Potato Variety Development

In Tulelake

2010

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

RESEARCH REPORT
Number 129, 2011

2010 Annual Progress Report to the California Potato Research Advisory Board

Potato Variety Development in Tulelake

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Introduction: In 2010 the Intermountain Research & Extension Center (IREC) conducted three potato variety trials: a Russet Trial with 29 entries, a Specialty Trial with 32 entries, and a Chipper Trial with 18 entries. The trials included entries from the Western Regional (WR) and Southwest Regional (SWR) variety development programs and varieties of local interest.

General Comments: At maturity, a total of 316 plots were harvested for tuber yield and graded for size, internal, and external qualities. Season weather included a dry mild winter, cool spring, and 75 frost-free days between June 16th and August 31st. Early die symptoms were observed in all trials. Weather data can be found at: http://www.cimis.water.ca.gov/cimis/welcome.jsp

Results

Late Russet Variety Trial

Cultural Information:

Location:	Intermountain Research & Extension Center, Tulelake, CA
Soil Type:	Tulebasin mucky silty clay loam
Planting Date:	May 13
Vine Kill Date:	September 16: Roll vines and application of Reglone at labeled rate
Days to Vine Kill:	126 days
Harvest Date:	October 7
Irrigation:	Solid-set sprinklers; total irrigation +precipitation = 26.06 inches
Plot Length:	22 hills
In-Row Spacing:	10.0 inches
Row Spacing:	36 inches
Number of Reps:	4 replications
Fertilizer:	195-246-6-84

Weed Control: Cultivation and Outlook (pre-emergence), Matrix and Sencor (post-emergence)

Insecticides: Movento and Coragen (aerial application)

Fungicides: Maxim (seed treatment), Quadris & Blocker (in-furrow at planting), Bravo & Quadris (foliar applications)

Fumigation: Vapam at 35 gallons per acre

The Late Russet Variety Trial conducted at IREC included 21 entries from the Western Regional Program, 4 entries from the Southwest Regional Trial, and 4 entries of local interest. The highest yielding variety in the trial was Alpine with a total yield of 554 cwt/A and U.S. No. 1 yield of 432 cwt/A. The second highest yield was the experimental entry A98345-1; this entry also was a top producer in 2009. AC99375-1RU was another entry with a total yield over 500 cwt/A. This entry was one of the top yielding varieties at IREC for the past three years. Entry AOTX98152-3RU was the best performing Southwest Trial entry with regard to total and U.S. No. 1 yield. The following bullets summarize trial results. See Tables 1-4 for a complete listing of trial results and Figure 1 for entry comments.

Stand Counts

- **42 Days After Planting**
  All entries had greater than 90% emergence except for: PA99N2-1 (66.8%), AOTX96216-2RU (85.0%), and Classic (86.8%).

Plant and Tuber Growth and Development

- **Average Tuber Number Per Plant**
  Most: PA99N2-1 (8.4) and PA00N14-2 (8.2)
  Least: AOTX96216-2RU (3.8) and A00324-1 (4.8)

- **Average Tuber Size (oz.)**
  Largest: AOTX96216-2RU (11.3) and PA99N2-1 (7.6)/ A00324-1 (7.6)
  Smallest: PA00N14-2 (4.9) and CO98067-7RU (5.0)

- **Undersized Tubers (<4oz.) cwt/Acre**
  Most: CO98067-7RU (85) and PA00N14-2 (84)
  Least: AOTX96216-2RU (11) and CO99100-1RU (25)

Yield and Return

- **Total Yield (cwt/Acre)**
  Highest: Alpine (554) and A98345-1 (521)
  Lowest: Russet Norkotah, SWR (361) and CO99053-4RU (368)

- **U.S. No. 1's Yield (4-16 oz.) cwt/Acre**
  Highest: Alpine (432) and A01010-1 (420)
  Lowest: AOTX96216-2RU (138) and CO98067-7RU (263)

- **Gross Return ($/acre)**
  This was calculated by using a four year average of fresh potato prices in the Columbia Basin and a packing shed cost of $5.75/cwt.
  Highest: Alpine and A98345-1 (both process market tubers)
  Lowest: CO98067-7RU and AOTX96216-2RU

Tuber Defect Incidence

- **Hollow Heart**
  Notable Defects: Premier (58%), PA99N82-4 (50%), and AOTX96216-2RU (15%)

- **Vascular Discoloration- no statistical significance**
  Notable Defects: A98345-1 (18%) and Alpine (13%)
- **Stem End Necrosis**
  Notable Defects: AOTX96265-2RU (20%), Ranger Russet (15%) and Alpine (15%)

Disease Susceptibility Rating:

- **Verticillium Wilt Rating, August 18th (0=0 symptoms, 9=90-100% of plants show symptoms of disease)**
  Highest Rating: Russet Norkotah (8.8 for both entries) and CO99053-4RU (8.8)
  Lowest Rating: PA99N2-1 (0.5) and A97066-42LB (0.8)

Table 1. Tuber Yield & Size Grade of Experimental & Standard Russet Skinned Potato Entries. Tulelake 2010.

		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
Russet Norkotah	SWR	267	26	73	168	72	5	12	4	361	74
AOTX96084-1RU	SWR	276	20	86	170	71	12	13	3	375	73
AOTX98152-3RU	SWR	369	46	130	193	70	30	19	2	490	75
ATX9332-12RU	SWR	355	47	128	180	49	22	33	10	468	77
Ranger Russet	WR	303	47	118	139	48	24	59	3	437	70
Russet Burbank	WR	313	32	96	185	67	2	36	1	419	75
Russet Norkotah	WR	296	25	93	178	64	3	21	2	385	77
A97066-42LB	WR	294	55	107	132	46	19	28	17	404	72
A98345-1	WR	406	78	166	162	45	41	25	4	521	78
A0008-1TE	WR	370	58	151	160	52	18	11	1	452	81
A00324-1	WR	273	62	110	101	27	44	45	0	388	70
A01010-1	WR	420	36	153	231	56	6	12	0	495	85
AC99375-1RU	WR	395	44	141	210	64	20	25	7	511	77
AO00057-2	WR	356	65	150	140	45	28	21	4	454	78
AO96305-3	WR	311	15	110	187	54	1	3	0	370	84
AOTX95265-1Ru	WR	315	25	104	187	76	2	13	3	409	76
AOTX96216-2Ru	WR	138	46	57	35	11	152	85	7	392	35
AOTX96265-2Ru	WR	331	48	111	172	37	16	5	1	390	85
CO98067-7RU	WR	263	6	67	190	85	3	30	2	383	69
CO99053-3RU	WR	321	74	111	136	43	31	15	2	413	78
CO99053-4RU	WR	289	21	96	172	52	3	22	2	368	78
CO99100-1RU	WR	338	70	134	134	25	14	11	1	389	87
PA00N14-2	WR	323	9	48	267	84	2	2	1	413	79
PA99N2-1	WR	320	86	120	133	35	37	42	2	437	74
PA99N82-4	WR	266	62	89	114	32	44	51	7	400	68
Alpine	IREC	432	71	159	202	62	37	19	3	554	78
Classic	IREC	338	42	121	175	47	15	16	7	423	80
Clearwater	IREC	281	24	90	167	71	5	27	4	388	72
Premier	IREC	377	70	137	170	56	17	40	3	493	76
Mean		322	45	112	165	53	23	25	3	427	322
LSD {0.05}		46.2	20.1	27.4	30.2	14.0	13.5	15.1	3.9	58.1	4.6

