 a
CO08065-2RU	SWR	401.8 ab	302.6 cd	75.4 cde	30.9 cdef	53.0 defg	130.5 abcd	88.2 bcdef	55.8 de	0.1 a
CO08155-2RU/Y	SWR	402.7 ab	291.4 cde	72.5 de	3.5 ef	48.1 defg	136.1 abcd	103.7 abc	87.5 bc	0.1 a
CO08231-1RU	SWR	387.0 ab	277.7 cde	71.8 de	7.5 ef	32.7 efg	130.1 abcd	107.4 ab	100.4 ab	1.9 a
Mean		416.9	315.9	75.7	33.7	59.7	136.3	86.1	65.0	1.7

Mean comparisons were performed using Tukey's-Kramer HSD; means with the same letter 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/Width Ratio ⁵
Ranger Russet	WR	2.9 abcd	3.3 abcd	3.3 d	3.4 ab	1.7 ab
Russet Burbank	WR	2.4 bcd	2.8 bcd	3.5 bcd	3.8 a	1.7 ab
Russet Norkotah	WR	2.8 abcd	3.6 abc	3.5 bcd	3.1 ab	1.8 ab
A03141-6	WR	2.0 de	2.3 cd	3.8 abcd	2.3 b	1.6 abc
A03921-2	WR	2.3 cd	1.8 d	4.4 a	3.3 ab	1.6 abc
A06021-1T	WR	2.9 abcd	3.8 abc	3.9 abcd	3.5 ab	1.7 ab
AO03123-2	WR	2.8 abcd	3.1 abcd	3.6 abcd	3.5 ab	1.7 ab
AO06191-1	WR	3.1 abc	3.8 abc	3.6 abcd	3.3 ab	1.6 ab
CO04220-7RU	WR	3.5 a	3.6 abc	3.5 bcd	3.8 a	1.7 ab
CO05068-1RU	WR	2.4 bcd	2.9 bcd	3.4 cd	3.3 ab	1.7 ab
CO05152-5RU	WR	3.4 a	3.8 abc	3.5 bcd	4.0 a	1.5 abc
CO05175-1RU	WR	2.8 abcd	4.5 a	4.1 abc	3.5 ab	1.7 ab
COTX09022-3RuRE/Y	WR	1.1 e	2.9 bcd	4.3 ab	3.3 ab	1.1 c
COTX09052-2Ru	WR	3.3 ab	3.5 abc	3.9 abcd	3.8 a	1.6 abc
TX08352-5Ru	WR	2.8 abcd	2.8 bcd	4.0 abcd	3.3 ab	1.3 bc
CO08065-2RU	SWR	3.4 a	4.0 ab	4.0 abcd	3.9 a	1.7 ab
CO08155-2RU/Y	SWR	3.0 abc	3.5 abc	4.0 abcd	3.6 a	1.9 a
CO08231-1RU	SWR	3.0 abc	3.5 abc	3.6 abcd	3.5 ab	1.4 abc
Mean		2.8	3.3	3.8	3.4	1.6

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 =Light,5=Heavy

³ 1=Deep, 5=Shallow

⁴ 1= Non Uniform, 5=Very Uniform

⁵ Ratio of 10 tubers measured from each plot, 8-16 oz in size.

Table 3. Tuber Defects of Russet Potato Entries.

	Trial	Hollow Heart ¹	Stem-end Necrosis ¹	Black Spot bruise ¹	Knobs ²	Growth Crack ²	Rot ²	Irregular Shaped ²	Greening ²
Ranger Russet	WR	0.0 b	2.5 c	5.0 ab	0.6 c	1.3 cde	0.0 b	1.1 a	0.2 c
Russet Burbank	WR	15.0 a	32.5 a	5.0 ab	2.3 bc	4.5 ab	0.1 b	0.3 a	0.4 bc
Russet Norkotah	WR	2.5 ab	0.0 c	5.0 ab	5.7 b	1.3 cde	0.0 b	0.5 a	0.3 c
A03141-6	WR	0.0 b	5.0 c	5.0 ab	1.5 c	1.7 bcde	0.0 b	1.3 a	2.3 abc
A03921-2	WR	2.5 ab	0.0 c	15.0 a	0.9 c	1.6 cde	0.0 b	0.1 a	4.0 a
A06021-1T	WR	0.0 b	2.5 c	2.5 ab	1.0 c	0.8 cde	0.1 b	0.0 a	1.9 abc
AO03123-2	WR	0.0 b	0.0 c	0.0 b	1.0 c	1.6 cde	0.0 b	0.1 a	1.2 bc
AO06191-1	WR	0.0 b	0.0 c	2.5 ab	0.7 c	3.5 abc	0.0 b	0.7 a	1.3 bc
CO04220-7RU	WR	5.0 ab	22.5 ab	2.5 ab	0.7 c	0.2 de	0.0 b	0.1 a	0.3 bc
CO05068-1RU	WR	2.5 ab	0.0 c	2.5 ab	1.1 c	0.6 de	0.7 a	1.2 a	2.5 ab
CO05152-5RU	WR	0.0 b	10.0 bc	5.0 ab	0.8 c	5.6 a	0.0 b	0.2 a	0.2 c
CO05175-1RU	WR	5.0 ab	0.0 c	0.0 b	2.5 bc	0.6 de	0.1 b	1.3 a	0.8 bc
COTX09022-3RuRE/Y	WR	0.0 b	0.0 c	0.0 b	0.3 c	3.0 abcd	0.0 b	0.2 a	0.6 bc
COTX09052-2Ru	WR	0.0 b	0.0 c	0.0 b	0.3 c	0.0 e	0.1 b	0.0 a	0.3 c
TX08352-5Ru	WR	0.0 b	0.0 c	7.5 ab	12.6 a	0.6 cde	0.1 b	0.1 a	0.3 c
CO08065-2RU	SWR	12.5 ab	0.0 c	5.0 ab	0.4 c	5.2 a	0.0 b	0.2 a	0.8 bc
CO08155-2RU/Y	SWR	0.0 b	0.0 c	0.0 b	1.4 c	0.6 cde	0.0 b	0.9 a	0.9 bc
CO08231-1RU	SWR	0.0 b	0.0 c	2.5 ab	0.7 c	0.1 e	0.2 b	0.3 a	0.4 bc
Mean		2.5	4.2	3.6	1.9	1.8	0.1	0.5	1.0

