Potato Variety Development

In Tulelake

2011

Table of Contents

Acknowledgements **3**

Introduction **3**

Late Russet Variety Trial

- **Cultural Information** **4**
- **Summary** **5**
- **Tables** **6-9**
- **Tulelake Entry Comments** **10-12**

Red/Specialty Variety Trial

- **Cultural Information** **13-14**
- **Summary** **14-15**
- **Tables** **16-20**
- **Tulelake Entry Comments** **21-24**

Chipper Variety Trial

- **Cultural Information** **25**
- **Summary** **26-27**
- **Tables** **28-31**
- **Tulelake Entry Comments** **32-34**

Storage Information **34**

University of California
Agriculture and Natural Resources
Intermountain Research & Extension Center

RESEARCH REPORT
Number 143, 2011

2011 Annual Progress Report to the California Potato Research Advisory Board
Potato Variety Development in Tulelake

Rob Wilson: Center Director/Farm Advisor
Email: rgwilson@ucdavis.edu
Phone: (530) 667-2719
Fax: (530) 667-5265

Brooke Kliewer: Staff Research Associate
Email: bekliewer@ucdavis.edu

Don Kirby: Superintendant of Agriculture
Email: dwkirby@ucdavis.edu
Phone: (530) 667-5117

Kevin Nicholson: Staff Research Associate
Email: kwnicholson@ucdavis.edu

Tables and variety notes were prepared by Brooke Kliewer

Three potato variety trials were conducted at the Intermountain Research & Extension Center (IREC) in 2011: a Russet trial with 22 entries, a Specialty trial with 30 entries, and a Chipping trial with 17 entries. The trials included entries from the Western Regional (WR) variety development program, Southwest Regional (SWR) variety development program, and varieties of local interest.

General Comments: Planting was delayed two to three weeks compared to the normal planting date due to wet, cool spring weather and water-logged soil conditions. Summer weather was favorable for potato growth with monthly average air temperatures between 60 to 65° F and monthly average soil temperatures (6 inch depth) between 70 and 80° F from June to September. Potato yield averaged across entries was lower than the historic average at IREC for all three trials. Trials were planted in a field with a known history of Verticillium Wilt problems, and early die symptoms were observed in all trials. Weather data can be found at: http://www.cimis.water.ca.gov/cimis/welcome.jsp

Late Russet Variety Trial

Trial Information

Location:	Intermountain Research & Extension Center, Tulelake, CA
Soil Type:	Tulebasin mucky silty clay loam
Planting Date:	May 23
Vine Kill Date:	September 16: Roll vines and application of Reglone at labeled rate
Days to Vine Kill:	116 days
Harvest Date:	October 12
Irrigation:	Solid-set sprinklers; applied water +precipitation = 22.16 inches
Plot Length:	22 hills
In-Row Spacing:	11.3 inches
Row Spacing:	36 inches
Number of Reps:	4 replications
Fertilizer per Acre:	204 lbs N - 80 lbs P2O5 - 48 lbs K2O - 21 lbs S
Seed Treatment:	Agri- Fill Premium Fir Bark Dust
Weed Control:	Cultivation, and Outlook (pre-emergence) Matrix and Sencor (post-emergence)
Insecticides:	Alias 4F (in-furrow at planting), Movento and Coragen (foliar applications)
Fungicides:	Quadris (in-furrow at planting), Quadris, Endura, and Tanos (foliar applications)
Fumigation:	No fumigation

Comments: The Late Russet trial included 12 entries from the Western Regional Program, 7 entries from the Southwest Regional Program, and 3 entries of local interest. The highest yielding entry was A02060-3TE with a total yield of 520 cwt/A. The second highest yielding entry was A01010-1 with a total yield of 494 cwt/A. A01010-1 yield graded 73% US No. 1, and it was one of the highest yielding entries in 2010. CO03202-1RU produced the highest total yield (475 cwt/A) in the Southwest Trial. CO03276-1RU, CO3276-4RU, AC00395-2RU, and CO03187-1RU produced the highest US No. 1 yields in the Southwest Trial. See Tables 1-4 for Russet trial results and Figure 1 for entry pictures and comments.

Potato Stand

- All entries had greater than 90% emergence except for A01025-4 (80.7%) and CO03276-4RU (84.7%).

Tuber Count and Size

- **Tubers Per Plant**
  Highest: CO03276-5RU (11.1)
  Lowest: CO99100-1RU (6.5), CO99053-3RU (6.9), CO03187-1RU (6.9), A01025-4 (7), A02060-3TE (7), and CO99053 (7.1)
- **Average Tuber Size (oz.)**
  Largest: A01025-4 (8.2) and A02060-3TE (7.9)
  Smallest: CO03276-5RU (4.2)
- **Undersized Tubers- <4oz. (cwt/acre)**
  Most: CO03276-5RU (140)
  Least: A01025-4 (29) and CO99100-1RU (33)

Yield and Return

- **Total Yield (cwt/acre)**
  Highest: A02060-3TE (520) and A01010-1 (494)
  Lowest: CO99053-4RU (350) and AOTX96075-1RU (386)
- **U.S. No. 1's Yield (cwt/acre)**
  Highest: A01010-1 (360), Premier Russet (356), CO099100-1RU (348), Classic (341), A02060-3TE (340), A98345-1 (338), CO03276-4RU (333), & CO03202-1RU (333)
  Lowest: CO99053-4RU (252), A01025-4 (257), CO03276-5RU (260), and Burbank (275)
- **Pack-out Return ($/acre)**
  Return was calculated using a four year average of fresh market potato prices in the Columbia Basin and a packing shed cost of $5.75/cwt.
  Highest: A02060-3TE ($3663)
  Lowest: CO03276-5RU ($904)

Tuber Defects

- **Hollow Heart**
  Notable Entries: Russet Burbank (28%), Premier Russet (13%)
- **Stem End Necrosis**
  Notable Entries: AOTX96265-2RU (28%), Classic (15%), Russet Burbank (15%), & A01010-1 (15%)
- **Vascular Discoloration**
  Notable Entries: A98345-1 (20%) and AC99375-1RU (18%)

Verticillium Wilt Susceptibility Rating

- **Rating, September 1st (0=0 symptoms, 9=90-100% of plants show symptoms of disease)**
  Most Susceptible: Russet Norkotah (8.8), CO03187-1RU (8.5), and AOTX96075-1RU (8.3)
  Least Susceptible: A98345-1 (2.8), AC99375-1RU (3.0), AC00395-2RU (3.0), CO99053-3RU (3.3), A01010-1 (3.5), and A02060-3TE (3.5)

Table 1. Tuber Yield & Size of Experimental & Standard Russet Skinned Potato Entries.

		Tuber Yield (cwt/A)										
		U.S. No. 1's (cwt)										
Clone/Variety	Trial	Total 1's	12-16oz	8-12oz	4-8oz	<4oz	>16oz	2's	Culls	Total	% 1's	Pack-out Revenue[1] $
Ranger Russet	WR	290	30	81	179	91	5	24	6	416	70	1673
Russet Burbank	WR	275	34	93	148	80	10	24	3	390	70	1839
Russet Norkotah	WR	332	35	98	199	71	13	16	3	435	76	2190
A98345-1	WR	338	24	98	216	86	1	9	4	439	77	1898
A01010-1	WR	360	20	77	263	102	1	21	10	494	73	1766
A01025-4	WR	257	78	88	91	29	76	56	27	444	58	3031
A02060-3TE	WR	340	97	120	122	41	77	40	22	520	65	3663
AC99375-1RU	WR	321	31	98	192	79	19	22	15	456	71	2111
AOTX96265-2RU	WR	322	20	78	224	86	9	3	11	431	75	1711
CO99053-3RU	WR	326	71	112	143	47	50	13	4	439	74	3028
CO99053-4RU	WR	252	23	74	155	69	8	20	1	350	71	1563
CO99100-1RU	WR	348	67	147	133	33	32	26	4	443	79	3210
Russet Norkotah	SWR	331	33	99	199	90	8	12	6	447	74	1996
AC00395-2RU	SWR	313	14	67	232	108	3	9	6	439	71	1432
AOTX96075-1RU	SWR	279	36	87	156	60	14	29	4	386	72	1983
CO03187-1RU	SWR	309	42	111	155	51	22	12	4	397	78	2394
CO03202-1RU	SWR	333	41	102	190	84	28	10	19	475	70	2289
CO03276-4RU	SWR	333	27	105	201	66	1	11	4	414	80	2036
CO03276-5RU	SWR	260	12	50	199	140	1	4	3	408	64	904
Classic	IREC	341	26	111	205	51	2	25	7	427	80	2213
Clearwater Russet	IREC	303	8	67	228	93	2	12	3	413	73	1422
Premier Russet	IREC	356	67	127	162	53	23	26	7	465	77	2913
Mean		314	38	95	181	73	18	19	8	433	73	2148
95% CI		27.6	14.9	16.1	18.4	10.8	11.7	11.6	5.3	31.9	3.9	349.7

