

2021

Potato Variety Development In Tulelake, CA

Three variety trials were grown at the Intermountain Research and Extension Center during 2021.

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

Trial results are summarized in this report.



University of California

Agriculture and Natural Resources

Intermountain Research and Extension Center

Table of Contents

Acknowledgements	2
Introduction	2
Late Russet Variety Trial	
Cultural Information	3
Tables	4-7
Tulelake Variety Photos and Comments	8-9
Red/Specialty Variety Trial	
Cultural Information	10
Tables	11-15
Tulelake Variety Photos and Comments	16-17
Chipping Potato Variety Trial	
Cultural Information	18
Tables	19-22
Tulelake Variety Photos and Comments	23-24



2021 Annual Progress Report Potato Variety Development in Tulelake

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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 10 entries, and a Chipping trial with 12 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 sixteen 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. 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 18 th , 2021
Vine Kill Date:	September 1 st , 2021
Days to Vine Kill:	106
Harvest Date:	September 29, 2021
Irrigation:	Solid-set sprinklers; applied water + precipitation = 26.05 inches
Plot Length:	18.3 Feet
In-Row Spacing:	10 Inches
Row Spacing:	36 Inches
Number of Reps:	4
# of Fertilizer/Acre:	172-100-400
Seed Treatment:	Maxim 4FS and Fir Bark Dust
Weed Control:	Prowl H2O + Outlook (pre-emergence) Matrix SG (early post-emergence)x2 ; 14 days apart
Insecticides:	Admire Pro (In-furrow)
Fungicides:	Quadris (In-furrow)
Vine Kill Method:	Rolling and Reglone at labeled rates

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

	Trial	%1's	Tuber Yield (cwt/A) ¹									
			U.S. 1's		Total	U.S. No. 1's				Culls + 2's		
			>14oz	10-14oz		6-10oz	4-6oz	<4oz				
Clearwater Russet	WR	59 b	265.2 abc	353.1 bc	0.0 b	32.6 c	125.2 bc	107.4 a	80.6 a	7.2 d		
Ranger Russet	WR	65 ab	294.8 abc	440.4 abc	34.7 b	98.0 ab	129.8 abc	67.0 bcd	39.9 bcd	71.1 ab		
Russet Burbank	WR	61 ab	260.1 bc	353.1 bc	11.0 b	50.7 bc	131.1 abc	78.2 abcd	65.1 ab	17.0 cd		
Russet Norkotah	WR	69 ab	328.7 abc	486.2 a	104.4 a	130.7 a	135.4 abc	62.6 d	32.4 cd	20.9 bcd		
AOR08540-1	WR	73 a	359.4 a	428.2 abc	15.2 b	74.9 abc	189.6 ab	95.0 abcd	47.8 bcd	5.8 d		
AOR10204-3	WR	63 ab	257.4 bc	436.4 abc	35.5 b	62.7 bc	128.0 abc	66.7 cd	27.2 d	116.2 ab		
CO10085-1RU	WR	65 ab	293.7 abc	382.5 bc	5.9 b	50.9 bc	149.6 abc	93.2 abcd	61.0 abc	21.9 bcd		
CO11009-3RU	WR	69 ab	331.9 abc	418.8 abc	25.0 b	90.1 abc	159.6 abc	82.3 abcd	50.3 bcd	11.5 cd		
CO12378-1RU	WR	61 ab	262.9 bc	376.7 bc	15.3 b	51.1 bc	123.3 c	88.5 abcd	57.8 abc	40.7 bcd		
COA11013-2	WR	68 ab	335.8 abc	427.0 abc	4.2 b	41.4 bc	191.8 a	102.7 abc	61.2 abc	25.9 bcd		
OR12133-10	WR	73 ab	334.6 abc	402.3 abc	5.7 b	65.2 bc	166.6 abc	102.8 ab	49.9 bcd	12.1 cd		
POR12NCK50-1	WR	66 ab	287.0 abc	372.5 bc	13.0 b	66.4 abc	140.0 abc	80.6 abcd	53.6 abcd	18.8 cd		
TX13590-9Ru (Sunset)	WR	65 ab	352.0 ab	455.2 ab	24.5 b	69.2 abc	185.2 abc	97.6 abcd	65.9 ab	12.8 cd		
AC12080-4RU	WR	61 ab	287.5 abc	394.7 abc	22.7 b	69.2 abc	126.6 abc	91.7 abcd	67.2 ab	17.3 cd		
AC12090-3RU	WR	64 ab	305.1 abc	438.1 abc	21.1 b	65.7 bc	140.3 abc	99.1 abc	61.8 abc	50.2 bcd		
CO13003-1RU	WR	63 ab	241.9 c	359.1 bc	15.6 b	45.3 bc	123.1 c	73.6 abcd	42.4 bcd	59.1 bc		
COTX08063-2Ru	SWR	67 ab	261.2 bc	345.2 c	22.1 b	56.2 bc	142.9 abc	62.1 d	43.6 bcd	18.3 cd		
Mean		65	297.6	404.1	22.1	65.9	146.4	85.4	53.4	31.0		