1 10, 8-16oz. tubers were evaluated from each plot.





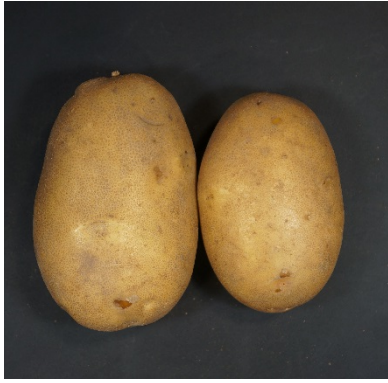




2 Percent of total tubers.




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




	Trial	Vert Wilt Rating	Early Die ¹ (A.U.D.P.C.)	% Stand	Tubers per Plant	Average Tuber Size	Specific Gravity
Ranger Russet	WR	5.9 cdefg	327.9 def	98.3 ab	7.0 bcdef	5.8 cd	1.083 de
Russet Burbank	WR	7.5 abc	714.5 cd	97.7 ab	7.0 bcdef	5.9 bcd	1.082 de
Russet Norkotah	WR	9.0 a	1683.1 a	94.9 ab	5.9 defg	6.4 bc	1.070 f
A03141-6	WR	4.5 fg	100.5 f	97.7 ab	4.3 g	10.6 a	1.090 bc
A03921-2	WR	6.0 cdef	366.0 def	98.9 a	5.5 efg	6.9 b	1.095 ab
A06021-1T	WR	6.8 bcde	816.5 c	90.9 b	5.5 efg	6.5 bc	1.081 e
AO03123-2	WR	4.3 fg	165.1 ef	97.2 ab	6.4 cdef	5.9 bcd	1.083 cde
AO06191-1	WR	5.5 defg	268.9 ef	97.2 ab	6.4 cdef	6.1 bc	1.089 bcd
CO04220-7RU	WR	5.8 cdefg	323.5 def	97.7 ab	9.3 a	4.7 f	1.080 e
CO05068-1RU	WR	4.0 g	187.5 ef	94.9 ab	6.3 cdef	6.9 b	1.093 ab
CO05152-5RU	WR	7.3 abcd	766.5 c	96.6 ab	7.4 abcde	5.7 cde	1.081 e
CO05175-1RU	WR	4.5 fg	206.0 ef	93.8 ab	5.3 fg	6.8 b	1.078 e
COTX09022-3RuRE/Y	WR	4.1 fg	121.3 f	94.9 ab	7.5 abcd	6.3 bc	1.081 e
COTX09052-2Ru	WR	8.0 ab	782.3 c	93.2 ab	7.9 abc	4.4 f	1.079 e
TX08352-5Ru	WR	8.8 a	1235.0 b	94.3 ab	8.9 ab	4.7 f	1.064 f
CO08065-2RU	SWR	6.5 bcde	564.0 cde	95.5 ab	6.5 cdef	6.0 bcd	1.097 a
CO08155-2RU/Y	SWR	7.3 abcd	876.9 bc	94.9 ab	7.7 abcd	5.1 def	1.082 de
CO08231-1RU	SWR	4.9 efg	241.5 ef	95.5 ab	7.7 abcd	4.8 ef	1.082 de
Mean		6.1	541.5	95.8	6.8	6.1	1.083




¹ Area Under Disease Progress Curve based on foliar early-dying ratings taken 82, 88, 97, and 102 days after planting. Higher value is more susceptible

Figure 1. 2016 Late Russet Trial Entries.