[1] Pack-Out Revenue per Acre= Gross Revenue using the 4 year average for Columbia Basin Carton and Bag Prices - $5.75/CWT Packing and Handling Charges

Table 2. External Tuber Characteristics of Experimental & Standard Russet Skinned Potato Entries.

Clone/Variety	Trial	Merit Score[1]	Russeting[2]	Eye Depth[3]	Tuber Shape[4]	Shape Uniformity[5]	Length/ Width Ratio[6]
Ranger Russet	WR	3.3	3.6	3.4	4.8	4.2	2.1
Russet Burbank	WR	3.2	3.7	3.3	4.2	3.1	1.8
Russet Norkotah	WR	3.6	4.2	3.5	4.1	3.0	1.9
A98345-1	WR	2.7	2.4	3.6	3.6	3.4	1.6
A01010-1	WR	3.5	3.9	3.6	3.7	3.6	1.6
A01025-4	WR	3.7	3.7	3.9	3.6	4.1	1.7
A02060-3TE	WR	3.9	3.8	3.8	3.8	3.8	1.7
AC99375-1RU	WR	2.5	3.5	3.1	3.9	3.0	1.8
AOTX96265-2RU	WR	3.4	3.9	3.4	3.5	3.8	1.5
CO99053-3RU	WR	3.8	3.6	4.0	3.9	3.6	1.7
CO99053-4RU	WR	3.2	3.2	3.5	4.4	3.3	1.9
CO99100-1RU	WR	4.0	3.8	4.1	3.9	3.3	1.8
Russet Norkotah	SWR	3.5	4.0	3.4	4.3	3.4	1.9
AC00395-2RU	SWR	3.4	3.9	3.5	3.9	3.5	1.7
AOTX96075-1RU	SWR	3.5	4.2	3.3	4.2	3.5	1.9
CO03187-1RU	SWR	3.7	3.5	3.6	4.8	4.7	2.2
CO03202-1RU	SWR	3.8	3.8	3.8	4.6	4.0	2.1
CO03276-4RU	SWR	3.8	3.8	4.0	4.0	3.5	1.9
CO03276-5RU	SWR	3.4	3.9	3.6	4.3	3.3	2.0
Classic	IREC	3.4	3.8	3.7	3.9	3.3	1.8
Clearwater Russet	IREC	4.0	3.9	3.9	3.9	4.0	1.7
Premier Russet	IREC	4.0	3.8	3.7	4.0	4.1	1.8
Mean		3.5	3.7	3.6	4.0	3.6	1.8
95% CI		0.4	0.2	0.3	0.3	NS	0.1

Rating Scales (Tubers evaluated were 8-16oz size)

[1] 1=Worst, 5=Best - Fresh Market Russet Merit Score takes into account multiple factors important to fresh market appeal inlcuding tuber shape, eye depth, russeting, and shape

[2] 1=Light, 5= Heavy

[3] 1=Deep, 5= Shallow

[4] 1=Round, 5= Oblong

[5] 1= Non Uniform, 5= Very Uniform

[6] Ratio of 10 tubers measured from each plot

Table 3. Tuber Defects of Experimental & Standard Russet Skinned Potato Entries.

Clone/Variety	Trial	Hollow Heart[1] (%)	Stem End Necrosis[1] (%)	Vascular Discoloration[1] (%)	Knobs[2] (%)	Growth Cracks[2] (%)	Irregular Shaped[2] (%)	Green[2] (%)
Ranger Russet	WR	0	10	13	2	0	1	2
Russet Burbank	WR	28	15	5	3	1	1	1
Russet Norkotah	WR	0	3	3	2	1	1	1
A98345-1	WR	0	8	20	1	0	0	1
A01010-1	WR	0	15	8	2	0	0	2
A01025-4	WR	0	3	5	5	1	1	10
A02060-3TE	WR	0	10	5	3	1	1	6
AC99375-1RU	WR	3	3	18	2	0	1	4
AOTX96265-2RU	WR	5	28	10	0	0	0	3
CO99053-3RU	WR	0	5	10	1	0	1	2
CO99053-4RU	WR	0	10	10	2	0	3	1
CO99100-1RU	WR	0	5	8	1	2	1	1
Russet Norkotah	SWR	0	5	8	1	0	1	2
AC00395-2RU	SWR	0	3	5	1	0	1	2
AOTX96075-1RU	SWR	3	5	5	2	0	2	1
CO03187-1RU	SWR	0	5	3	1	1	0	2
CO03202-1RU	SWR	0	0	8	0	0	1	3
CO03276-4RU	SWR	8	8	0	1	0	0	1
CO03276-5RU	SWR	0	3	5	1	0	0	1
Classic	IREC	0	15	10	1	1	2	3
Clearwater Russet	IREC	0	5	15	1	1	0	1
Premier Russet	IREC	13	3	3	1	1	2	2
Mean		3	7	8	1	1	1	2
95% CI		3.8	8.46	NS	1.1	0.6	NS	1.3

[1] 10 tubers evaluated from each plot in the 12-16oz and/or 8-12oz tubers

[2] Percent of tubers pulled with defects from total tuber count

Table 4. Disease Susceptibility, Stand, Tuber Set, Average Tuber Size, & Specific Gravity of Experimental & Standard Russet Skinned Potato Entries.

Clone/Variety	Trial	Verticillium Wilt Rating[1] 9/1/2011	% Stand	Plants/ Acre	Tubers /Plant	Avg Tuber Size (oz)	Specific Gravity
Ranger Russet	WR	4.8	98.9	15244	8.5	5.1	1.090
Russet Burbank	WR	5.5	96.6	14894	7.8	5.4	1.087
Russet Norkotah	WR	8.0	98.9	15244	8.2	5.6	1.077
A98345-1	WR	2.8	100.0	15419	8.8	5.2	1.093
A01010-1	WR	3.5	98.3	15157	10.3	5.1	1.086
A01025-4	WR	4.5	80.7	12441	7.0	8.2	1.081
A02060-3TE	WR	3.5	97.8	15069	7.0	7.9	1.083
AC99375-1RU	WR	3.0	96.1	14807	8.8	5.6	1.095
AOTX96265-2RU	WR	3.8	94.3	14544	9.3	5.1	1.090
CO99053-3RU	WR	3.3	94.3	14544	6.9	7.0	1.088
CO99053-4RU	WR	7.8	97.8	15069	7.1	5.3	1.088
CO99100-1RU	WR	7.3	95.5	14719	6.5	7.5	1.084
Russet Norkotah	SWR	8.8	98.3	15156	9.1	5.2	1.076
AC00395-2RU	SWR	3.0	96.1	14806	10.0	4.7	1.103
AOTX96075-1RU	SWR	8.3	97.2	14981	7.1	5.8	1.080
CO03187-1RU	SWR	8.5	94.9	14631	6.9	6.3	1.078
CO03202-1RU	SWR	5.5	92.6	14281	9.4	5.7	1.087
CO03276-4RU	SWR	7.0	84.7	13054	9.0	5.6	1.089
CO03276-5RU	SWR	7.3	91.5	14106	11.1	4.2	1.088
Classic	IREC	4.0	94.9	14631	8.0	5.9	1.089
Clearwater Russet	IREC	3.8	95.5	14719	9.5	4.8	1.088
Premier Russet	IREC	4.8	100.0	15419	7.3	6.6	1.093
Mean		5.4	95.2	14679	8.3	5.8	1.087
95% CI		0.81	3.5	532	0.6	0.4	Avg

[1] Verticillium Wilt Rating- 0= 0 Symptoms, 1= Trace, 2= 1-5% of plants show symptoms of disease, 3= 5-10%, 4= 10-20%, 5= 20-40%, 6= 40-60%, 7= 60-75%, 8= 75-90%, 9= 90-100%

Figure 1. 2011 Late Russet Trial Entries.