¹Mean 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	4.0	3.5	4.5	4.0	2.16	1.75
Ranger Russet	WR	3.0	3.0	3.5	3.5	2.46	1.96
Russet Burbank	WR	4.0	3.0	4.0	4.0	2.14	1.72
Russet Norkotah	WR	4.0	4.0	4.0	4.0	2.16	1.76
AOR08540-1	WR	3.5	4.0	4.5	4.0	2.19	1.87
AOR10204-3	WR	3.5	4.0	4.5	3.5	1.90	1.74
CO10085-1RU	WR	3.0	3.0	4.0	3.5	2.13	1.72
CO11009-3RU	WR	4.0	4.0	4.0	4.0	2.00	1.76
CO12378-1RU	WR	4.0	4.0	4.5	4.0	2.15	1.71
COA11013-2	WR	2.5	2.5	4.5	3.5	2.25	1.80
OR12133-10	WR	2.5	2.0	4.0	3.5	2.16	1.81
POR12NCK50-1	WR	3.5	4.0	4.0	4.5	2.38	1.96
TX13590-9Ru (Sunset)	WR	2.0	3.0	4.5	3.5	1.64	1.48
AC12080-4RU	SWR	3.0	3.5	4.0	3.5	2.07	1.91
AC12090-3RU	SWR	2.5	3.5	4.5	4.0	2.19	1.87
CO13003-1RU	SWR	3.5	4.0	4.5	3.5	1.96	1.62
COTX08063-2Ru	SWR	2.0	2.5	4.5	3.5	1.89	1.60
Mean		3.2	3.4	4.2	3.8	2.11	1.77

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	Black Spot Bruise ¹	Knobs ²	Growth Crack ²	Irregular Shaped ²	Greening ²
		%	%	%	%	%	%	%	%
Clearwater Russet	WR	0	0	0	0	0.8 b	0.5 bc	0.3 a	0.8 a
Ranger Russet	WR	0	20	0	0	2.5 ab	6.0 abc	0.0 a	0.3 a
Russet Burbank	WR	0	40	0	0	2.0 ab	0.5 bc	0.0 a	0.0 a
Russet Norkotah	WR	0	0	0	0	1.8 ab	0.3 c	0.3 a	0.0 a
AOR08540-1	WR	0	0	10	0	0.8 b	0.3 c	0.5 a	0.8 a
AOR10204-3	WR	0	0	0	0	7.0 a	10.3 a	0.0 a	0.0 a
CO10085-1RU	WR	0	20	20	0	1.5 ab	2.0 bc	0.0 a	0.0 a
CO11009-3RU	WR	10	10	0	0	1.0 b	1.5 bc	0.0 a	0.8 a
CO12378-1RU	WR	30	0	0	0	3.8 ab	0.5 bc	2.3 a	0.3 a
COA11013-2	WR	0	30	0	0	0.8 b	3.0 bc	0.0 a	0.3 a
OR12133-10	WR	0	30	20	0	1.0 b	0.5 bc	0.0 a	0.5 a
POR12NCK50-1	WR	0	0	50	0	1.5 ab	1.3 bc	0.0 a	0.5 a
TX13590-9Ru (Sunset)	WR	0	0	0	0	1.8 ab	0.8 bc	0.0 a	0.0 a
AC12080-4RU	SWR	0	20	0	0	1.5 ab	0.8 bc	0.0 a	0.3 a
AC12090-3RU	SWR	0	0	0	0	4.5 ab	0.8 bc	0.8 a	0.8 a
CO13003-1RU	SWR	30	0	10	0	1.8 ab	6.8 ab	0.0 a	0.3 a
COTX08063-2Ru	SWR	10	0	10	0	1.5 ab	1.8 bc	0.0 a	0.5 a
Mean		5	10	7	0	2.1	2.2	0.2	0.3