Table 2. External Tuber Characteristics of Experimental & Standard Russet Skinned Potato Entries. Tulelake 2010.

Clone/Variety	Trial	Merit Score[1]	Russeting[2]	Eye Depth[3]	Tuber Shape[4]	Shape Uniformity[5]	Length/ Width Ratio[6]
Russet Norkotah	SWR	3.6	4.5	3.6	4.0	3.5	2.1
AOTX96084-1RU	SWR	3.8	4.2	3.4	4.1	3.0	2.0
AOTX98152-3RU	SWR	3.3	3.6	3.7	3.8	3.8	1.8
ATX9332-12RU	SWR	4.2	3.6	4.0	4.2	3.3	2.0
Ranger Russet	WR	3.2	3.5	3.6	4.8	4.0	2.3
Russet Burbank	WR	3.3	3.7	3.9	4.7	4.2	2.2
Russet Norkotah	WR	3.3	4.4	3.3	3.9	3.3	1.9
A97066-42LB	WR	3.3	2.2	3.9	4.0	4.5	1.9
A98345-1	WR	2.8	3.0	3.2	3.9	3.1	1.7
A0008-1TE	WR	4.1	3.5	4.1	4.3	4.1	2.1
A00324-1	WR	3.9	3.9	3.9	4.4	4.0	2.1
A01010-1	WR	4.3	4.2	3.8	4.1	3.6	1.9
AC99375-1RU	WR	3.4	4.0	3.8	3.8	3.0	1.7
AO00057-2	WR	4.6	4.1	3.9	4.3	4.6	1.9
AO96305-3	WR	3.8	2.8	4.1	4.5	4.3	2.3
AOTX95265-1Ru	WR	3.3	4.0	3.5	4.2	3.2	2.0
AOTX96216-2Ru	WR	4.3	4.5	4.1	3.9	3.8	1.7
AOTX96265-2Ru	WR	3.6	3.8	3.6	3.9	2.8	1.7
CO98067-7RU	WR	3.3	3.9	3.7	4.0	3.2	1.9
CO99053-3RU	WR	3.8	4.1	3.8	4.1	3.9	2.0
CO99053-4RU	WR	3.4	3.0	3.8	4.6	3.8	2.2
CO99100-1RU	WR	3.8	3.6	4.1	4.4	3.3	2.0
PA00N14-2	WR	3.8	3.0	3.9	3.9	3.8	2.1
PA99N2-1	WR	4.3	4.0	4.1	3.9	3.7	1.6
PA99N82-4	WR	4.3	4.4	4.0	3.8	4.0	1.6
Alpine	IREC	3.1	3.3	3.5	3.7	3.3	1.9
Classic	IREC	4.6	4.0	4.0	4.0	4.6	2.0
Clearwater	IREC	4.4	4.3	4.0	4.6	4.1	2.2
Premier	IREC	4.0	4.4	3.4	4.5	4.3	2.0
Mean		3.7	3.8	3.8	4.1	3.7	2.0
LSD {0.05}		0.4	0.2	0.2	0.3	0.6	0.1

Rating Scales (Tubers evaluated were 12-16oz and/or 8-12oz size)

[1] 1=Worst, 5=Best - Fresh Market Russet Merit Score takes into account multiple factors important to fresh market appeal including tuber shape, eye depth, russeting, 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 3. Internal Characteristics & External Defects of Experimental & Standard Russet Skinned Potato Entries. Tulelake 2010.

Clone/Variety	Trial	Hollow Heart[1] (%)	Vascular Discoloration[1] (%)	Stem End Necrosis[1] (%)	Irregular Shaped[2]	Growth Cracks[2]	Knobs[2]
Russet Norkotah	SWR	3	3	3	3.3	0.2	0.6
AOTX96084-1RU	SWR	13	5	0	1.5	0.7	0.2
AOTX98152-3RU	SWR	0	8	5	3.4	0.6	1.3
ATX9332-12RU	SWR	0	0	8	5.2	0.3	1.3
Ranger Russet	WR	0	0	15	11.3	2.5	1.3
Russet Burbank	WR	0	3	10	3.2	5.8	2.3
Russet Norkotah	WR	3	5	0	1.3	0.1	0.2
A97066-42LB	WR	5	3	13	2.0	0.1	2.7
A98345-1	WR	0	18	8	3.1	0.8	0.2
A0008-1TE	WR	0	0	5	1.2	0.8	1.9
A00324-1	WR	3	5	8	9.7	1.7	1.2
A01010-1	WR	0	3	5	2.8	0.0	1.0
AC99375-1RU	WR	3	0	5	3.5	0.9	0.1
AO00057-2	WR	3	0	3	1.6	0.6	0.7
AO96305-3	WR	0	0	10	1.4	0.0	0.5
AOTX95265-1Ru	WR	3	0	5	2.9	0.2	0.0
AOTX96216-2Ru	WR	15	0	3	2.3	22.5	3.1
AOTX96265-2Ru	WR	8	3	20	0.9	0.0	0.1
CO98067-7RU	WR	0	0	5	2.0	0.3	3.1
CO99053-3RU	WR	10	0	8	1.8	0.5	2.2
CO99053-4RU	WR	0	5	8	3.4	0.8	0.8
CO99100-1RU	WR	10	8	5	2.7	1.0	0.6
PA00N14-2	WR	0	3	3	0.9	1.7	0.1
PA99N2-1	WR	8	3	0	3.4	5.7	4.2
PA99N82-4	WR	50	0	3	5.6	8.9	0.9
Alpine	IREC	0	13	15	2.9	0.2	0.9
Classic	IREC	3	5	5	4.9	0.7	2.2
Clearwater	IREC	0	5	13	5.3	0.5	1.2
Premier	IREC	58	0	0	9.8	1.0	1.2
Mean		7	3	6	3.6	2.0	1.3
LSD {0.05}		1	NS	1	1.7	1.5	1.3

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

[2] Number of tubers pulled from each plot with defects

Table 4. Performance, Average Tuber Size & Specific Gravity of Experimental & Standard Russet Skinned Potato Entries. Tulelake 2010.