Ranger Russet (WR)	Russet Burbank (WR)	Russet Norkotah (WR)
 <ul style="list-style-type: none"> • Check 	 <ul style="list-style-type: none"> • Check 	 <ul style="list-style-type: none"> • Check
A03141-6 (WR)	A03921-2 (WR)	A06021-1T (WR)
 <ul style="list-style-type: none"> • 10.6 Average Tuber Size • Irregular Shape 	 <ul style="list-style-type: none"> • 4 % Green • Little russeting 	 <ul style="list-style-type: none"> • Ruptured lenticels
AO03123-2	AO06191-1	CO04220-7RU
 <ul style="list-style-type: none"> • Blocky shape • Lumpy 	 <ul style="list-style-type: none"> • Pear shape 	 <ul style="list-style-type: none"> • High merit score

CO05068-1RU	CO05152-5RU	CO05175-1RU
 <ul style="list-style-type: none"> • Deep, pink eyes 	 <ul style="list-style-type: none"> • Uniform shape 	 <ul style="list-style-type: none"> • Heavy russet

COTX09022-3RuRE/Y	COTX09052-2Ru	TX08352-5Ru
 <ul style="list-style-type: none"> • Pink eyes • High yield • Round shape 	 <ul style="list-style-type: none"> • Blocky shape 	 <ul style="list-style-type: none"> • 12% Knobs • Susceptible to early-dying

CO08065-2RU	CO08155-2RU/Y	CO08231-1RU
 <ul style="list-style-type: none"> • High merit score • Ruptured lenticels 	 <ul style="list-style-type: none"> • Long and narrow shape • Yellow flesh 	 <ul style="list-style-type: none"> • Pear shape

Red/Specialty Variety Trial

The Red/Specialty Trial included 13 entries from the Western Regional Variety Trial (WR), one entry from the Southwest Regional Trial (SWR), and three entries that graduated from the Western Regional Variety Trial in 2015. Red and specialty type potatoes are an expanding segment of the Klamath Basin potato industry. Organic certified acreage is also increasing in these categories. 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 5-10 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 18 th 2016
Vine Kill Date:	September 8th 2016
Days to Vine Kill:	113
Harvest Date:	September 28 th 2016
Irrigation:	Solid-set sprinklers; applied water + precipitation = 20.94 inches
Plot Length:	18.3 Ft
In-Row Spacing:	10 Inches
Row Spacing:	36 Inch
Number of Reps:	4
# of Fertilizer/Acre:	185-0-100
Seed Treatment:	Maxim 4FS and Fir Bark Dust
Weed Control:	Roundup PowerMax, Prowl H2O, and Outlook (pre-emergence) Matrix (early post-emergence)
Insecticides:	Vydate
Fungicides:	Quadris (in-furrow) and Tanos (Chemigate)
Vine Kill Method:	Rolling and Reglone at labeled rates

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

Clone / Variety	Trial	Skin Color ¹	Rating	Flesh color	Rating
Chieftan	WR	Red	2.4 cde	White	1.1 de
Red LaSoda	WR	Red	1.8 e	White	1.3 cde
AC03534-2R/Y	WR	Red	3.1 bcde	Yellow	2.0 abcde
AC05175-3P/Y	WR	Purple	5.0 a	Yellow	3.0 a
ATTX98514-1R/Y	WR	Red	1.9 e	Yellow	2.9 a
CO05035-1PW/Y	WR	Purple/White	2.4 cde	Yellow	2.6 ab
COA07365-4RY	WR	Red	4.3 ab	Yellow	2.0 abcde
NDTX059759-3RY/Y Pinto	WR	Red/White	3.6 abcd	Yellow	2.8 a
Yukon Gold	WR	White	1.9 e	Yellow	2.4 abc
A06336-2Y	WR	Champagne/Pine	2.1 e	Yellow	2.5 ab
A06336-5Y	WR	Champagne/Pine	2.4 cde	Yellow	3.0 a
COTX03134-1W	WR	White	1.8 e	White	1.0 e
TXWL-1	WR	White	2.0 e	White	1.5 bcde
NDC081655-1R	SWR	Red	4.1 ab	White	1.0 e
NDA050237B-1R	GRAD	Red	3.8 abc	White	1.0 e
NDA081451CB-1Y	GRAD	Yellow	2.1 e	Yellow	2.1 abcde
AO518Z-7RY	GRAD	Yellow	2.5 cde	Yellow	2.5 ab
Mean			2.8		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.