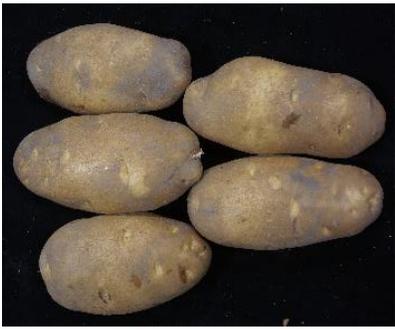
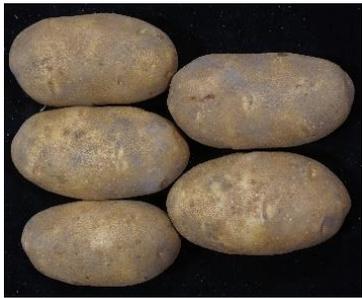
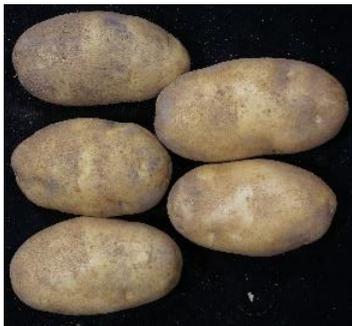
¹ Ten, 8 to 14 oz. tubers were evaluated from each plot.

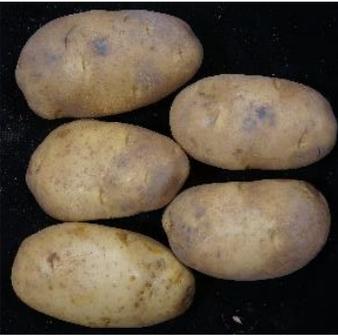
² Percent of total tubers.

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
Clearwater Russet	WR	99 a	6.7 ab	4.9 e	1.084 abc
Ranger Russet	WR	95 a	5.7 abc	7.5 abc	1.084 abc
Russet Burbank	WR	100 a	5.8 abc	5.6 de	1.075 cde
Russet Norkotah	WR	99 a	5.6 bc	8.0 a	1.071 e
AOR08540-1	WR	99 a	6.4 abc	6.3 cde	1.082 abcd
AOR10204-3	WR	96 a	5.5 bc	7.7 ab	1.070 e
CO10085-1RU	WR	99 a	6.2 abc	5.7 de	1.084 abc
CO11009-3RU	WR	100 a	6.1 abc	6.3 bcde	1.087 ab
CO12378-1RU	WR	100 a	6.0 abc	5.8 de	1.081 abcd
COA11013-2	WR	95 a	7.1 a	5.8 de	1.075 de
OR12133-10	WR	97 a	6.4 abc	6.0 de	1.078 bcde
POR12NCK50-1	WR	99 a	5.8 abc	6.0 cde	1.085 ab
TX13590-9Ru (Sunset)	WR	99 a	7.1 a	6.0 cde	1.077 cde
AC12080-4RU	SWR	100 a	6.2 abc	5.8 de	1.076 cde
AC12090-3RU	SWR	95 a	6.7 ab	6.4 bcd	1.077 cde
CO13003-1RU	SWR	100 a	5.2 c	6.4 bcd	1.074 de
COTX08063-2Ru	SWR	99 a	5.0 c	6.4 bcd	1.088 a
Mean		98	6.1	6.3	1.079

Figure 1. 2021 Late Russet Trial Entries.