Entry	Tulelake Notes	Entry	Tulelake Notes
Ranger Russet (WR)		**Russet Burbank (WR)**	
	• 13% Vascular Discoloration • Low susceptibility to Vert. Wilt		
Russ. Norkotah (WR/SWR)		**A98345-1 (WR)**	
	• 76% U.S. No. 1's		• Light russet • Shallow eye • 20% vascular discoloration- similar in 2010 • Low susceptibility to Vert. Wilt
A01010-1 (WR)		**A01025-4 (WR)**	
	• High yield- similar in 2010 • Shallow eye • 15% stem-end necrosis • 10.3 tubers per plant • Problem with ruptured lenticels		• Blocky shape • Shallow eye • Uniform shape • 8.2 oz avg. tuber size • Several tubers had elephant hide
A02060-3TE (WR)		**AC99375-1RU (WR)**	
	• High yield • Easily skinned • Highest revenue • Good merit score • Shallow eye • Avg tuber size 7.9oz		• Entry noted to have significant mouse damage • 18% vascular discoloration • High specific gravity

Figure 1. 2011 Late Russet Trial Entries Continued.

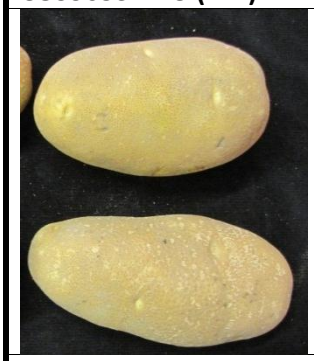
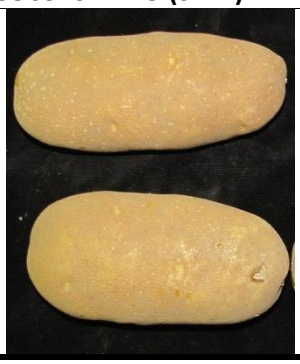
Entry	Tulelake Notes	Entry	Tulelake Notes
AOTX96265-2RU (WR)		**CO99053-3RU (WR)**	
	• 75% U.S. No. 1's • Darker russet • Blocky shape • High internal defects- similar in 2010 • Low susceptibility to Vert. Wilt		• Shallow eye • Low susceptibility to Vert. Wilt • Low number of tubers/plant • 7.0oz avg tuber size
CO99053-4RU (WR)		**CO99100-1RU (WR)**	
	• Light russet • Long, pointy shape • High susceptibility to Vert. Wilt		• Majority of tubers in the 8-12oz size category- similar in 2010 • Shallow eye • Low number of tubers/plant
AC00395-2RU (SWR)		**AOTX96075-1RU (SWR)**	
	• Low internal defects • Low susceptibility to Vert. Wilt • 10 tubers/plant • 4.7oz avg. tuber size		• Dark russet • Long shape • High susceptibility to Vert. Wilt
CO03187-1RU (SWR)		**CO03202-1RU (SWR)**	
	• 78% U.S. No. 1's • Long, narrow shape • Uniform shape • Low internal defects • Low number of tubers/plant		• High yield • Long skinny shape • Uniform shape • Shallow eye • Low susceptibility to Vert. Wilt

Figure 1. 2011 Late Russet Trial Entries Continued.

Entry	Tulelake Notes	Entry	Tulelake Notes
CO03276-4RU (SWR)		**CO03276-5RU (SWR)**	
	• 80% U.S. No. 1's • High merit score • Shallow eye and nice shape • 8% hollow heart		• Dark russet • Long shape • Low internal defects • 11.1 tubers/plant • 4.2oz avg. tuber size
Classic Russet (IREC)		**Clearwater Russet (IREC)**	
	• 80% U.S. No. 1's • Low susceptibility to Vert. Wilt • *Please see Research Report #140 for additional information about this variety		• Shallow eye • Uniform shape • Low susceptibility to Vert. Wilt • 4.8oz avg. tuber size
Premier Russet (IREC)			
	• High U.S. No. 1's yield • Uniform shape • 13% hollow heart		

Red/ Specialty Variety Trial

Trial Information

Location:	Intermountain Research & Extension Center, Tulelake, CA
Soil Type:	Tulebasin mucky silty clay loam
Planting Date:	May 23
Vine Kill Date:	September 16: Roll vines and application of Reglone at labeled rate
Days to Vine Kill:	116 days
Harvest Date:	October 12
Irrigation:	Solid-set sprinklers; applied water + precipitation = 22.16 inches
Plot Length:	24 hills
In-Row Spacing:	9.1 inches
Row Spacing:	36 inches
Number of Reps:	4 replications
Fertilizer per Acre:	204 lbs N - 80 lbs P2O5 - 48 lbs K2O - 21 lbs S
Seed Treatment:	Agri-Fill Premium Fir Bark Dust
Weed Control:	Cultivation, Outlook (preemergence) and Matrix (postemergence)
Insecticides:	Alias 4F (in-furrow at planting), Movento and Coragen (foliar applications)
Fungicides:	Quadris (in-furrow at planting), Quadris, Endura, and Tanos (foliar applications)
Fumigation:	No fumigation

Comments: The Red/ Specialty trial included 14 entries from the Western Regional Program and 16 entries from the Southwest Regional Program. Entries were separated into five categories: red skin and white flesh, red/purple skin and yellow flesh, red/purple skin and red/purple flesh, white/yellow skin and yellow flesh, and fingerlings.

In the red skin and white flesh category, Red LaSoda (WR) and entry ATTX01178-1R were the highest yielding entries with a total yield of 609 cwt/A.

In the red/purple skin and yellow flesh category, ATTX98510-1R/Y and CO01399-10P/Y were the highest yielding entries with a total yield of 693 cwt/A and 663 cwt/A respectively. CO01399-10P/Y was the highest yielding entry in 2010.

In the red/ purple skin and red/purple flesh category Purple Majesty was the highest yielding entry at 521 cwt/A .

In the white/yellow skin and yellow flesh category, A99433-5y was the highest yielding entry with a total yield of 529 cwt/A. A99433-5y produced higher total and US No. 1 yields compared to Yukon Gold (standard).

See Tables 5-9 for Red/Specialty trial results and Figure 2 for entry pictures and comments.

Potato Stand

- Potato stand for entries in the Red/Specialty trial was variable. Most varieties had less than 90% emergence. The cool, wet spring delayed plant emergence; it also likely increased the incidence and severity of *Rhizoctonia* damage to emerging stems. *Rhizoctonia* lesions were observed on belowground stems.