Clone / Variety	Trial	Total Yield	Tuber Yield (cwt/A)					Culls
			10-14 oz	6-10 oz	4-6 oz	< 4oz	> 14 oz	
Chieftan	WR	503.9 abc	113.0 a	150.4 abc	55.4 hij	47.5 ef	63.1 b	74.4 b
Red LaSoda	WR	535.2 ab	66.4 bc	111.9 cd	62.7 ghi	43.3 ef	36.7 bc	214.2 a
AC03534-2R/Y	WR	505.4 abc	24.6 def	141.2 abc	143.7 ab	157.0 bcd	5.8 d	33.2 bcd
AC05175-3P/Y	WR	394.4 cd	21.9 ef	129.0 bcd	117.1 abcd	121.3 cde	3.0 d	2.2 d
ATTX98514-1R/Y	WR	437.5 bcd	83.5 abc	146.4 abc	65.1 fghi	47.3 ef	28.7 cd	66.5 bc
CO05035-1PW/Y	WR	471.8 bcd	90.1 abc	174.8 ab	79.3 defghi	51.7 ef	63.5 b	12.3 bcd
COA07365-4RY	WR	373.4 cd	16.9 f	152.0 abc	112.0 bcde	74.0 ef	2.7 d	15.8 bcd
NDTX059759-3RY/Y Pinto	WR	383.3 cd	25.4 def	130.2 bcd	114.6 abcde	92.0 def	14.5 cd	6.6 cd
Yukon Gold	WR	415.5 bcd	100.1 ab	145.6 abc	74.1 efghi	48.2 ef	29.5 cd	18.0 bcd
A06336-2Y	WR	366.7 cd	16.4 f	137.2 bc	104.1 bcdef	76.8 def	1.7 d	30.5 bcd
A06336-5Y	WR	359.0 d	1.4 f	38.2 ef	102.1 cdefg	204.2 b	0.0 d	13.2 bcd
COTX03134-1W	WR	358.6 d	0.0 f	0.4 f	17.1 j	338.3 a	0.0 d	2.8 d
TXWL-1	WR	620.1 a	104.0 a	111.3 cd	46.9 ij	33.3 f	104.7 a	219.9 a
NDC081655-1R	SWR	476.3 bcd	59.8 cd	180.0 ab	93.2 cdefgh	69.0 ef	10.6 cd	63.8 bcd
NDA050237B-1R	GRAD	418.3 bcd	26.7 def	153.4 abc	130.9 abc	94.8 def	3.5 d	9.0 cd
NDA081451CB-1Y	GRAD	487.9 abcd	56.8 cde	193.8 a	117.7 abcd	87.7 def	8.8 cd	23.1 bcd
AO518Z-7RY	GRAD	434.5 bcd	5.5 f	82.5 de	154.2 a	178.8 bc	1.9 d	11.6 bcd
Mean		443.6	47.8	128.1	93.5	103.8	22.3	48.1

Table 7. External Tuber Characteristics of Specialty Potato Entries.

Clone / Variety	Trial	Merit ¹	Eye Depth ²	Tuber Shape ³	Shape	Length/Width
					Uniformity ⁴	Ratio ⁵
Chieftan	WR	3.0 ab	3.4 bc	3.3 abcd	3.6 ab	1.2 cde
Red LaSoda	WR	2.3 abc	3.4 bc	2.8 bcde	3.1 ab	1.1 def
AC03534-2R/Y	WR	2.9 ab	3.6 abc	2.0 e	3.8 a	1.1 f
AC05175-3P/Y	WR	2.1 bc	3.4 bc	2.5 cde	3.5 ab	1.1 f
ATTX98514-1R/Y	WR	2.5 ab	4.0 ab	3.6 abc	3.6 ab	1.3 bc
CO05035-1PW/Y	WR	2.5 ab	4.1 a	3.5 abcd	3.6 ab	1.2 cd
COA07365-4RY	WR	2.5 ab	3.6 abc	2.6 cde	3.6 ab	1.1 def
NDTX059759-3RY/Y Pinto	WR	2.5 ab	3.9 abc	3.9 ab	3.1 ab	1.3 bc
Yukon Gold	WR	2.4 ab	4.0 ab	3.1 abcde	2.9 ab	1.2 cdef
A06336-2Y	WR	2.1 bc	3.8 abc	4.0 a	3.0 ab	1.5 a
A06336-5Y	WR	2.8 ab	4.0 ab	3.3 abcd	3.8 a	1.3 bc
COTX03134-1W	WR	2.1 bc	4.0 ab	3.9 ab	3.5 ab	1.4 ab
TXWL-1	WR	1.3 c	3.3 c	2.4 de	2.5 b	1.1 ef
NDC081655-1R	SWR	2.5 ab	3.9 abc	3.0 abcde	3.4 ab	1.1 def
NDA050237B-1R	GRAD	3.3 a	4.1 a	2.5 cde	3.9 a	1.1 def
NDA081451CB-1Y	GRAD	2.6 ab	3.9 abc	2.6 cde	3.4 ab	1.1 def
AO518Z-7RY	GRAD	2.9 ab	3.8 abc	2.5 cde	3.9 a	1.1 def
Mean		2.5	3.8	3.0	3.4	1.2

1 1=Worst, 5=Best - Specialty Merit Score takes into account important 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= No Uniformity, 5=Very Uniform

5 Ratio of 10 tubers measured from each plot

Table 8. Tuber Defects of Specialty Potato Entries.