Clearwater Russet	Ranger Russet	Russet Burbank
 <ul style="list-style-type: none"> • Check 	 <ul style="list-style-type: none"> • Check 	 <ul style="list-style-type: none"> • Check
Russet Norkotah	AOR08540-1	AOR10204-3
 <ul style="list-style-type: none"> • Check 	 <ul style="list-style-type: none"> • Dark russeting 	 <ul style="list-style-type: none"> • Pointy
CO10085-1RU	CO11009-3RU	CO12378-1RU
 <ul style="list-style-type: none"> • Lumpy shape 	 <ul style="list-style-type: none"> • Blocky shape 	 <ul style="list-style-type: none"> • 30 % hollow heart

COA11013-2	OR12133-10	POR12NCK50-1
 <ul style="list-style-type: none"> • Yellow hue on external skin, pointy shape 	 <ul style="list-style-type: none"> • Yellow hue to skin color • Light russeting 	 <ul style="list-style-type: none"> • Pointy shaped tuber • Uniform shape
TX13590-9Ru (Sunset)	AC12080-4RU	AC12090-3RU
 <ul style="list-style-type: none"> • Purple discoloration throughout skin 	 <ul style="list-style-type: none"> • Lumpy shape 	 <ul style="list-style-type: none"> • Pink discoloration throughout skin
CO13003-1RU	COTX08063-2Ru	
 <ul style="list-style-type: none"> • Light russeting 	 <ul style="list-style-type: none"> • Pink discoloration and pink eyes 	

Red/Specialty Variety Trial

The Red/Specialty Trial included 10 entries from the Western Regional Variety Trial (WR). 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 18 th , 2021
Vine Kill Date:	September 1 st , 2021
Days to Vine Kill:	106
Harvest Date:	September 29, 2021
Irrigation:	Solid-set sprinklers; applied water + precipitation = 26.05 inches
Plot Length:	18.3 Feet
In-Row Spacing:	10 Inches
Row Spacing:	36 Inches
Number of Reps:	4
# of Fertilizer/Acre:	172-100-400
Seed Treatment:	Maxim 4FS and Fir Bark Dust
Weed Control:	Prowl H2O + Outlook (pre-emergence) Matrix SG (early post-emergence)x2 ; 14 days apart
Insecticides:	Admire Pro (In-furrow)
Fungicides:	Quadris (In-furrow)
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	3.0	White	1.5
Red LaSoda	WR	Red	3.0	White	2.0
Modoc	WR	Red	3.5	White	1.0
A08122-12Rsto	WR	Red	2.5	Yellow	3.0
Yukon Gold	WR	Yellow	1.0	Yellow	3.0
A08120-4Y	WR	Yellow	1.0	Yellow	4.0
AORTX09037-1W/Y	WR	Yellow	1.0	Yellow	2.0
CO11250-1W/Y	WR	Yellow	1.0	Yellow	4.0
CO11266-1W/Y	WR	Yellow	1.0	Yellow	4.5
COTX10118-4Wpe/Y	WR	Yellow	1.5	Yellow	4.0

¹1=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	Tuber Yield (cwt/A) ¹									
		Total Yield	10-14 oz	6-10 oz	4-6 oz	< 4oz	> 14 oz	Undersize	Culls		
Chieftain	WR	522.7 ab	112.1 a	158.5 ab	53.2 d	29.4 c	103.0 ab	3.2 e	63.3 b		
Red LaSoda	WR	522.0 ab	89.5 ab	104.6 abc	40.6 d	33.2 c	59.4 bc	0.0 e	194.7 a		
Modoc	WR	509.1 abc	13.7 c	107.9 abc	183.7 a	172.8 ab	1.8 c	26.3 de	3.1 c		
A08122-12Rsto	WR	468.6 abc	0.0 c	51.3 cd	134.3 ab	212.6 a	0.0 c	60.0 bc	10.4 bc		
Yukon Gold	WR	398.5 bc	76.1 ab	88.7 bcd	33.0 d	15.9 c	161.9 a	0.0 e	22.9 bc		
A08120-4Y	WR	364.0 c	0.0 c	16.2 d	63.9 c	175.1 ab	0.0 c	102.2 a	6.6 bc		
AORTX09037-1W/Y	WR	436.9 abc	8.8 c	109.9 abc	137.2 ab	128.4 b	0.0 c	33.0 cd	19.7 bc		
CO11250-1W/Y	WR	463.5 abc	2.5 c	56.5 cd	120.7 bc	207.1 a	0.0 c	69.4 b	7.2 bc		
CO11266-1W/Y	WR	409.9 bc	15.2 c	70.5 cd	124.6 abc	158.1 ab	0.0 c	33.1 cd	8.3 bc		
COTX10118-4Wpe/Y	WR	579.1 a	65.4 b	178.7 a	130.2 ab	129.6 b	22.7 c	27.7 de	24.8 bc		
Mean		467.4	38.3	94.3	102.2	126.2	34.9	35.5	36.1		