Clone/Variety	Trial	Verticillium Wilt Rating[1]	% Stand	Tubers/ Plant	Plants/ Acre	Avg Tuber Size oz	Specific Gravity
Russet Norkotah	SWR	8.8	96.7	6.3	16876	5.2	1.077
AOTX96084-1RU	SWR	7.8	97.4	6.4	16994	5.4	1.080
AOTX98152-3RU	SWR	5.5	97.1	7.6	16951	6.0	1.087
ATX9332-12RU	SWR	6.0	95.8	6.7	16751	6.7	1.095
Ranger Russet	WR	4.5	96.5	6.1	16846	6.8	1.093
Russet Burbank	WR	4.8	99.5	6.6	17367	5.8	1.090
Russet Norkotah	WR	8.8	98.5	6.2	17169	5.8	1.078
A97066-42LB	WR	0.8	96.3	5.9	16809	6.5	1.100
A98345-1	WR	3.5	95.8	6.9	16744	7.3	1.094
A0008-1TE	WR	6.0	95.5	6.6	16688	6.7	1.087
A00324-1	WR	5.5	96.6	4.8	16882	7.6	1.084
A01010-1	WR	5.0	98.3	7.6	17135	6.2	1.089
AC99375-1RU	WR	2.3	96.0	8.1	16778	6.2	1.101
AO00057-2	WR	3.5	94.3	7.2	16478	6.6	1.091
AO96305-3	WR	4.8	96.8	6.2	16898	5.6	1.094
AOTX95265-1Ru	WR	7.5	97.7	7.1	17052	5.4	1.079
AOTX96216-2Ru	WR	6.0	85.0	3.8	14788	11.3	1.079
AOTX96265-2Ru	WR	7.0	95.8	5.6	16774	6.5	1.090
CO98067-7RU	WR	7.8	94.2	7.2	16441	5.0	1.077
CO99053-3RU	WR	3.8	93.0	6.0	16277	6.7	1.085
CO99053-4RU	WR	8.8	93.3	5.7	16284	5.9	1.079
CO99100-1RU	WR	8.5	96.5	4.9	16791	7.4	1.085
PA00N14-2	WR	7.5	97.3	8.2	17001	4.9	1.092
PA99N2-1	WR	0.5	66.8	8.4	11678	7.6	1.087
PA99N82-4	WR	3.3	90.5	5.6	15794	7.4	1.085
Alpine	IREC	4.5	96.1	7.9	16814	6.5	1.091
Classic	IREC	4.0	86.8	7.4	15148	6.1	1.089
Clearwater	IREC	2.3	94.5	6.9	16474	5.5	1.090
Premier	IREC	2.5	95.7	7.3	16694	6.5	1.098
Mean		5.2	94.3	6.6	16461	6.5	1.088
LSD {0.05}		1.8	4.2	1.0	724	0.7	0.006

[1] Verticillium Wilt Rating taken on August 18th, 2010. 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. 2010 Late Russet Trial Entries.

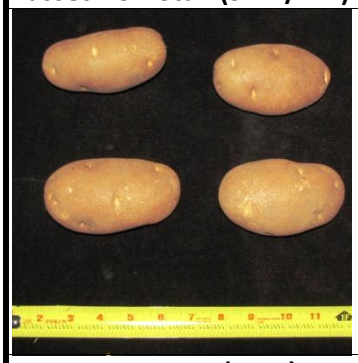
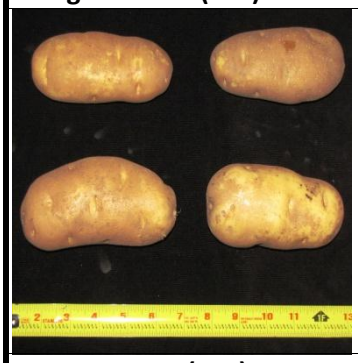
Entry	Tulelake Notes	Entry	Tulelake Notes
Russet Norkotah (SWR/WR)		**AOTX96084-1RU (SWR)**	
	• Good shape • Heavy russet • Highly susceptible to vert wilt		• Good shape • Heavy russet • Highly susceptible to vert wilt • 13% hollow heart
AOTX98152-3RU(SWR)		**ATX9332-12RU (SWR)**	
	• Blocky shape • Uniform shape		• Good appearance • Shallow eye • 6.7oz avg tuber size • Some shatter bruise
Ranger Russet (WR)		**Russet Burbank (WR)**	
	• Long shape • Uniform shape • 6.8oz avg tuber size • Some irregular shaped tubers		• Long shape • Uniform shape • Shallow eye
A97066-42LB (WR)		**A98345-1 (WR)**	
	• Light russet • Good shape and uniformity • Easily skinned • Specific Gravity 1.100 • Low susceptibility to vert wilt		• Blocky shape • Light russet • Low merit score • Low susceptibility to vert wilt • High yield • Shatter bruise

Figure 1. 2010 Late Russet Trial Entries Continued.