Clone / Variety	Trial	Hollow Heart ¹	Black Spot Bruise ¹	Vascular Dicoloration ¹	Knobs ²	Growth Crack ²	Irregular Shape ²	Greening ²	% Culls of Total ²
Chieftan	WR	2.5 a	0.0 a	12.7 a	0.3 bc	7.9 bc	0.0 a	0.5 bcd	9.3 bc
Red LaSoda	WR	2.5 a	0.0 a	5.1 a	2.4 b	22.0 a	0.3 a	1.1 bcd	25.8 a
AC03534-2R/Y	WR	0.0 a	0.0 a	7.8 a	1.3 bc	2.4 cd	0.2 a	0.0 d	3.9 bcde
AC05175-3P/Y	WR	0.0 a	2.5 a	15.0 a	0.0 c	0.0 d	0.0 a	0.8 bcd	0.8 e
ATTX98514-1R/Y	WR	0.1 a	5.0 a	17.7 a	0.3 bc	9.0 b	0.1 a	0.6 bcd	10.0 b
CO05035-1PW/Y	WR	2.5 a	0.0 a	12.6 a	0.4 bc	0.3 d	0.3 a	2.1 b	3.1 cde
COA07365-4RY	WR	0.0 a	0.0 a	15.0 a	0.6 bc	0.9 d	1.4 a	0.7 bcd	3.7 bcde
NDTX059759-3RY/Y Pinto	WR	0.0 a	2.5 a	8.2 a	0.2 bc	0.0 d	0.1 a	1.4 bcd	1.8 e
Yukon Gold	WR	2.5 a	5.1 a	5.0 a	1.1 bc	0.6 d	0.7 a	0.2 d	2.6 de
A06336-2Y	WR	0.0 a	0.0 a	27.5 a	5.2 a	0.7 d	1.0 a	0.4 bcd	7.3 bcde
A06336-5Y	WR	0.0 a	0.0 a	30.2 a	1.5 bc	0.4 d	0.7 a	0.2 d	2.7 cde
COTX03134-1W	WR	0.0 a	0.0 a	7.5 a	0.3 bc	0.1 d	0.0 a	0.3 cd	0.7 e
TXWL-1	WR	0.0 a	0.0 a	17.5 a	0.7 bc	17.7 a	0.5 a	2.0 bc	21.0 a
NDC081655-1R	SWR	2.5 a	0.0 a	15.2 a	0.5 bc	8.2 bc	0.0 a	0.3 cd	8.9 bcd
NDA050237B-1R	GRAD	0.0 a	0.0 a	47.5 a	0.6 bc	0.9 d	0.1 a	0.5 bcd	2.1 e
NDA081451CB-1Y	GRAD	0.0 a	0.0 a	12.5 a	0.4 bc	0.0 d	0.2 a	4.9 a	5.7 bcde
AO518Z-7RY	GRAD	7.5 a	0.0 a	35.0 a	1.2 bc	0.1 d	0.0 a	1.4 bcd	2.6 de
Mean		1.2	0.9	17.2	1.0	4.2	0.3	1.0	6.6

¹ 10, 6-10oz. tubers were evaluated from each plot.


² Percent of total tubers.

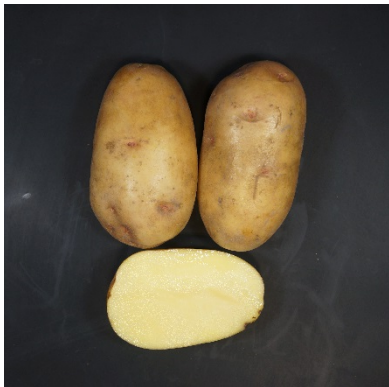
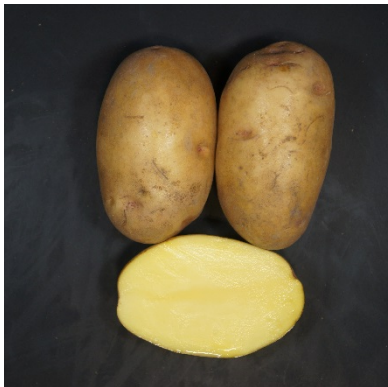
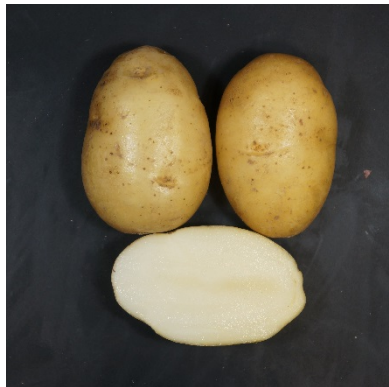
Table 9. Disease Susceptibility, Stand, Tuber Set, Average Tuber Size and Specific Gravity of Specialty Potato Entries.