¹Mean 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	3.5	3.5	3.0	3.0	1.50	1.17
Red LaSoda	WR	2.5	2.5	3.0	2.5	1.45	1.18
Modoc	WR	3.5	4.0	2.5	3.5	1.28	1.15
A08122-12Rsto	WR	3.0	4.0	2.0	3.5	1.24	1.06
Yukon Gold	WR	3.0	4.0	3.0	2.5	1.45	1.16
A08120-4Y	WR	1.0	4.0	1.5	3.5	1.33	1.05
AORTX09037-1W/Y	WR	3.0	3.5	2.0	3.5	1.32	1.11
CO11250-1W/Y	WR	2.5	4.0	3.0	3.5	1.50	1.22
CO11266-1W/Y	WR	1.0	3.5	3.0	2.5	1.54	1.30
COTX10118-4Wpe/Y	WR	2.0	4.0	2.5	4.0	1.53	1.11
Mean		2.5	3.7	2.6	3.2	1.41	1.15

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	Hollow Heart ¹	Stem End Necrosis ¹	Vascular Dicoloration ¹	Knobs ²	Growth Crack ²	Greening ²
		%	%	%	%	%	%
Chieftain	WR	0	0	10	0.8 a	5.3 b	0.0 a
Red LaSoda	WR	0	10	0	2.0 a	21.0 a	0.3 a
Modoc	WR	0	0	0	0.3 a	0.0 b	0.0 a
A08122-12Rsto	WR	0	10	0	0.3 a	1.0 b	0.0 a
Yukon Gold	WR	20	20	0	1.5 a	1.8 b	0.0 a
A08120-4Y	WR	0	0	40	0.5 a	0.0 b	0.8 a
AORTX09037-1W/Y	WR	0	0	20	2.0 a	0.8 b	0.3 a
CO11250-1W/Y	WR	0	0	10	0.5 a	0.3 b	0.0 a
CO11266-1W/Y	WR	10	10	0	1.0 a	0.3 b	0.0 a
COTX10118-4Wpe/Y	WR	0	0	10	0.5 a	1.3 b	0.3 a
Mean		3	5	9	0.9	3.2	0.2

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

² Percent of total tubers.

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
Chieftain	WR	93 a	6.2 d	8.4 b	1.073 bc
Red LaSoda	WR	98 a	5.5 d	8.9 ab	1.073 bc
Modoc	WR	98 a	12.3 abc	4.0 cd	1.062 e
A08122-12Rsto	WR	99 a	13.9 ab	3.1 cd	1.071 cd
Yukon Gold	WR	99 a	3.7 d	10.2 a	1.079 ab
A08120-4Y	WR	98 a	14.7 a	2.4 d	1.070 cd
AORTX09037-1W/Y	WR	100 a	10.5 c	3.8 cd	1.079 ab
CO11250-1W/Y	WR	100 a	14.4 a	3.0 cd	1.086 a
CO11266-1W/Y	WR	96 a	11.1 bc	3.5 cd	1.076 bc
COTX10118-4Wpe/Y	WR	99 a	11.8 abc	4.6 c	1.064 de
Mean		98	10.4	5.2	1.073

Figure 2. 2021 Red/Specialty Entries.