Tuber Count and Size

- **Tubers Per Plant**
  Highest: COTX02172-1R (15.3) and CO04013-1W/Y (14.6)
  Lowest: Yukon Gold-WR (6.4) and CO04177-5PW/Y (7.2)
- **Average Tuber Size (oz.)**
  Largest: Red Lasoda-SWR (6.9), COTX01403-4R/Y (6.9), CO04021-2R/Y (6.7), and Yukon Gold (6.7)
  Smallest: CO04177-5PW/Y (2.8)
- **Undersized Tubers- <4 oz. (cwt/acre)**
  Most: CO04013-1W/Y (299)
  Least: Yukon Gold-WR (41) and TX1674-1W/Y (54)

Yield

- **Total Yield (cwt/acre)**
  Highest: ATTX98510-1R/Y (693), CO01399-10P/Y (663), and CO04021-2R/Y (652)
  Lowest: CO04177-5PW/Y (197)
- **U.S. No. 1's Yield - 4-14 oz. (cwt/Acre)**
  Highest: ATTX98510-1R/Y (492), CO01399-10P/Y (478), ATTX01178-1R (453)
  Lowest: CO04177-5PW/Y (47)

Tuber Defects

- **Hollow Heart**
  Notable Entries: Red LaSoda- both entries (43/33%) and COTX01403-4R/Y (35%)
- **Stem End Necrosis**
  Notable Entries: CO03027-2R/R (33%), Yukon Gold (25/23%), TX1674-1W/Y (23%) and CO04177-5PW/Y (23%)
- **Vascular Discoloration**
  Notable Entries: ATTX01180-1R/Y (93%), COTX02172-1R (80%), and CO04177-5PW/Y (43%)

Verticillium Wilt Susceptibility Rating

- **Rating, September 1st (0=0 symptoms, 9=90-100% of plants show symptoms of disease)**
  Most Susceptible : CO04177-5PW/Y (9.0), COTX01403-4R/Y (8.5), Dark Red Norland (8)
  Least Susceptible: CO01399-10P/Y (3.0) and A99433-5Y (3.0)

Table 5. Skin & Flesh Colors of Experimental & Standard Specialty Entries.

Clone/Variety	Trial	Skin Color	Flesh Color
Dark Red Norland	WR	Red	White
Dark Red Norland	SWR	Red	White
Red LaSoda	WR	Red	White
Red LaSoda	SWR	Red	White
ATTX01178-1R	WR	Red	White
ATTX98453-6R	WR	Red	White
CO00291-5R	WR	Red	White
CO99076-6R	WR	Red	White
CO99256-2R	WR	Red	White
COTX02172-1R	SWR	Red	White
NDTX5438-11R	SWR	Red	White
ATTX98510-1R/Y	WR	Red	Yellow
CO01399-10P/Y	WR	Purple	Yellow
COTX01403-4R/Y	WR	Red	Yellow
ATTX88654-2P/Y	SWR	Purple	Yellow
ATTX01180-1R/Y	SWR	Red	Yellow
CO04021-2R/Y	SWR	Red	Yellow
Purple Majesty	WR/SWR	Purple	Purple
CO03027-2R/R	SWR	Red	Red
CO04045-4P/P	SWR	Purple	Purple
Yukon Gold	WR	White	Yellow
Yukon Gold	SWR	White	Yellow
A99433-5Y	WR	Yellow	Yellow
ATC00293-1W/Y	WR	White	Yellow
CO04013-1W/Y	SWR	White	Yellow
TX1674-1W/Y	SWR	White	Yellow
A99331-2RY	WR	Red/White	Yellow
CO04177-5PW/Y	SWR	Purple/White	Yellow
Banana	SWR	White	Yellow
CO03094-5RF/RW	SWR	Red	Red/White

Table 6. Tuber Yield & Size of Experimental & Standard Specialty Potato Entries.

		Tuber Yield (cwt/A)									
		U.S. No. 1's (cwt)									
Clone/Variety	Trial	Total 1's	10-14oz	6-10oz	4-6oz	<4oz	>14oz	2's	Culls	Total	% 1's
Red/White Flesh											
Dark Red Norland	WR	386	63	207	116	72	28	31	7	524	74
Dark Red Norland	SWR	370	64	187	118	88	23	25	12	516	71
Red LaSoda	WR	424	102	217	105	58	40	53	34	609	70
Red LaSoda	SWR	364	109	177	78	61	62	81	24	593	61
ATTX01178-1R	WR	453	124	212	117	59	40	38	19	609	75
ATTX98453-6R	WR	338	71	166	101	76	17	21	19	470	72
CO00291-5R	WR	156	6	50	100	126	0	5	2	289	54
CO99076-6R	WR	307	16	155	135	93	3	8	6	415	74
CO99256-2R	WR	273	16	133	125	131	7	13	12	436	63
COTX02172-1R	SWR	235	7	97	131	163	0	6	15	418	56
NDTX5438-11R	SWR	355	70	174	111	80	10	9	10	464	76
Red-Purple/Yellow Flesh											
ATTX98510-1R/Y	WR	492	120	242	130	119	59	16	8	693	71
CO01399-10P/Y	WR	478	114	237	128	93	61	26	5	663	72
COTX01403-4R/Y	WR	376	105	187	85	60	82	65	14	597	63
ATTX88654-2P/Y	SWR	346	70	176	100	69	29	23	27	493	70
ATTX01180-1R/Y	SWR	283	61	125	97	95	22	12	27	440	64
CO04021-2R/Y	SWR	456	146	215	95	60	74	31	31	652	70
Red-Purple/Red-Purple Flesh											
Purple Majesty	WR/SWR	293	29	122	142	187	2	36	3	521	56
CO03027-2R/R	SWR	258	8	106	144	160	0	9	1	429	60
CO04045-4P/P	SWR	165	4	53	108	203	0	1	1	370	44
Yellow Flesh											
Yukon Gold	WR	313	90	155	68	41	31	32	7	425	74
Yukon Gold	SWR	329	74	167	88	66	26	36	5	463	71
A99433-5Y	WR	386	19	176	192	139	0	3	1	529	73
ATC00293-1W/Y	WR	265	51	136	78	81	32	24	37	439	60
CO04013-1W/Y	SWR	176	3	54	120	299	0	5	5	485	36
TX1674-1W/Y	SWR	167	38	74	55	54	16	6	6	249	67
A99331-2RY	WR	264	12	107	145	195	1	6	13	478	55
CO04177-5PW/Y	SWR	47	0	7	40	144	0	4	1	197	23
Fingerlings											
Banana	SWR	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	250	n/a
CO03094-5RF/RW	SWR	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	464	n/a
Mean		310	55	145	110	113	23	22	12	472	63
95% CI		41.4	20.1	25.1	17.3	16.2	11.2	12.1	5.8	44.2	5.3

Table 7. External & Internal Tuber Characteristics of Experimental & Standard Specialty Entries.

Clone/Variety	Trial	Appearance[1]	Skin Color Rating[2]	Internal Color Rating[3]	Eye Depth[4]	Tuber Shape[5]	Shape Uniformity[6]	Length/ Width Ratio[7]
Red/White Flesh								
Dark Red Norland	WR	3.5	2.1	1.0	3.0	2.1	4.0	1.1
Dark Red Norland	SWR	3.1	2.3	1.0	3.0	2.3	4.0	1.1
Red LaSoda	WR	2.3	1.6	1.9	1.1	2.3	2.4	1.1
Red LaSoda	SWR	2.5	1.8	1.7	1.2	2.0	2.9	1.1
ATTX01178-1R	WR	2.6	1.9	1.3	2.5	1.5	4.0	1.0
ATTX98453-6R	WR	3.4	2.1	1.1	2.5	1.8	3.5	1.1
CO00291-5R	WR	2.4	4.0	1.1	3.6	1.6	3.0	1.2
CO99076-6R	WR	2.9	4.0	1.0	3.1	1.4	3.8	1.0
CO99256-2R	WR	2.5	3.6	1.4	3.4	2.1	2.6	1.2
COTX02172-1R	SWR	3.6	2.3	1.4	3.1	1.6	3.3	1.1
NDTX5438-11R	SWR	3.1	3.0	1.3	3.4	1.6	4.0	1.1
Red-Purple/Yellow Flesh								
ATTX98510-1R/Y	WR	3.5	1.5	2.8	2.3	1.8	4.0	1.0
CO01399-10P/Y	WR	3.3	3.3	2.6	2.9	1.5	4.1	1.0
COTX01403-4R/Y	WR	3.8	1.3	3.1	3.8	2.8	3.0	1.2
ATTX88654-2P/Y	SWR	3.4	3.9	2.9	2.8	1.5	3.8	0.9
ATTX01180-1R/Y	SWR	3.3	2.8	3.0	3.4	3.1	3.9	1.4
CO04021-2R/Y	SWR	4.0	3.5	3.1	3.8	3.6	3.8	1.5
Red-Purple/Red-Purple Flesh								
Purple Majesty	WR/SWR	3.6	5.0	5.0	3.3	4.0	4.1	1.8
CO03027-2R/R	SWR	2.5	5.0	4.0	3.6	2.6	3.0	1.3
CO04045-4P/P	SWR	3.5	5.0	5.0	3.4	1.9	3.8	1.2
Yellow Flesh								
Yukon Gold	WR	4.0	1.2	3.0	4.0	3.7	3.8	1.4
Yukon Gold	SWR	4.0	1.0	2.8	4.1	3.1	3.8	1.4
A99433-5Y	WR	3.8	1.4	2.4	3.5	1.9	3.1	1.2
ATC00293-1W/Y	WR	3.9	1.4	3.5	4.0	3.5	4.0	1.5
CO04013-1W/Y	SWR	3.9	1.3	3.9	3.0	1.5	3.8	1.1
TX1674-1W/Y	SWR	3.5	1.5	2.9	3.6	3.6	3.8	1.6
A99331-2RY	WR	3.4	2.0	3.9	2.6	1.6	3.4	1.1
CO04177-5PW/Y	SWR	3.4	4.0	3.9	3.3	3.5	3.3	1.5
Fingerlings								
Banana	SWR	3.0	1.0	2.5	3.5	5.0	3.8	3.2
CO03094-5RF/RW	SWR	2.8	3.4	1.5	3.3	5.0	3.1	2.7
Mean		3.3	2.6	2.5	3.2	2.5	3.5	1.3
95% CI		0.5	0.4	0.5	0.6	0.4	0.7	0.1