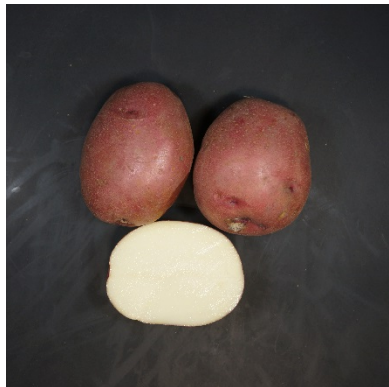
Clone / Variety	Trial	Early-Dying ¹	% Stand	Tubers/Plant	Average Size (oz)	Specific Gravity
Chieftan	WR	895.1 bcde	89.2 bcdef	7.0 bc	7.5 bc	1.071 defgh
Red LaSoda	WR	324.7 efg	95.5 abc	6.7 bc	7.7 b	1.068 efg
AC03534-2R/Y	WR	655.1 efg	88.6 cdef	11.9 b	4.4 gh	1.065 fgh
AC05175-3P/Y	WR	1822.5 a	96.6 ab	8.4 bc	4.4 gh	1.064 h
ATTX98514-1R/Y	WR	697.9 defg	85.2 f	7.2 bc	6.6 cd	1.064 gh
CO05035-1PW/Y	WR	273.7 fg	89.8 bcdef	7.2 bc	6.7 bcd	1.073 cdef
COA07365-4RY	WR	595.4 efg	86.9 ef	8.0 bc	5.0 efg	1.072 cdef
NDTX059759-3RY/Y Pinto	WR	185.9 fg	98.9 a	7.4 bc	4.8 fgh	1.078 abcd
Yukon Gold	WR	1403.3 ab	94.3 abcde	6.2 c	6.5 cd	1.082 ab
A06336-2Y	WR	1310.1 abc	96.6 ab	7.1 bc	4.9 efg	1.072 defg
A06336-5Y	WR	1328.1 ab	87.5 def	11.5 bc	3.3 i	1.066 efg
COTX03134-1W	WR	742.2 cdef	100.0 a	17.5 a	2.1 j	1.080 abc
TXWL-1	WR	389.8 efg	96.6 ab	6.2 c	9.5 a	1.074 cde
NDC081655-1R	SWR	353.0 efg	98.9 a	7.5 bc	5.9 de	1.074 bcde
NDA050237B-1R	GRAD	133.7 g	88.1 cdef	9.0 bc	4.8 fgh	1.068 efg
NDA081451CB-1Y	GRAD	721.7 def	94.9 abcd	9.0 bc	5.2 efg	1.071 defgh
AO518Z-7RY	GRAD	163.0 fg	94.9 abcd	10.9 bc	3.9 hi	1.077 abcd
Mean		705.6	93.1	8.8	5.5	1.072

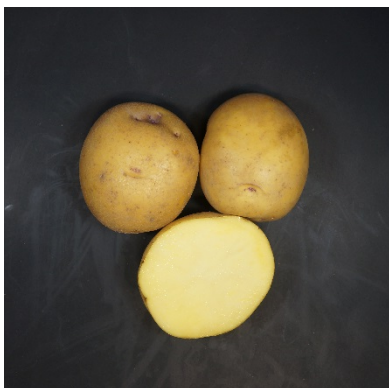

¹ Area Under Disease Progress Curve based on foliar early-dying ratings taken 82, 88, 97, and 102 days after planting. Higher value is more susceptible.

Figure 2. 2016 Red/Specialty Entries.

<p>Cheiftan (WR)</p>  <ul style="list-style-type: none"> • Red Check 	<p>Red LaSoda (WR)</p>  <ul style="list-style-type: none"> • Red Check 	<p>AC03534-2R/Y (WR)</p>  <ul style="list-style-type: none"> • 12 Tubers per plant • Elephant hide symptoms
<p>AC05175-3P/Y (WR)</p>  <ul style="list-style-type: none"> • Susceptible to early-dying 	<p>ATTX98514-1R/Y (WR)</p>  <ul style="list-style-type: none"> • 85% Stand 	<p>CO05035-1PW/Y (WR)</p> 
<p>COA07365-4RY (WR)</p>  <ul style="list-style-type: none"> • Deep red skin color 	<p>NDTX059759-3RY/Y Pinto (WR)</p> 	<p>Yukon Gold (WR)</p>  <ul style="list-style-type: none"> • Yellow Check

<p>A06336-2Y (WR)</p>  <ul style="list-style-type: none"> • Long / curved shape • Pink eyes 	<p>A06336-5Y (WR)</p>  <ul style="list-style-type: none"> • Pink eyes 	<p>COTX03134-1W (WR)</p>  <ul style="list-style-type: none"> • Most tubers < 4oz
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<p>TXWL-1 (WR)</p>  <ul style="list-style-type: none"> • 9.5oz Avg. tuber size • Pink eyes and Pink splash on skin 	<p>NDC081655-1R (SWR)</p>  <ul style="list-style-type: none"> • More skinning than on checks 	<p>NDA050237B-1R (GRAD)</p>  <ul style="list-style-type: none"> • High merit score • High shape uniformity • Resistant to early-dying
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<p>NDA081451CB-1Y (GRAD)</p>  <ul style="list-style-type: none"> • Dark pink eyes 	<p>AO518Z-7RY (GRAD)</p>  <ul style="list-style-type: none"> • 10.9 tubers per plant • Pink eyes • Resistant to early-dying
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Chipping Potato Variety Trial

In recent years, expanding markets have created a need for public chip varieties. The 2016 Chipping Trial included 13 entries from the Western Regional Variety Trial (WR) and one entry from the South West 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 11-14 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 18 th 2016
Vine Kill Date:	September 8 th
Days to Vine Kill:	113
Harvest Date:	September 29 th 2016
Irrigation:	Solid-set sprinklers; applied water + precipitation = 20.94 inches
Plot Length:	18.3 feet
In-Row Spacing:	10 inches
Row Spacing:	36 inches
Number of Reps:	4
# of Fertilizer/Acre:	185-0-100
Seed Treatment:	Maxim 4FS and Fir Bark Dust
Weed Control:	Roundup PowerMax, Prowl H2O, and Outlook (pre-emergence) Matrix (Early post-emergence)
Insecticides:	Vydate
Fungicides:	Quadris (in-furrow) and Tanos (chemigate)
Vine Kill Method:	Rolling and with labeled rates of Reglone

Table 11. Tuber Yield and Size of Chipping Potato Entries.