Cheiftain	Red LaSoda	Modoc
 <ul style="list-style-type: none"> • Check 	 <ul style="list-style-type: none"> • Check • High percent of growth cracks 	 <ul style="list-style-type: none"> • Check
A08112-12Rsto	Yukon Gold	A08120-4Y
 <ul style="list-style-type: none"> • Darker eye than skin 	 <ul style="list-style-type: none"> • Check 	 <ul style="list-style-type: none"> • Large purple splotches on skin • High tuber set
AORTX09037-1W/Y	CO11250-1W/Y	CO11266-1W/Y
 <ul style="list-style-type: none"> • Ruptured lenticils on most tubers 	 <ul style="list-style-type: none"> • Russetting on skin • Pink splotches on skin 	 <ul style="list-style-type: none"> • Russetting on skin • Pink splotches on skin

COTX10118-4Wpe/Y



- High yield
- Extremely purple eyes
- Pancake shaped
- Discoloration on skin

Chipping Potato Variety Trial

The 2020 Chipping Trial included 10 entries from the Western Regional Variety Trial (WR) and two entries 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 18 th , 2021
Vine Kill Date:	September 1 st , 2021
Days to Vine Kill:	106
Harvest Date:	September 29, 2021
Irrigation:	Solid-set sprinklers; applied water + precipitation = 26.05 inches
Plot Length:	18.3 Feet
In-Row Spacing:	10 Inches
Row Spacing:	36 Inches
Number of Reps:	4
# of Fertilizer/Acre:	172-100-400
Seed Treatment:	Maxim 4FS and Fir Bark Dust
Weed Control:	Prowl H2O + Outlook (pre-emergence) Matrix SG (early post-emergence)x2 ; 14 days apart
Insecticides:	Admire Pro (In-furrow)
Fungicides:	Quadris (In-furrow)
Vine Kill Method:	Rolling and Reglone at labeled rates

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

Clone / Variety	Trial	Total	Tuber Yield (cwt/A) ¹					Culls
			>14 oz	10-14 oz	6-10oz	4-6 oz	<4 oz	
Atlantic	WR	424.6 a	21.5 abc	77.2 a	204.7 a	71.2 bcd	38.4 de	11.6 bc
Snowden	WR	447.4 a	1.9 c	39.8 ab	202.9 a	126.9 a	65.5 bcde	10.4 bc
AC11494-6W	WR	301.5 bcd	0.0 c	1.2 b	67.1 e	123.3 a	104.6 b	5.2 c
AOR12197-4	WR	392.4 ab	31.8 ab	60.8 ab	143.1 abc	54.8 d	41.5 de	60.3 a
CO11023-2W	WR	361.4 abc	0.0 c	30.5 ab	124.8 bcde	114.0 a	85.3 bc	6.9 c
CO11037-5W	WR	392.2 ab	9.7 bc	36.2 ab	150.4 ab	114.3 a	70.0 bcd	11.5 bc
CO12235-3W	WR	277.8 cd	2.2 c	12.5 b	72.9 de	103.6 ab	70.0 bcd	16.6 bc
CO12293-1W	WR	243.3 d	4.5 c	26.7 ab	59.5 e	61.9 cd	48.2 cde	42.5 ab
COOR13270-2	WR	379.2 ab	21.7 abc	46.3 ab	140.9 abcd	95.2 abc	68.8 bcde	6.4 c
NYOR14Q9-5	WR	383.6 ab	40.8 a	74.9 a	174.1 ab	60.8 cd	28.2 e	4.8 c
CO13232-5W	SWR	372.3 abc	0.0 c	5.6 b	74.3 cde	126.1 a	159.1 a	7.1 c
CO13232-25W	SWR	436.7 a	9.8 bc	37.0 ab	154.8 ab	132.3 a	91.6 b	11.3 bc
Mean		367.7	12.0	37.4	130.8	98.7	72.6	16.2

¹Mean 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	4.0	1.24	1.01
Snowden	WR	4.0	3.5	2.0	4.0	1.23	0.99
AC11494-6W	WR	3.5	3.5	1.5	4.0	1.08	0.88
AOR12197-4	WR	3.0	3.0	2.0	3.0	1.23	1.02
CO11023-2W	WR	4.0	4.0	1.5	4.0	1.24	0.99
CO11037-5W	WR	4.0	4.0	2.0	3.5	1.21	1.05
CO12235-3W	WR	3.5	4.0	1.5	3.5	1.19	1.00
CO12293-1W	WR	3.0	4.0	2.0	3.5	1.36	1.11
COOR13270-2	WR	3.0	4.0	2.0	3.0	1.21	1.03
NYOR14Q9-5	WR	3.0	4.0	2.0	3.0	1.21	0.92
CO13232-5W	SWR	4.0	4.0	1.5	4.0	1.16	1.01
CO13232-25W	SWR	3.5	4.0	1.5	3.5	1.17	0.97
Mean		3.5	3.8	1.8	3.6	1.21	1.00