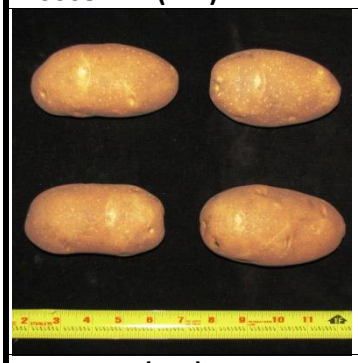
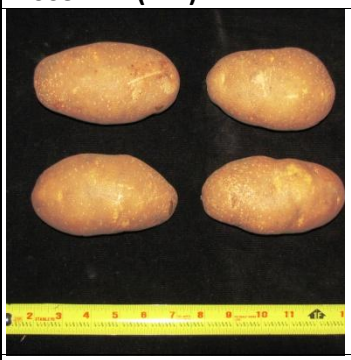
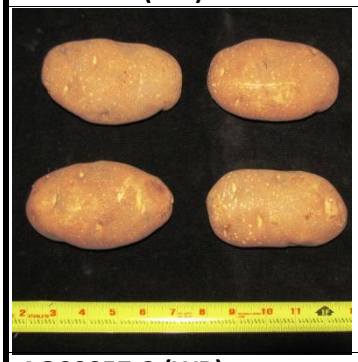
Entry	Tulelake Notes	Entry	Tulelake Notes
A0008-1TE (WR)		**A00324-1 (WR)**	
	• Shallow eye • Good shape and uniformity • 6.7oz avg tuber size • Low internal defects		• Good shape and uniformity • 7.6oz avg tuber size • Black Scurf • Some irregular shaped tubers
A01010-1 (WR)		**AC99375-1RU (WR)**	
	• Good merit score • Heavy russet • High percentage of U.S. No 1's (85%) • Low internal defects		• Blocky shape • High specific gravity of 1.101 • Low susceptibility to vert wilt • High yield
AO00057-2 (WR)		**AO96305-3 (WR)**	
	• High merit score • Desirable shape and uniformity • Low susceptibility to vert wilt • 6.6oz avg tuber size • Liked this variety		• Light russet • Shallow eye • Long shape • Uniform shape • Easily skinned • Common scab • Low yield
AOTX95265-1RU (WR)		**AOTX96216-2RU (WR)**	
	• Good shape • Low internal and external defects • Highly susceptible to vert wilt • Common scab		• Large, lumpy, blocky tubers • Yielded mostly in the >16oz size • Heavy russet • Shallow eye • Some hollow heart • Growth cracks

Figure 1. 2010 Late Russet Trial Entries Continued.

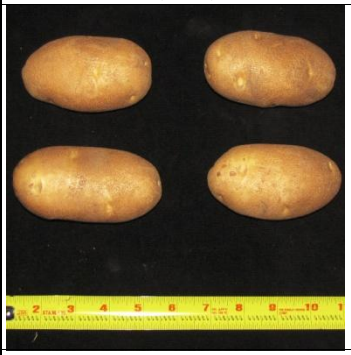
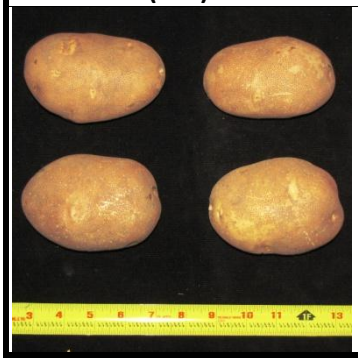
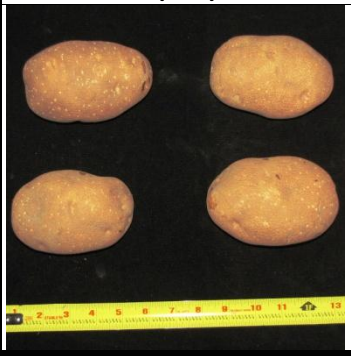
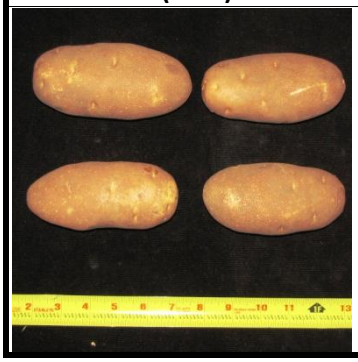
Entry	Tulelake Notes	Entry	Tulelake Notes
AOTX96265-2RU (WR)		**CO98067-7RU (WR)**	
	• Poor uniformity • Problem with stem end necrosis • Susceptible to vert wilt • High percentage of U.S. No 1's (85%)		• Good shape • Susceptible to vert wilt • Low internal and external defects • Small sized tubers • Low yield
CO99053-3RU (WR)		**CO99053-4RU (WR)**	
	• Good shape and uniformity • Some hollow heart • 6.7oz avg tuber size • Black Scurf		• Long shape • Light russet • High susceptibility to vert wilt
CO99100-1RU (WR)		**PA00N14-2 (WR)**	
	• Long shape • Shallow eye • Some hollow heart • Susceptible to vert wilt • 7.4oz avg tuber size • 87% U.S. No 1's		• Blocky shape • Light russet • Low internal defects • Susceptible to vert wilt • Small sized tubers
PA99N2-1 (WR)		**PA99N82-4 (WR)**	
	• Good merit score • Shallow eye, few eyes • Low susceptibility to vert wilt • Poor stand 66.8% • 7.6oz avg tuber size		• Good merit score • Heavy russet • Shallow eye • Uniform shape • 50% hollow heart • Low susceptibility to vert wilt

Figure 1. 2010 Late Russet Trial Entries Continued.

Entry	Tulelake Notes	Entry	Tulelake Notes
Alpine (IREC)		**Classic (IREC)**	
	• Blocky shape • Light russet • Skinned easily • 6.5 oz avg tuber size • Top yielding entry		• High merit score • Shallow eye • High shape uniformity • Low internal defects
Clearwater (IREC)		**Premier (IREC)**	
	• Long tuber • Good merit score • Heavy russet • Shallow eye • Nice uniformity • Low susceptibility to vert wilt • Low yield		• Long shape • Heavy russet • Deeper eye • Problem with hollow heart 58% • Low susceptibility to vert wilt

Red Specialty Variety Trial

Cultural Information:

Location:	Intermountain Research & Extension Center, Tulelake, CA
Soil Type:	Tulebasin mucky silty clay loam
Planting Date:	May 13
Vine Kill Date:	September 16: Roll vines and application of Reglone at labeled rate
Days to Vine Kill:	126 days
Harvest Date:	October 7
Irrigation:	Solid-set sprinklers; total irrigation +precipitation = 26.06 inches
Plot Length:	24 hills
In-Row Spacing:	9.0 inches
Row Spacing:	36 inches
Number of Reps:	4 replications
Fertilizer:	195-246-6-84
Weed Control:	Cultivation and Outlook (pre-emergence), and Matrix (post-emergence)
Insecticides:	Movento and Coragen (aerial application)
Fungicides:	Maxim (seed treatment), Quadris & Blocker (in-furrow at planting), Bravo & Quadris (foliar applications)
Fumigation:	Vapam at 35 gallons per acre

The Red Specialty Variety trial conducted at IREC included 16 entries from the Western Regional Trial, and 16 entries from the Southwest Regional Trial. The trial was broke into four different categories: Red skin and white fleshed, red/purple skin and yellow flesh, purple skin and purple flesh, and white/yellow skin and yellow flesh.

In the red skin and white flesh category, Red LaSoda (SWR) and Dark Red Norland (WR) were the top yielding entries with a total yield of 572 cwt/A and 558 cwt/A respectively. The highest yielding experimental entries were BTX2332-1R (WR) and AOTX91861-4R (SWR). BTX2332-1R (WR) has been a top performing entry for the past three years.