Clone / Variety	Trial	Tuber Yield (cwt/A)					Culls	Total
		>14 oz	10-14 oz	6-10oz	4-6 oz	<4 oz		
Atlantic	WR	18.6 a	74.7 a	193.8 a	98.7 de	54.5 fgh	15.1 b	455.5 a
Snowden	WR	7.4 ab	16.9 cd	114.1 bcde	131.9 abcd	100.7 bc	3.5 b	374.4 ab
AC05153-1W	WR	4.0 ab	19.9 cd	95.0 de	119.4 abcde	122.6 b	9.7 b	370.6 ab
AOR09034-3	WR	2.1 b	29.1 bcd	138.3 abcd	101.1 cde	70.7 defg	29.1 a	370.4 ab
CO07070-10W	WR	0.9 b	22.9 cd	120.1 bcde	116.4 bcde	98.6 bcd	4.7 b	363.5 ab
CO07070-13W	WR	1.3 b	4.8 d	74.1 e	150.1 ab	159.9 a	3.6 b	393.8 ab
NDA081453CAB-2C	WR	2.1 b	43.3 abc	185.0 a	142.6 abc	75.6 cdef	8.6 b	457.2 a
NDTX071109C-01W	WR	13.6 ab	64.9 a	157.8 abc	84.9 e	40.2 h	6.9 b	368.2 ab
NDTX081648CB-13W	WR	7.8 ab	41.2 abc	159.8 abc	112.3 bcde	70.0 defg	8.2 b	399.3 ab
NDTX091908AB-02W	WR	1.7 b	21.1 cd	169.1 ab	142.8 abc	126.3 b	9.8 b	470.8 a
OR09256-2	WR	4.5 ab	26.5 bcd	154.5 abcd	128.0 abcd	83.7 cde	4.5 b	401.8 ab
OR9253-1	WR	5.7 ab	46.6 abc	146.8 abcd	80.0 e	43.6 gh	12.8 b	335.6 b
TX09396-1W	WR	9.7 ab	59.6 ab	170.6 ab	105.0 cde	59.8 efgh	12.7 b	417.5 ab
AC01144-1W	SWR	0.9 b	12.2 cd	102.5 cde	160.9 a	162.8 a	6.5 b	445.7 ab
Mean		5.7	34.6	141.5	119.6	90.6	9.7	401.7

Table 12. Merit Score and Tuber Characteristics of Chipping Potato Entries.

Clone / Variety	Trial	Merit	Eye depth	Tuber Shape	Shape Uniformity	Length/Width Ratio
Atlantic	WR	3.0 a	3.8 a	2.5 b	3.1 a	1.0 bcd
Snowden	WR	2.9 a	3.4 a	2.9 ab	3.0 a	0.9 f
AC05153-1W	WR	2.5 a	3.9 a	2.6 b	3.1 a	1.0 def
AOR09034-3	WR	3.3 a	3.9 a	2.1 b	3.8 a	1.0 def
CO07070-10W	WR	2.9 a	3.9 a	2.8 ab	3.5 a	1.1 bc
CO07070-13W	WR	3.0 a	4.0 a	2.3 b	3.5 a	0.9 ef
NDA081453CAB-2C	WR	3.1 a	3.9 a	2.4 b	3.5 a	1.0 cdef
NDTX071109C-01W	WR	2.5 a	3.8 a	2.5 b	2.9 a	0.9 f
NDTX081648CB-13W	WR	2.9 a	3.9 a	2.3 b	2.9 a	1.0 def
NDTX091908AB-02W	WR	2.4 a	3.9 a	3.9 a	3.0 a	1.3 a
OR09256-2	WR	3.1 a	3.9 a	2.6 b	3.4 a	1.1 b
OR9253-1	WR	2.9 a	3.5 a	2.4 b	3.1 a	0.9 def
TX09396-1W	WR	2.9 a	3.9 a	2.6 b	3.0 a	1.0 def
AC01144-1W	SWR	3.0 a	3.5 a	2.5 b	3.5 a	1.0 bcde
Mean		2.9	3.8	2.6	3.2	1.0

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 each plot

Table 13. Tuber Defects of Chipping Potato Entries.