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	0	0.5 a	0.3 c	2.3 abc
Snowden	WR	0	0	50	0.5 a	0.3 c	1.3 bc
AC11494-6W	WR	0	0	20	0.3 a	0.3 c	1.5 abc
AOR12197-4	WR	0	0	20	1.0 a	5.5 b	4.8 ab
CO11023-2W	WR	50	0	10	0.3 a	0.8 c	0.5 c
CO11037-5W	WR	0	0	0	0.3 a	1.0 c	1.0 bc
CO12235-3W	WR	0	0	10	0.0 a	2.3 bc	1.8 abc
CO12293-1W	WR	10	0	0	0.0 a	10.0 a	5.3 a
COOR13270-2	WR	0	0	20	0.0 a	0.3 c	0.8 c
NYOR14Q9-5	WR	30	0	0	0.0 a	0.0 c	2.0 abc
CO13232-5W	SWR	0	0	20	0.5 a	0.3 c	0.8 c
CO13232-25W	SWR	10	0	40	0.3 a	1.0 c	0.8 c
Mean		8	0	16	0.3	1.8	1.9

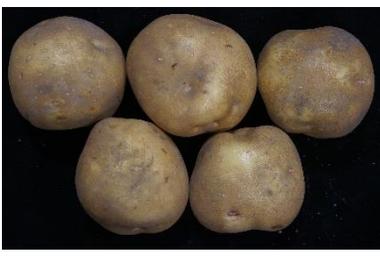
¹ Ten, 6-10oz tubers were evaluated from each plot.

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	
Atlantic	WR	82	ab	7.2	ab	6.6	ab	1.088	abc
Snowden	WR	92	ab	7.9	ab	5.7	bc	1.091	a
AC11494-6W	WR	90	ab	7.6	ab	4.1	de	1.090	ab
AOR12197-4	WR	85	ab	6.5	bc	6.6	ab	1.080	bcd
CO11023-2W	WR	94	ab	7.1	b	5.0	cde	1.079	cd
CO11037-5W	WR	99	a	6.6	bc	5.5	bc	1.080	bcd
CO12235-3W	WR	89	ab	6.2	bc	4.7	cde	1.076	d
CO12293-1W	WR	86	ab	5.2	c	5.1	cde	1.076	d
COOR13270-2	WR	90	ab	7.0	b	5.6	bc	1.080	cd
NYOR14Q9-5	WR	78	b	6.4	bc	7.1	a	1.078	d
CO13232-5W	SWR	97	ab	8.9	a	4.0	e	1.075	d
CO13232-25W	SWR	99	a	7.8	ab	5.2	cd	1.078	d
Mean		90		7.0		5.4		1.081	

Figure 3. 2021 Chipping Trial Entries

Atlantic	Snowden	AC11494-6W
 <ul style="list-style-type: none"> • Check 	 <ul style="list-style-type: none"> • Check 	 <ul style="list-style-type: none"> • Squat tubers
AOR12197-4	CO11023-2W	CO11037-5W
 <ul style="list-style-type: none"> • 1% total tubers culled from knobs 	 <ul style="list-style-type: none"> • Nice shape • 50% hollow heart 	 <ul style="list-style-type: none"> • Prone to shatter bruise
CO12235-3W	CO12293-1W	COOR13270-2
 <ul style="list-style-type: none"> • A lot of skinning • Ruptured lenticils 	 <ul style="list-style-type: none"> • Had pink splotches on interior flesh and exterior skin 	 <ul style="list-style-type: none"> • A lot of skinning

NYOR14Q9-5	CO13232-5W	CO13232-25W
 <ul style="list-style-type: none"> • Flat tuber shape 	 <ul style="list-style-type: none"> • Uniform and round • Small tuber size 	 <ul style="list-style-type: none"> • Higher yield than most experimental entrants

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