In the red/purple skin and yellow flesh category, two SWR entries performed the best; CO01399-10P/Y and COTX01403-4R/Y with a total yield of 605 cwt/A and 568 cwt/A respectively.

In the purple skin and purple flesh category ATTX01180-1R/Y (SWR) and Purple Majesty (WR) were the top yielding at 529 cwt/A and 481 cwt/A respectively. Most entries in this category produced a high percent of tubers in the less than four ounce size class.

In the white/yellow skin and yellow flesh category, two experimental varieties had higher yields compared to the standard Yukon Gold. A00286-3Y (WR) and A99433-5Y (WR) yielded a total of 559 cwt/A and 534 cwt/A respectively. The following bullets summarize IREC field results (not broken down into skin and flesh categories). See Tables 5-9 for complete results and Figure 2 for entry comments.

Stand Counts

- **42 Days After Planting**
  All entries had greater than 90% emergence except for: NDTX5003-2R (84%), CO99076-6R (85%), Yukon Gold (89%), and ATTX88654-2P/Y (89%).

Plant and Tuber Growth and Development

- **Average Tuber Number Per Plant**
  Most: Purple Majesty (11) for both entries and CO99256-2R (10)
  Least: Red Lasoda (6) and Yukon Gold (6)

- **Average Tuber Size (oz.)**
  Largest: Red Lasoda (8.0/7.9), BTX2332-1R (7.1), and POR03PG80-2 (7.1)
  Smallest: TC02072-3P/P (3.1) and Purple Majesty, SWR (3.5)

- **Undersized Tubers (<4 oz.) cwt/Acre**
  Most: Purple Majesty (231/204) and TC02072-3P/P (203)
  Least: POR03PG80-2 (32) and Red LaSoda (35/38)

Yield

- **Total Yield (cwt/Acre)**
  Highest: CO01399-10P/Y (605) and Red LaSoda, SWR (572)
  Lowest: TC02072-3P/P (326) and A99331-2RY (349)

- **U.S. No. 1's Yield (4-14 oz.) cwt/Acre**
  Highest: A99433-5Y (438) and AOTX91861-4R (422)
  Lowest: TC02072-3P/P (108) and A99331-2RY (163)

Tuber Defect Incidence

- **Hollow Heart-no statistical difference**
  Notable Defects: Yukon Gold, SWR (8%) and ATC00293-1W/Y (8%)

- **Vascular Discoloration**
  Notable Defects: BTX2332-1R (25%) and ATTX01180-1R/Y (17%)

- **Stem End Necrosis**
  Notable Defects: Yukon Gold (33/20%) and POR03PG80-2 (18%)

Disease Susceptibility Rating

- **Verticillium Wilt Rating, August 18th (0=0 symptoms, 9=90-100% of plants show symptoms of disease)**
  Highest: Dark Red Norland, SWR (8.3) and COTX01403-4R/Y (8.0)
  Lowest: A00286-3Y (1.5) and CO01399-10P/Y (2.0)

Table 5. Skin & Flesh Colors of Experimental & Standard Specialty Entries. Tulelake 2010.

Clone/Variety	Trial	Skin Color	Flesh Color
Dk Red Norland	WR	Red	White
Dk Red Norland	SWR	Red	White
Red LaSoda	WR	Red	White
Red LaSoda	SWR	Red	White
BTX2332-1R	WR	Red	White
CO99076-6R	WR	Red	White
CO99256-2R	WR	Red	White
COTX94216-1R	WR	Red	White
COTX94218-1R	WR	Red	White
AOTX91861-4R	SWR	Red	White
ATTX98453-11BR	SWR	Red	White
NDTX5003-2R	SWR	Red	White
NDTX5438-11R	SWR	Red	White
A99326-1PY	WR	Purple	Yellow
POR03PG80-2	WR	Purple	Yellow
ATTX88654-2P/Y	SWR	Purple	Yellow
CO01399-10P/Y	SWR	Purple	Yellow
ATTX98510-1R/Y	SWR	Red	Yellow
BTX2103-1R/Y	SWR	Red	Yellow
COTX01403-4R/Y	SWR	Red	Yellow
A99331-2RY	WR	Red/Yellow	Yellow
Purple Majesty	WR	Purple	Purple
Purple Majesty	SWR	Purple	Purple
TC02072-3P/P	SWR	Purple	Purple
ATTX01180-1R/Y	SWR	Red	Purple/Yellow
Yukon Gold	WR	White	Yellow
Yukon Gold	SWR	White	Yellow
ATC00293 -1W/Y	WR	White	Yellow
CO00412-5W/Y	WR	White	Yellow
TX1674-1W/Y	SWR	White	Yellow
A99433-5Y	WR	Yellow	Yellow
A00286-3Y	WR	Yellow/Pink eye splash	Yellow

Table 6. Tuber Yield & Size Grade of Experimental & Standard Specialty Potato Entries. Tulelake 2010.

		Tuber Yield (cwt/A)									
		U.S. No. 1's (cwt)									
Clone/Variety	Trial	Total 1's	14-10oz	6-10oz	4-6oz	<4oz	>14oz	2's	Culls	Total	%1's
Red/White Flesh											
Dk Red Norland	WR	421	96	213	112	67	44	20	7	558	75
Dk Red Norland	SWR	419	67	221	131	76	12	5	3	515	81
Red LaSoda	WR	387	128	192	67	38	63	33	7	527	73
Red LaSoda	SWR	384	142	176	67	35	90	43	20	572	67
BTX2332-1R	WR	388	123	184	81	51	84	18	7	548	71
CO99076-6R	WR	346	83	186	77	54	18	15	7	440	79
CO99256-2R	WR	323	20	162	142	136	3	8	6	476	68
COTX94216-1R	WR	285	26	130	129	144	1	29	4	464	62
COTX94218-1R	WR	330	64	158	108	105	27	15	8	485	68
AOTX91861-4R	SWR	422	94	218	110	60	30	22	10	544	78
ATTX98453-11BR	SWR	280	58	140	82	79	15	49	7	430	65
NDTX5003-2R	SWR	308	81	149	78	75	28	27	7	445	69
NDTX5438-11R	SWR	364	62	188	113	88	18	20	10	500	73
Red-Purple/Yellow Flesh											
A99326-1PY	WR	322	71	164	87	71	61	28	8	489	66
POR03PG80-2	WR	371	102	194	75	32	43	10	4	461	81
ATTX88654-2P/Y	SWR	351	68	168	115	92	17	10	8	478	73
CO01399-10P/Y	SWR	418	112	197	109	99	63	21	4	605	69
ATTX98510-1R/Y	SWR	363	64	173	126	119	21	7	5	515	70
BTX2103-1R/Y	SWR	376	40	190	147	122	7	16	11	532	71
COTX01403-4R/Y	SWR	414	104	215	94	66	61	21	7	568	73
A99331-2RY	WR	163	6	54	103	174	1	5	6	349	46
Purple/Purple Flesh											
Purple Majesty	WR	249	19	99	130	204	3	18	7	481	51
Purple Majesty	SWR	210	13	73	124	231	0	14	6	460	45
TC02072-3P/P	SWR	108	1	25	83	203	0	11	4	326	33
ATTX01180-1R/Y	SWR	395	107	195	93	91	25	10	8	529	75
Yellow Flesh											
Yukon Gold	WR	299	98	129	72	47	37	19	1	403	74
Yukon Gold	SWR	336	77	171	88	51	18	9	0	414	81
ATC00293 -1W/Y	WR	341	59	183	98	64	21	25	19	469	72
CO00412-5W/Y	WR	295	29	143	123	134	3	5	5	442	66
TX1674-1W/Y	SWR	230	26	91	113	120	4	6	5	365	63
A99433-5Y	WR	438	76	226	136	70	14	10	3	534	82
A00286-3Y	WR	374	47	185	142	139	7	23	15	559	67
Mean		335	68	162	105	98	26	18	7	484	68
LSD {0.05}		47.3	23.8	35.6	19.5	22.3	17.5	14.6	7.7	47.6	6.1