Rating Scales

[1] 1= Worst, 5= Best

[2] 1= Light (White/Red), 5= Dark (Red/Purple)

[3] 1= White/Light Red, 5= Dark

[4] 1= Deep, 5= Shallow

[5] 1= Round, 5= Oblong

[6] 1= No Uniformity, 5= Very Uniform

[7] Ratio of 10 tubers measured from each plot

Table 8. Tuber Defects of Experimental & Standard Specialty Potato Entries.

Clone/Variety	Trial	Hollow Heart[1] (%)	Stem End Necrosis[1] (%)	Vascular Discoloration[1] (%)	Knobs[2] (%)	Growth Cracks[2] (%)	Irregular Shaped[2] (%)	Green[2] (%)
Red/White Flesh								
Dark Red Norland	WR	0	10	3	0.9	0.3	1.6	2.3
Dark Red Norland	SWR	0	0	6	0.2	0.0	0.8	3.7
Red LaSoda	WR	43	3	18	1.1	0.3	2.2	7.5
Red LaSoda	SWR	33	4	7	1.0	0.3	3.6	7.4
ATTX01178-1R	WR	0	5	3	0.7	0.2	1.9	5.6
ATTX98453-6R	WR	0	5	10	1.1	0.4	0.8	6.2
CO00291-5R	WR	0	3	5	0.1	0.0	0.4	1.1
CO99076-6R	WR	0	8	5	0.1	0.0	0.4	2.2
CO99256-2R	WR	3	8	25	0.4	0.1	0.9	3.3
COTX02172-1R	SWR	3	5	80	0.2	0.1	0.3	4.6
NDTX5438-11R	SWR	0	10	8	0.4	0.1	0.7	4.0
Red-Purple/Yellow Flesh								
ATTX98510-1R/Y	WR	20	5	10	0.3	0.1	1.0	1.6
CO01399-10P/Y	WR	0	10	13	0.5	0.1	1.3	0.9
COTX01403-4R/Y	WR	35	0	3	1.5	0.5	3.3	3.2
ATTX88654-2P/Y	SWR	13	0	3	0.5	0.2	2.0	7.5
ATTX01180-1R/Y	SWR	0	3	93	0.2	0.1	1.0	7.4
CO04021-2R/Y	SWR	3	8	13	1.9	0.5	1.4	7.5
Red-Purple/Red-Purple Flesh								
Purple Majesty	WR/SWR	0	8	10	0.4	0.1	2.2	0.8
CO03027-2R/R	SWR	0	33	10	0.3	0.1	0.8	0.2
CO04045-4P/P	SWR	3	15	10	0.1	0.0	0.2	0.1
Yellow Flesh								
Yukon Gold	WR	0	23	16	3.0	1.1	1.9	1.8
Yukon Gold	SWR	0	25	15	1.8	0.6	3.3	1.4
A99433-5Y	WR	0	3	8	0.4	0.1	0.4	0.1
ATC00293-1W/Y	WR	10	8	0	1.7	0.5	0.9	9.9
CO04013-1W/Y	SWR	15	3	13	0.3	0.0	0.2	1.2
TX1674-1W/Y	SWR	0	23	18	0.6	0.3	1.9	2.7
A99331-2RY	WR	0	3	3	0.4	0.1	0.6	3.6
CO04177-5PW/Y	SWR	0	23	43	0.1	0.0	1.7	0.9
Fingerlings								
Banana	SWR	0	3	10	n/a	n/a	n/a	n/a
CO03094-5RF/RW	SWR	0	15	0	n/a	n/a	n/a	n/a
Mean		6	10	15	0.7	0.2	1.4	3.3
95% CI		7.13	8.92	11.84	0.8	0.3	1.3	1.7

[1] 10 Tubers evaluated from each plot in the 6-10oz tuber size

[2] Percent of tubers pulled with defects from total tuber count

Table 9. Disease Susceptibility, Stand, Tuber Set, Avgerage Tuber Size, & Specific Gravity of Experimental & Standard Specialty Potato Entries.

Clone	Trial	Verticillium Wilt Rating[1] 9/1/2011	% Stand	Plants/ Acre	Tubers/ Plant	Avg Tuber Size (oz)	Specific Gravity
Red/White Flesh							
Dark Red Norland	WR	8.0	91.7	17552	8.0	6.0	1.065
Dark Red Norland	SWR	7.9	86.4	16535	9.1	5.5	1.066
Red LaSoda	WR	6.3	89.6	17153	8.7	6.6	1.078
Red LaSoda	SWR	6.4	92.8	17764	7.8	6.9	1.080
ATTX01178-1R	WR	4.8	79.7	15258	9.9	6.5	1.064
ATTX98453-6R	WR	7.3	79.7	15258	8.8	5.6	1.068
CO00291-5R	WR	4.0	73.0	13962	8.8	3.8	1.073
CO99076-6R	WR	6.3	74.0	14161	9.7	4.8	1.080
CO99256-2R	WR	4.5	82.8	15856	10.2	4.4	1.081
COTX02172-1R	SWR	8.0	59.4	11369	15.3	3.9	1.062
NDTX5438-11R	SWR	5.8	82.3	15757	8.8	5.5	1.066
Red-Purple/Yellow Flesh							
ATTX98510-1R/Y	WR	6.3	93.8	17951	10.3	6.0	1.075
CO01399-10P/Y	WR	3.0	92.2	17652	9.8	6.2	1.072
COTX01403-4R/Y	WR	8.5	84.4	16156	8.6	6.9	1.063
ATTX88654-2P/Y	SWR	5.8	79.2	15158	9.0	5.8	1.076
ATTX01180-1R/Y	SWR	6.8	60.5	11568	12.4	5.0	1.071
CO04021-2R/Y	SWR	4.8	74.5	14261	11.3	6.7	1.082
Red-Purple/Red-Purple Flesh							
Purple Majesty	WR/SWR	7.8	90.1	17253	11.7	4.2	1.077
CO03027-2R/R	SWR	4.5	87.5	16754	10.1	4.0	1.081
CO04045-4P/P	SWR	7.3	91.7	17552	10.1	3.3	1.067
Yellow Flesh							
Yukon Gold	WR	6.9	82.9	15870	6.4	6.7	1.086
Yukon Gold	SWR	7.5	85.4	16355	7.5	6.1	1.085
A99433-5Y	WR	3.0	94.3	18050	10.3	4.6	1.098
ATC00293-1W/Y	WR	5.8	65.6	12566	10.4	5.4	1.074
CO04013-1W/Y	SWR	5.3	89.1	17053	14.6	3.2	1.094
TX1674-1W/Y	SWR	5.0	37.0	7081	11.1	5.1	1.090
A99331-2RY	WR	5.3	91.2	17452	11.5	3.8	1.086
CO04177-5PW/Y	SWR	9.0	82.3	15757	7.2	2.8	1.068
Fingerlings							
Banana	SWR	7.8	94.3	18050	n/a	n/a	1.086
CO03094-5RF/RW	SWR	6.3	91.7	17552	n/a	n/a	1.075
Mean		6.3	82.1	15713	10.0	5.1	1.1
95% CI		0.98	6.9	1331	1.3	0.3	Avg