Clone / Variety	Trial	Hollow Heart	Black Spot Bruise	Stem End Necrosis	Knobs	Growth Crack	Greening
Atlantic	WR	0.0 a	0.0 a	0.0 a	0.2 a	0.2 b	2.0 abc
Snowden	WR	0.0 a	0.0 a	0.0 a	0.0 a	0.1 b	0.6 c
AC05153-1W	WR	0.0 a	0.0 a	0.0 a	0.2 a	0.5 b	0.4 c
AOR09034-3	WR	0.0 a	7.5 a	2.5 a	0.4 a	3.3 a	1.8 abc
CO07070-10W	WR	0.0 a	7.5 a	0.0 a	0.1 a	0.4 b	0.4 c
CO07070-13W	WR	0.0 a	7.5 a	0.0 a	0.3 a	0.3 b	0.2 c
NDA081453CAB-2C	WR	0.0 a	2.5 a	0.0 a	0.1 a	0.1 b	0.5 c
NDTX071109C-01W	WR	2.5 a	0.0 a	0.0 a	0.3 a	0.1 b	1.0 bc
NDTX081648CB-13W	WR	0.0 a	2.5 a	0.0 a	0.1 a	0.0 b	1.8 abc
NDTX091908AB-02W	WR	0.0 a	5.0 a	0.0 a	0.2 a	0.4 b	0.6 c
OR09256-2	WR	0.0 a	2.5 a	0.0 a	0.2 a	0.3 b	0.1 c
OR9253-1	WR	0.0 a	0.0 a	0.0 a	0.1 a	0.0 b	4.4 a
TX09396-1W	WR	0.0 a	2.5 a	0.0 a	0.1 a	0.0 b	3.5 ab
AC01144-1W	SWR	2.5 a	5.0 a	0.0 a	0.2 a	0.0 b	1.0 bc
Mean		0.4	3.0	0.2	0.2	0.4	1.3

1 10, 6-10oz tubers were evaluated from each plot.




2 Percent of total tubers.




Table 14. Disease Susceptibility, Stand, Tuber Set, Average Tuber Size and Specific Gravity of Chipping Potato Entries.



Clone / Variety	Trial	AUDPC ¹	% Stand	Tubers per Plant	Average Tuber Size	Specific Gravity
Atlantic	WR	685.1 de	88.6 ab	7.8 cde	6.1 a	1.098 ab
Snowden	WR	665.9 de	92.6 ab	8.0 bcde	4.6 de	1.091 b
AC05153-1W	WR	1140.8 bc	91.5 ab	8.8 abcd	4.2 ef	1.093 b
AOR09034-3	WR	369.0 ef	89.8 ab	7.2 def	5.3 bc	1.094 b
CO07070-10W	WR	1110.6 bc	93.2 ab	7.8 cde	4.6 de	1.106 a
CO07070-13W	WR	1434.3 ab	95.5 ab	9.6 abc	3.9 f	1.094 b
NDA081453CAB-2C	WR	790.0 cd	91.5 ab	8.6 bcd	5.3 bc	1.090 b
NDTX071109C-01W	WR	1712.5 a	87.5 b	6.3 ef	6.1 a	1.074 c
NDTX081648CB-13W	WR	226.1 f	92.6 ab	7.5 def	5.3 bc	1.091 b
NDTX091908AB-02W	WR	775.5 cd	93.2 ab	10.1 ab	4.6 de	1.077 c
OR09256-2	WR	812.1 cd	93.2 ab	7.9 cde	5.0 cd	1.091 b
OR9253-1	WR	98.6 f	96.0 ab	5.5 f	5.8 ab	1.105 a
TX09396-1W	WR	111.8 f	97.7 a	6.9 def	5.7 ab	1.097 ab
AC01144-1W	SWR	329.2 ef	91.5 ab	10.8 a	4.1 ef	1.076 c
Mean		733.0	92.5	8.1	5.1	1.091

¹ Area Under Disease Progress Curve based on foliar early-dying ratings taken 82, 88, 97, and 102 days after planting. Higher value is more susceptible.

Figure 3. 2016 Chipping Trial Entries.

Atlantic (WR)	Snowden (WR)	AC05153-1W (WR)
 <ul style="list-style-type: none"> • Check 	 <ul style="list-style-type: none"> • Check 	 <ul style="list-style-type: none"> • Susceptible to black dot
AOR09034-3 (WR)	CO07070-10W (WR)	CO07070-13W (WR)
 <ul style="list-style-type: none"> • Uniform shape 		 <ul style="list-style-type: none"> • Flat shape • Susceptible to early-dying
NDA081453CAB-2C (WR)	NDTX071109C-01W (WR)	NDTX081648CB-13W (WR)
	 <ul style="list-style-type: none"> • A lot of oversize tubers 	

NDTX091908AB-02W (WR)	OR09256-2 (WR)	OR9253-1 (WR)
 <ul style="list-style-type: none"> • Oblong tubers 	 <ul style="list-style-type: none"> • High merit score 	 <ul style="list-style-type: none"> • Low total yield • 4% Green tubers

TX09396-1W (WR)	AC01144-1W (SWR)
 <ul style="list-style-type: none"> • 3.5% Green tubers 	 <ul style="list-style-type: none"> • 10.8 tubers per plant

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