Table 7. External Tuber Characteristics of Experimental & Standard Specialty Entries. Tulelake 2010.

Clone/Variety	Trial	Appearance[1]	Skin Color Rating[2]	Eye Depth[3]	Tuber Shape[4]	Shape Uniformity[5]	Length/ Width Ratio[6]
Red/White Flesh							
Dk Red Norland	WR	3.3	1.6	2.7	2.3	3.2	1.1
Dk Red Norland	SWR	3.6	1.7	2.8	2.2	3.6	1.2
Red LaSoda	WR	2.3	1.9	1.2	1.9	3.6	1.1
Red LaSoda	SWR	2.4	2.0	1.1	2.0	3.3	1.1
BTX2332-1R	WR	3.7	3.1	3.1	2.3	4.3	1.1
CO99076-6R	WR	3.4	3.7	2.6	1.8	4.3	1.1
CO99256-2R	WR	3.2	3.0	2.9	1.8	4.0	1.1
COTX94216-1R	WR	3.5	3.8	2.5	2.1	3.2	1.1
COTX94218-1R	WR	3.1	3.4	2.9	2.0	4.2	1.1
AOTX91861-4R	SWR	2.9	2.1	1.7	1.7	4.2	1.1
ATTX98453-11BR	SWR	2.9	3.1	2.5	1.9	3.6	1.1
NDTX5003-2R	SWR	2.6	3.8	2.4	1.8	4.3	1.1
NDTX5438-11R	SWR	3.8	3.6	2.9	1.9	4.2	1.1
Red-Purple/Yellow Flesh							
A99326-1PY	WR	3.3	3.7	3.1	2.2	3.6	1.2
POR03PG80-2	WR	3.5	3.0	3.6	3.8	3.7	1.6
ATTX88654-2P/Y	SWR	3.2	3.8	1.6	2.2	2.9	1.1
CO01399-10P/Y	SWR	3.5	4.2	3.0	2.4	2.7	1.1
ATTX98510-1R/Y	SWR	3.3	1.5	2.4	2.2	3.6	1.1
BTX2103-1R/Y	SWR	2.6	3.3	2.5	2.4	2.6	1.1
COTX01403-4R/Y	SWR	3.6	1.5	3.1	2.2	3.7	1.2
A99331-2RY	WR	3.9	1.9	2.7	2.0	4.3	1.1
Purple/Purple Flesh							
Purple Majesty	WR	2.3	5.0	2.9	4.4	3.7	1.7
Purple Majesty	SWR	3.1	5.0	2.8	4.6	3.7	1.8
TC02072-3P/P	SWR	3.1	5.0	3.7	4.7	4.4	2.2
ATTX01180-1R/Y	SWR	2.6	3.3	3.2	2.5	2.3	1.3
Yellow Flesh							
Yukon Gold	WR	3.9	1.1	3.5	2.4	2.5	1.2
Yukon Gold	SWR	3.9	1.2	3.7	2.4	2.9	1.3
ATC00293 -1W/Y	WR	4.0	1.5	3.6	2.4	2.6	1.3
CO00412-5W/Y	WR	3.5	1.8	3.9	2.7	3.2	1.3
TX1674-1W/Y	SWR	3.4	1.6	3.8	3.6	3.0	1.5
A99433-5Y	WR	3.8	1.5	3.7	1.6	4.5	1.1
A00286-3Y	WR	3.3	1.4	3.6	2.9	3.5	1.4
Mean		3.3	2.7	2.9	2.5	3.5	1.2
LSD {0.05}		0.5	0.3	0.5	0.2	0.5	0.1

Rating Scales

[1] 1=Worst, 5=Best

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

[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 8. Internal Characteristics, & External Defects of Experimental & Standard Specialty Potato Entries. Tulelake 2010.