[1] Verticillium Wilt Rating- 0= 0 Symptoms, 1= Trace, 2= 1-5% of plants show symptoms of disease, 3= 5-10%, 4= 10-20%, 5= 20-40%, 6= 40-60%, 7= 60-75%, 8= 75-90%, 9= 90-100%

Figure 2. 2011 Red/ Specialty Trial Entries.

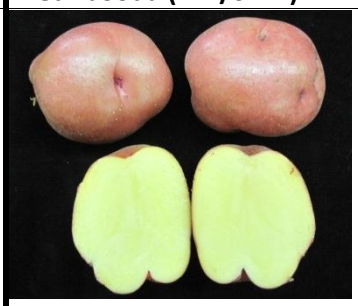
Entry	Tulelake Notes	Entry	Tulelake Notes
Dark Red Norland (WR/SWR)		**Red LaSoda (WR/SWR)**	
	• Problem with scab • Uniform shape • High susceptibility to Vert. Wilt		• High yield • Deep eye • High % hollow heart • High % of green tubers
ATTX01178-1R (WR)		**ATTX98453-6R (WR)**	
	• High yield • Light red skin • Low susceptibility to Vert. Wilt		• Light red skin • 10% vascular discoloration • 5.6oz avg. tuber size
CO00291-5R (WR)		**CO99076-6R (WR)**	
	• Dark red skin • Low internal defects • 3.8oz avg. tuber size		• Dark red skin • Shallow eye • Round shape
CO99256-2R (WR)		**COTX02172-1R (SWR)**	
	• Problem with scab • Medium red skin • 25% vascular discoloration • 10.2 tubers per plant		• Good appearance • Round shape • 80% vascular discoloration • 15.3 tubers per plant • 3.9oz avg. size

Figure 2. 2011 Red Specialty Trial Entries Continued.

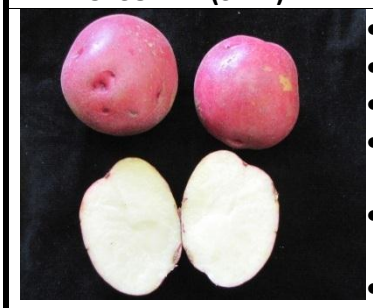
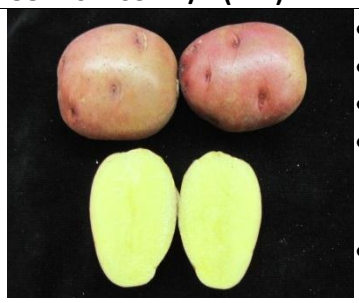
Entry	Tulelake Notes	Entry	Tulelake Notes
NDTX5438-11R (SWR)		**ATTX98510-1R/Y (WR)**	
	• Medium red skin • Round shape • Uniform shape • 10% stem-end necrosis • Low susceptibility to Vert. Wilt • 5.5oz avg. size		• Highest yield in trial • Light red skin • Deep eye • Flat shape • Medium yellow flesh
CO01399-10P/Y (WR)		**COTX01403-4R/Y (WR)**	
	• Medium purple skin • Deep eye • Round, uniform shape • Low susceptibility to Vert. Wilt		• Light red skin • Shallow eye • 35% hollow heart • High susceptibility to Vert. Wilt-similar in 2010 • 6.9oz avg. size
ATTX88654-2P/Y (SWR)		**ATTX01180-1R/Y (SWR)**	
	• Medium purple skin • Deep eye • Flat, donut shape • 7.5% green tubers • 5.8oz avg. tuber size		• 93% vascular discoloration • 12.4 tubers per plant • 5.0oz avg. tuber size
CO04021-2R/Y (SWR)		**Purple Majesty (WR/SWR)**	
	• High yield • Medium red skin • Shallow eye • Oblong in shape • 11.3 tubers per plant		• Dark purple skin • Uniform shape • Deep purple flesh • 4.2oz avg. tuber size

Figure 2. 2011 Red Specialty Trial Entries Continued.

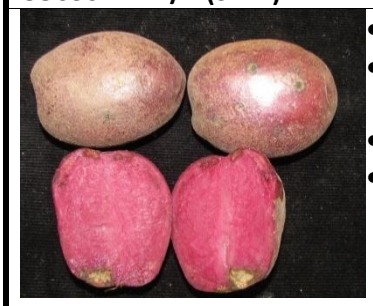
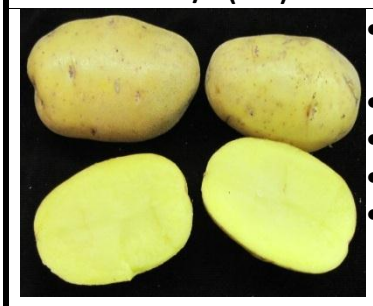
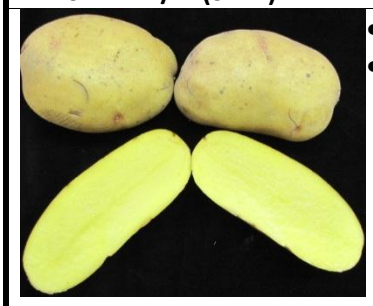
Entry	Tulelake Notes	Entry	Tulelake Notes
CO03027-2R/R (SWR)		**CO04045-4P/P (SWR)**	
	• Dark red skin • 33% stem end necrosis • Deep red flesh • Low susceptibility to Vert. Wilt		• Dark purple skin • Deep purple flesh • High susceptibility to Vert. Wilt • 3.3oz avg. tuber size
Yukon Gold (WR/SWR)		**A99433-5Y (WR)**	
	• Good appearance • Shallow eye • Low number of tubers per plant-similar in 2010		• High yield for category • No tubers greater than 14oz • Low susceptibility to Vert. Wilt • 10.3 tubers per plant • 4.6oz avg. size
ATC00293-1W/Y (WR)		**CO04013-1W/Y (SWR)**	
	• High % of culls and No. 2's • Shallow eye • Uniform shape • 10% hollow heart • 9.9% green tubers		• Deeper yellow flesh • 14.6 tubers/ plant • 3.2oz avg. size • High specific gravity
TX1674-1W/Y (SWR)		**A99331-2RY (WR)**	
	• 11.1 tubers/ plant • High specific gravity		• Red and yellow skin • Low internal defects • 3.8oz avg size

Figure 2. 2011 Red Specialty Trial Entries Continued.