Clone/Variety	Trial	Hollow Heart[1] (%)	Vascular Discoloration[1] (%)	Stem End Necrosis[1] (%)	Internal Color Rating[2]	Irregular Shaped[3]	Growth Cracks[3]	Knobs[3]
Red/White Flesh								
Dk Red Norland	WR	0	8	3	1.0	0.0	1.8	1.8
Dk Red Norland	SWR	0	3	5	1.0	0.0	0.0	1.0
Red LaSoda	WR	0	15	3	1.0	1.0	6.3	0.8
Red LaSoda	SWR	0	10	0	1.3	1.3	7.3	3.0
BTX2332-1R	WR	0	25	0	2.0	0.5	2.0	0.5
CO99076-6R	WR	0	10	0	1.0	0.5	5.0	1.5
CO99256-2R	WR	0	5	5	1.0	0.0	2.5	0.8
COTX94216-1R	WR	0	3	0	1.0	4.8	1.0	9.3
COTX94218-1R	WR	0	5	0	1.0	0.0	5.5	0.5
AOTX91861-4R	SWR	0	8	3	1.0	0.0	2.8	2.0
ATTX98453-11BR	SWR	0	5	3	1.0	0.0	12.5	9.8
NDTX5003-2R	SWR	0	8	0	1.0	2.0	3.0	7.8
NDTX5438-11R	SWR	0	8	8	1.0	0.0	3.5	4.3
Red-Purple/Yellow Flesh								
A99326-1PY	WR	0	5	5	2.6	0.0	4.8	4.5
POR03PG80-2	WR	0	15	18	2.6	0.3	0.8	2.3
ATTX88654-2P/Y	SWR	3	3	5	3.1	0.0	4.0	1.5
CO01399-10P/Y	SWR	0	15	10	2.6	0.0	5.5	2.5
ATTX98510-1R/Y	SWR	3	5	10	2.6	0.0	2.8	1.0
BTX2103-1R/Y	SWR	0	10	0	2.6	0.0	5.5	2.8
COTX01403-4R/Y	SWR	3	15	0	2.6	0.8	0.8	6.8
A99331-2RY	WR	0	8	5	3.6	0.0	0.0	4.5
Purple/Purple Flesh								
Purple Majesty	WR	3	15	0	5.0	0.8	2.3	6.0
Purple Majesty	SWR	3	8	0	5.0	0.8	0.5	5.3
TC02072-3P/P	SWR	0	5	13	5.0	3.3	0.3	4.8
ATTX01180-1R/Y	SWR	0	17	5	2.6	0.3	0.5	3.8
Yellow Flesh								
Yukon Gold	WR	0	10	33	2.1	3.3	0.0	4.3
Yukon Gold	SWR	8	5	20	2.6	0.0	0.3	5.0
ATC00293 -1W/Y	WR	8	13	0	3.6	0.0	3.5	4.8
CO00412-5W/Y	WR	3	15	0	3.6	0.3	0.3	2.0
TX1674-1W/Y	SWR	0	15	8	2.6	1.3	0.3	2.3
A99433-5Y	WR	0	10	0	1.6	0.3	0.3	1.8
A00286-3Y	WR	0	15	0	2.6	0.8	0.5	4.8
Mean		1	10	5	2	0.7	2.7	3.5
LSD {0.05}		NS	1	1	0.3	2.5	3.7	4.2

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

[2] 1=White/Pink, 5=Dark

[3] Number of tubers pulled from each plot with defects

Table 9. Performance, Average Tuber Size & Specific Gravity of Experimental & Standard Specialty Potato Entries. Tulelake 2010.

Clone/Variety	Trial	Verticillium Wilt Rating[1]	Stand Count[2]	% Stand	Tubers/ Plant	Plants/ Acre	Avg Tuber Size (oz)	Specific Gravity
Red/White Flesh								
Dk Red Norland	WR	5.5	46	95	8	18352	6.7	1.071
Dk Red Norland	SWR	8.3	45	94	8	18150	6.7	1.069
Red LaSoda	WR	5.3	46	95	6	18352	7.9	1.079
Red LaSoda	SWR	5.7	46	95	6	18453	8.0	1.082
BTX2332-1R	WR	5.0	46	95	7	18453	7.1	1.071
CO99076-6R	WR	6.3	41	85	7	15932	6.1	1.082
CO99256-2R	WR	2.8	43	90	10	17343	4.5	1.081
COTX94216-1R	WR	5.5	44	92	9	17848	4.3	1.084
COTX94218-1R	WR	3.0	45	94	8	18251	5.2	1.079
AOTX91861-4R	SWR	6.0	45	94	7	18150	6.4	1.075
ATTX98453-11BR	SWR	6.0	45	93	7	18049	5.6	1.075
NDTX5003-2R	SWR	4.3	40	84	8	16234	5.8	1.075
NDTX5438-11R	SWR	4.7	45	93	8	18049	5.4	1.073
Red-Purple/Yellow Flesh								
A99326-1PY	WR	4.0	43	90	7	17343	6.3	1.081
POR03PG80-2	WR	5.0	44	91	6	17545	7.1	1.076
ATTX88654-2P/Y	SWR	4.5	43	89	9	17142	5.2	1.080
CO01399-10P/Y	SWR	2.0	46	95	9	18453	6.0	1.074
ATTX98510-1R/Y	SWR	4.3	45	94	9	18150	5.1	1.072
BTX2103-1R/Y	SWR	5.8	46	96	9	18654	4.9	1.084
COTX01403-4R/Y	SWR	8.0	45	94	8	18251	6.5	1.068
A99331-2RY	WR	4.3	46	96	9	18553	3.4	1.084
Purple/Purple Flesh								
Purple Majesty	WR	6.3	46	95	11	18352	3.8	1.080
Purple Majesty	SWR	6.3	47	97	11	18856	3.5	1.079
TC02072-3P/P	SWR	5.5	45	94	9	18150	3.1	1.088
ATTX01180-1R/Y	SWR	4.3	45	93	8	17948	5.5	1.077
Yellow Flesh								
Yukon Gold	WR	6.7	43	89	6	17142	6.7	1.097
Yukon Gold	SWR	7.0	45	94	6	18251	6.2	1.091
ATC00293 -1W/Y	WR	3.5	45	93	7	17948	5.8	1.075
CO00412-5W/Y	WR	4.3	47	97	8	18856	4.4	1.094
TX1674-1W/Y	SWR	6.5	45	94	7	18251	4.4	1.096
A99433-5Y	WR	2.3	46	96	8	18553	5.8	1.103
A00286-3Y	WR	1.5	45	93	9	17948	5.0	1.081
Mean		5.0	45	93	8	17999	5.6	1.081
LSD {0.05}		1.3	3	6	1	1251	0.5	0.010

[1] Verticillium Wilt Rating taken on August 18th, 2010. 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%

[2] Number of plants counted in two rows 18ft long

Figure 2. 2010 Red Specialty Trial Entries.

Entry	Tulelake Notes	Entry	Tulelake Notes
Dark Red Norland (WR/SWR)		**Red LaSoda (WR/SWR)**	
	• Light red skin • High yield • Susceptible to vert wilt • Shatter bruise • Common scab		• Light red skin • Deep eye • Easily skinned • High yield • Low appearance rating
BTX2332-1R (WR)		**CO99076-6R (WR)**	
	• Medium red skin • High yield • Internal color discoloration • Common scab		• Darker red skin • Easily skinned • Susceptible to vert wilt • Common scab • 85% stand
CO99256-2R (WR)		**COTX94216-1R (WR)**	
	• Medium red skin • Low susceptibility to vert wilt • Easily skinned		• Darker red skin • Low internal defects • Easily skinned • Knobs • Common scab
COTX94218-1R (WR)		**AOTX91861-4R (SWR)**	
	• Medium red skin • Low susceptibility to vert wilt • Shatter Bruise • Easily skinned • Common scab		• Lighter red skin • Deep eye • High yield • Susceptible to vert wilt • Common scab

Figure 2. 2010 Red Specialty Trial Entries Continued.