Entry	Tulelake Notes	Entry	Tulelake Notes
CO04177-5PW/Y (SWR)		**Banana (SWR)**	
	• Purple and white skin • High susceptibility to Vert. Wilt • 7.2 tubers/plant • 2.8oz avg. size		• Light yellow skin • Light yellow flesh • Lumpy
CO03094-5RF/RW (SWR)			
	• Medium red skin with russeting • Red internal discoloration		

Chipping Potato Variety Trial

Trial Information

Location:	Intermountain Research & Extension Center, Tulelake, CA
Soil Type:	Tulebasin mucky silty clay loam
Planting Date:	May 23
Vine Kill Date:	September 16: Roll vines and application of Reglone at labeled rate
Days to Vine Kill:	116 days
Harvest Date:	October 11
Irrigation:	Solid-set sprinklers; applied water + precipitation = 22.16 inches
Plot Length:	24 hills
In-Row Spacing:	9.1 inches
Row Spacing:	36 inches
Number of Reps:	4 replications
Fertilizer per Acre:	204 lbs N - 80 lbs P2O5 - 48 lbs K2O - 21 lbs S
Seed Treatment:	Agri-Fill Premium Fir Bark Dust
Weed Control:	Cultivation, Outlook (preemergence), Matrix and Sencor (postemergence)
Insecticides:	Alias 4F (in-furrow at planting), Movento and Coragen (foliar applications)
Fungicides:	Quadris (in-furrow at planting), Quadris, Endura, and Tanos (foliar applications)
Fumigation:	No fumigation

Comments: The 2011 Chipping Potato trial included Atlantic (standard), Chipeta (standard), eight entries from the Western Region Program, two entries from the Southwest Regional Program, and five entries of local interest. CO02024-9W, Chipeta, AC01151-5W, AC03433-1W, and CO02321-4W were the highest yielding entries. See Tables 10-13 for Chipping Potato trial results and Figure 3 for entry pictures and comments.

Stand Counts

- Potato stand for entries in the Chipping trial was variable. The cool, wet spring delayed plant emergence; it also likely increased the incidence and severity of *Rhizoctonia* damage to emerging stems. *Rhizoctonia* lesions were observed on belowground stems. All entries had greater than 85% emergence except for: CO00270-7W (47.9%), CO00197-3W (73.0 %), Atlantic (75.6%), IR 618 (80.8%) and AC03433-1W (82.3%).

Tuber Count and Size

- **Tubers per Plant**

  Highest: CO02024-9W (12.0) and AC01151-5W (11.0)

  Lowest: Chipeta (6.7), IR 616 (7.0), CO00270-7W (8), and IR 618 (8.2)

- **Average Tuber Size (oz.)**

  Largest: Chipeta (7.0) and IR 616 (6.7)

  Smallest: IR 617 (4.0), CO02024-9W (4.2), A01143-3C (4.2), A01143-3C (4.2), CO02033-1W (4.3), CO00188-4W (4.4), and IR 619 (4.4)

- **Undersized Tubers- <4 oz. (cwt/acre)**

  Most: IR 617 (216)

  Least: IR 616 (36), Chipeta (41), and CO00270-7W (43)

Yield

- **Total Yield (cwt/acre)**

  Highest: CO02024-9W (551), Chipeta (527), AC01151-5W (524), AC03433-1W (526), and CO02321-4W (513)

  Lowest: CO00270-7W (287)

- **U.S. No. 1's Yield - 4-14 oz. (cwt/acre)**

  Highest: AC03433-1W (395), CO02321-4W (391), Chipeta (376), CO02024-9W (354), and IR 620 (349)

  Lowest: IR 617 (170) and CO00270-7W (178)

- **% Yield in the 4-14 oz. Size Class (cwt/acre)**

  Highest: CO02321-4W (76%), IR 620 (76%), AC03433-1W (75%), IR 616 (73%), CO03243-3W (73%), Chipeta (71%), IR 618 (71%), and IR 619 (71%)

  Lowest: IR 617 (43%), CO00270-7W (62%), and AC01151-5W (62%)

Specific Gravity

- Highest: IR 617 (1.104), IR 618 (1.103), Atlantic (1.102), and CO02033-1W (1.10)
  Lowest: CO00270-7W (1.081) and AC01151-5W (1.083)

Tuber Defects

- **Hollow Heart**
  Notable Entries: Atlantic (15%), AC03433-1W (13%), and CO02024-9W (10%)

- **Stem End Necrosis**
  Notable Entries: CO02033-1W (18%), CO00197-3W (18%), and CO02321-4W (13%)

- **Vascular Discoloration**
  Notable Entries: CO02033-1W (20%), A01143-3C (10%), and AC01151-5W (10%)

Disease Susceptibility Rating

- **Verticillium Wilt Rating, September 1st (0=0 symptoms, 9=90-100% of plants show symptoms of disease)**
  Highest: CO02033-1W (7.0), CO00188-4W (6.8), IR 618 (6.5), CO00197-3W (6.3), and CO00270-7W (6.3)
  Lowest: A01143-3C (2.5) and AC03433-1W (3.3)

Table 10. Tuber Yield & Size of Experimental & Standard Chipping Potato Entries.

		Tuber Yield (cwt/A)									
		U.S. No. 1's (cwt)									
Clone/Variety	Trial	Total 1's	10-14oz	6-10oz	4-6oz	<4oz	>14oz	2's	Culls	Total	% 1's
Atlantic	WR/SWR	254	36	122	96	81	12	4	15	366	70
Chipeta	WR/SWR	376	101	194	81	41	68	15	27	527	71
A01143-3C	WR	278	9	109	159	149	1	3	3	433	63
AC01151-5W	WR	326	32	141	152	148	4	20	26	524	62
CO00188-4W	WR	303	28	132	143	135	3	2	11	454	66
CO00197-3W	WR	259	36	114	109	102	1	9	18	389	67
CO00270-7W	WR	178	48	84	46	43	31	19	16	287	62
CO02024-9W	WR	354	14	142	198	184	1	3	9	551	64
CO02033-1W	WR	281	16	129	137	142	1	5	10	438	64
CO02321-4W	WR	391	54	195	142	82	18	3	18	513	76
AC03433-1W	SWR	395	67	196	133	58	25	30	18	526	75
CO03243-3W	SWR	326	62	134	131	81	24	8	3	442	73
IR 616	IREC	357	101	178	77	36	36	37	23	488	73
IR 617	IREC	170	3	64	103	216	0	4	7	396	43
IR 618	IREC	265	31	137	98	86	2	7	15	375	71
IR 619	IREC	306	7	138	161	114	0	6	7	431	71
IR 620	IREC	349	34	179	136	92	4	1	10	456	76
Mean		304	40	140	124	105	14	10	14	447	67
95% CI		55.4	15.7	40.0	19.0	18.3	11.0	10.7	7.5	62.6	5.0

Table 11. External Tuber Characteristics of Experimental & Standard Chipping Potato Entries.

Clone/Variety	Trial	Merit Score[1]	Russeting[2]	Eye Depth[3]	Tuber Shape[4]	Shape Uniformity[5]	Length/ Width Ratio[6]
Atlantic	WR/SWR	2.8	2.0	2.9	1.4	2.9	1.1
Chipeta	WR/SWR	3.7	2.0	3.7	1.5	3.9	1.1
A01143-3C	WR	4.6	1.6	3.7	1.1	4.1	1.0
AC01151-5W	WR	2.5	1.0	3.4	1.9	2.6	1.2
CO00188-4W	WR	3.4	1.7	3.4	1.5	3.5	1.1
CO00197-3W	WR	2.8	1.0	3.9	2.0	3.1	1.3
CO00270-7W	WR	3.3	1.0	3.9	1.8	3.0	1.2
CO02024-9W	WR	3.7	1.1	3.8	1.3	3.0	1.1
CO02033-1W	WR	4.0	1.1	3.7	1.3	3.6	1.1
CO02321-4W	WR	3.6	1.4	3.9	1.6	3.5	1.1
AC03433-1W	SWR	4.0	1.8	3.9	1.4	3.5	1.1
CO03243-3W	SWR	4.5	1.7	3.8	1.2	4.2	1.1
IR 616	IREC	3.8	1.5	3.7	1.5	3.5	1.1
IR 617	IREC	2.3	1.9	2.9	1.8	2.8	1.3
IR 618	IREC	3.2	1.8	3.9	1.6	2.8	1.2
IR 619	IREC	3.5	1.9	3.5	1.4	3.3	1.2
IR 620	IREC	4.5	2.2	3.8	1.2	4.3	1.0
Mean		3.5	1.6	3.6	1.5	3.4	1.1
95% CI		0.5	0.3	0.3	0.2	0.6	0.1

Rating Scales

[1] 1=Worst, 5=Best - Chipper Merit Score takes into account multiple factors important to the chip market inlcuding tuber shape, eye depth, and shape uniformity

[2] 1=Light, 5= Heavy

[3] 1=Deep, 5= Shallow

[4] 1=Round, 5= Oblong

[5] 1= No Uniformity, 5= Very Uniform

[6] Ratio of 10 tubers measured from each plot

Table 12. Tuber Defects of Experimental & Standard Chipping Potato Entries.

Clone/Variety	Trial	Hollow Heart[1] (%)	Stem End Necrosis[1] (%)	Vascular Discoloration[1] (%)	Knobs[2] (%)	Growth Cracks[2] (%)	Irregular Shaped[2] (%)	Green[2] (%)
Atlantic	WR/SWR	15	3	0	0.3	0.2	0.2	5.5
Chipeta	WR/SWR	0	0	1	1.2	0.4	0.0	5.9
A01143-3C	WR	0	0	10	0.2	0.2	0.0	0.7
AC01151-5W	WR	0	10	10	1.3	0.2	0.3	5.7
CO00188-4W	WR	5	0	8	0.2	0.1	0.0	2.4
CO00197-3W	WR	0	18	8	0.6	0.1	0.8	7.7
CO00270-7W	WR	3	8	5	3.8	0.2	0.3	6.8
CO02024-9W	WR	10	5	0	0.1	0.2	0.2	2.6
CO02033-1W	WR	0	18	20	0.6	0.1	0.1	3.3
CO02321-4W	WR	0	13	5	0.2	0.1	0.1	4.1
AC03433-1W	SWR	13	3	3	0.9	2.4	0.4	3.7
CO03243-3W	SWR	0	7	7	0.1	0.7	0.0	1.2
IR 616	IREC	0	0	3	1.9	3.7	0.2	8.0
IR 617	IREC	0	8	8	0.4	0.0	0.2	2.6
IR 618	IREC	0	5	0	1.3	0.6	0.0	5.2
IR 619	IREC	0	5	0	1.3	0.2	0.1	2.4
IR 620	IREC	0	0	3	0.0	0.2	0.1	3.4
Mean		3	6	5	0.8	0.5	0.2	4.2
95% CI		4	10	8	1.1	0.8	NS	1.8

[1] 10 tubers evaluated from each plot in the 6-10oz tubers

[2] Percent of tubers pulled with defects from total tuber count

Table 13. Disease Susceptibility, Stand, Tuber Set, Average Tuber Size, & Specific Gravity of Experimental & Standard Chipping Potato Entries.

Clone	Trial	Verticillium Wilt Rating[1] 9/1/2011	% Stand	Plants/ Acre	Tubers/Plant	Avg Tuber Size (oz)	Specific Gravity
Atlantic	WR/SWR	5.8	75.6	14460	8.3	4.9	1.102
Chipeta	WR/SWR	3.8	94.9	18168	6.7	7.0	1.090
A01143-3C	WR	2.5	90.1	17248	9.4	4.2	1.095
AC01151-5W	WR	4.3	90.1	17252	11.0	4.5	1.083
CO00188-4W	WR	6.8	93.2	17851	9.3	4.4	1.088
CO00197-3W	WR	6.3	73.0	13962	10.1	4.5	1.087
CO00270-7W	WR	6.3	47.9	9175	8.0	6.3	1.081
CO02024-9W	WR	5.0	91.7	17552	12.0	4.2	1.085
CO02033-1W	WR	7.0	90.1	17252	9.7	4.3	1.100
CO02321-4W	WR	5.5	89.1	17053	8.9	5.5	1.095
AC03433-1W	SWR	3.3	82.3	15757	8.9	6.1	1.084
CO03243-3W	SWR	5.2	89.4	17115	8.3	4.9	1.093
IR 616	IREC	5.3	87.5	16754	7.0	6.7	1.098
IR 617	IREC	6.0	86.5	16554	10.3	4.0	1.104
IR 618	IREC	6.5	80.8	15457	8.2	4.8	1.103
IR 619	IREC	5.5	88.1	16854	9.2	4.4	1.096
IR 620	IREC	6.0	90.1	17252	8.6	4.9	1.095
Mean		5.3	84.7	16219	9.0	5.0	1.093
95% CI		0.8	7.2	1382	1.5	0.6	Avg

[1] Verticillium Wilt Rating- 0= 0 Symptoms, 1= Trace, 2= 1-5% of plants show symptoms of disease, 3= 5-10%, 4= 10-20%, 5= 20-40%, 6= 40-60%, 7= 60-75%, 8= 75-90%, 9= 90-100%

Figure 3. 2011 Chipper Trial Entries.

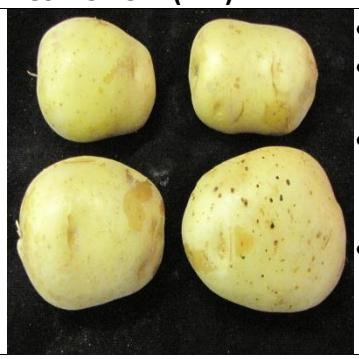
Entry	Tulelake Notes	Entry	Tulelake Notes
Atlantic (WR/SWR)		**Chipeta (WR/SWR)**	
	• Low % stand • 15% hollow heart		• High yield • Largest average tuber size- similar in 2010 • Shallow eye • Low internal defects
A01143-3C (WR)		**AC01151-5W (WR)**	
	• High incidence of Black Scurf • Easily skinned • Round, uniform shape • Low susceptibility to Vert. Wilt		• High yield • 11.0 tubers per plant • Low specific gravity-similar in 2010 • Higher incidence of Black Scurf
CO00188-4W (WR)		**CO00197-3W (WR)**	
	• Higher incidence of Black Dot, Black Scurf, and Common Scab • High susceptibility to Vert. Wilt • 4.4oz avg. tuber size		• Low % stand • Shallow eye • 18% stem-end necrosis • Higher incidence of Black Dot on tubers
CO00270-7W (WR)		**CO02024-9W (WR)**	
	• Low % stand • Shallow eye • 3.8% of tubers had knobs		• Highest yield • High tuber set- same in 2010 • Most tubers <4oz- same in 2010 • 10% hollow heart • Higher incidence of Black Dot on tubers

Figure 3. 2011 Chipper Trial Entries Continued.

Entry	Tulelake Notes	Entry	Tulelake Notes
CO02033-1W (WR))		**CO02321-4W (WR)**	
	• High % internal defects • Susceptible to Vert. Wilt • Higher incidence of Black Scurf		• Shallow eye • 5.5oz avg. tuber size
AC03433-1W (SWR)		**CO03243-3W (SWR)**	
	• High yield • Shallow eye • Skinned easily • 13% hollow heart • 6.1oz avg. tuber size		• Round shape • Very uniform • 4.9oz avg. tuber size
IR 616 (IREC)		**IR 617 (IREC)**	
	• High % of No. 2s and culls • Round shape • Low internal defects • 8% of tubers green • 6.7oz avg. tuber size		• Deeper eye • non-uniform tuber shape • 10.3 tubers/plant • High specific gravity
IR 618 (IREC)		**IR 619 (IREC)**	
	• Low % stand • Shallow eye • Non-uniform tuber shape		• Heavier russet • 4.4oz avg. tuber size • Higher incidence of Black Scurf

Figure 3. 2011 Chipper Trial Entries Continued.		
Entry	**Tulelake Notes**	
IR 620 (IREC)		
	• Very uniform shape • Flat shape • A lot of shatter bruise • Low % of internal defects	

Storage

Fifty pounds sacks of U.S. No. 1 potatoes for each entry were stored and then evaluated for shatter bruise, percent of cumulative shrink, percent of cumulative rot, turgor, and sprouting. Russet and Specialty entries were placed into storage at 40^0F for 180 days with evaluations at approximately 60, 120, and 180 days after harvest. Chipper varieties were placed into a separate storage bin at 50^0F for 120 days and were evaluated at 60 and 120 days after harvest. Sprout inhibitor was not applied during the storage duration.

Storage evaluation results will be reported separately upon completion of the storage period.