Entry	Tulelake Notes	Entry	Tulelake Notes
ATTX98453-11BR (SWR)		**NDTX5003-2R (SWR)**	
	• Medium red skin • Problem with growth cracks and knobs • Easily skinned • Shatter Bruise • Common scab		• Darker red skin • Low appearance rating • Easily skinned • Common scab • Black Scurf • 84% stand
NDTX5438-11R (SWR)		**A99326-1PY (WR)**	
	• Darker red skin • Uniform in shape • 5.4 oz avg tuber size		• Medium purple skin • Low susceptibility to vert wilt • 6.3 oz avg tuber size
POR03PG80-2 (WR)		**ATTX88654-2P/Y (SWR)**	
	• Medium purple skin • More oblong shape • Internal defects		• Medium purple skin • Deep eye • Deeper yellow flesh
CO01399-10P/Y (SWR)		**ATTX98510-1R/Y (SWR)**	
	• Darker purple skin • High yield • Low susceptibility to vert wilt		• Light red skin • Deeper eye • Low susceptibility to vert wilt • A lot of stems still attached to tubers

Figure 2. 2010 Red Specialty Trial Entries Continued.

Entry	Tulelake Notes	Entry	Tulelake Notes
BTX2103-1R/Y (SWR)		**COTX01403-4R/Y (SWR)**	
	• Medium red skin • Deep eye • Low appearance rating • Common scab • Shatter bruise		• Light red skin • Good appearance • High yield • Knobs • High susceptibility to vert wilt • Shatter bruise
A99331-2RY (WR)		**Purple Majesty (WR/SWR)**	
	• Lighter red skin with yellow splotches • Good appearance and uniformity • Deeper yellow flesh • Poor yield, 46% 1's		• Dark purple skin • Oblong shape • Deep purple flesh • Knobs • Small tubers, avg tuber size 3.5-3.8 oz
TC02072-3P/P (SWR)		**ATTX01180-1R/Y (SWR)**	
	• Dark purple skin • Oblong shape • Deep purple flesh • More shallow eye than Purple Maj. • Poor yield, 33% 1's • 3.1 oz avg size		• Medium red skin • High yield • Low appearance rating • Easily skinned • Purple and yellow fleshed variety
Yukon Gold (WR/SWR)		**ATC00293-1W/Y (WR)**	
	• Good appearance • Internal defects • Susceptible to vert wilt • 6.2-6.7 oz avg tuber size		• Good appearance • Deeper yellow flesh • Low susceptibility to vert wilt

Figure 2. 2010 Red Specialty Trial Entries Continued.

Entry	Tulelake Notes	Entry	Tulelake Notes
CO00412-5W/Y (WR)		**TX1674-1W/Y (SWR)**	
	• Darker white skin • Deeper yellow flesh • Shallow eye, few eyes • Low susceptibility to vert wilt		• Pear shaped tubers • Shallow eye • Poor yield • Susceptible to vert wilt • Shatter Bruise
A99433-5Y (WR)		**AO0286-3Y (WR)**	
	• Good appearance • Light yellow flesh • High yield • Low susceptibility to vert wilt • Common scab		• Yellow skin with pink eye splash • Oblong shape • Knobs • Low susceptibility to vert wilt • Black Scurf

Chipper Variety Trial

Cultural Information:

Location:	Tulelake, CA- Grower Field (Walker Farms)
Soil Type:	Tulebasin mucky silty clay loam
Planting Date:	May 19
Vine Kill Date:	September 28: Reglone application at labeled rate
Days to Vine Kill:	132 days
Harvest Date:	October 13
Irrigation:	Solid-set sprinklers
Plot Length:	24 hills
In-Row Spacing:	9.0 inches
Row Spacing:	36 inches
Number of Reps:	4 replications
Fertilizer:	210-158-0-399 (grower field practice)
Weed Control:	Matrix, Metribuzin, and Prowl (post-emergence)
Insecticides:	Leverage (grower field practice)
Fungicides:	Maxim (seed treatment), Quadris & Blocker (in-furrow at planting), Bravo, Endura, and Manzate (grower field practice)
Fumigation:	Grower field practice

The Chipper Variety Trial was located in a cooperating farmer's field this year due to the Klamath Basin Water Shortage. Trial management was the same as the grower's commercial production practices. The Western Regional Trial included two standard varieties and five experimental varieties. The Southwest Regional Trial included the same two standard varieties and four experimental varieties. Seven varieties of local interest were included this year. IREC would like to thank Walker Farms for supporting our research efforts this year by allowing the Chipper Variety Trial to be located in one of their commercial potato fields.

Dakota Crisp was the top yielding chipper variety in regard to both total yield and U.S. No. 1's yielding 599 cwt/A and 470 cwt/A respectively. Atlantic was the next highest yielding variety with a total yield of 558 cwt/A and 434 cwt/A for U.S. No. 1's. The highest yielding experimental entry was a Southwest Regional entry, CO02024-9W with a total yield of 521 cwt/A. Black Scurf was evident on all entries in the Chipper Variety Trial this year. The following bullets summarize trial results. See Tables 10-13 for complete results and Figure 3 for entry comments.

Stand Counts

- **37 Days After Planting**
  All entries had greater than 85% emergence except for: Pike (75.0%), Dakota Pearl (80.2 %), 6212 (84.0%), and 8402 (84.9%).

Plant and Tuber Growth and Development

- **Average Tuber Number per Plant**
  Most: 6212 (10.4) and CO02024-9W (10.2)
  Least: 8402 (4.7) and CO00270-7W (5.2)

- **Average Tuber Size (oz.)**
  Largest: Chipeta (8.6) and 8402 (8.4)
  Smallest: 6212 (4.3) and A00188-3C (4.5)

- **Undersized Tubers (<4 oz.) cwt/Acre**
  Most: 6212 (138) and CO02024-9W (125)
  Least: 8402 (22) and Chipeta (23)

Yield

- **Total Yield (cwt/Acre)**
  Highest: Dakota Crisp (599) and Atlantic (558)
  Lowest: CO00270-7W (357) and A00188-3C (392)

- **U.S. No. 1's Yield (4-14 oz.) cwt/Acre**
  Highest: Dakota Crisp (470) and Atlantic (434)
  Lowest: CO00270-7W (259) and A00188-3C (260)

- **% Marketable Yield (4-14 oz.)**
  Highest: Dakota Crisp (78%) and Atlantic (77%)
  Lowest: 8402 (63%) and 6212 (63%)

Tuber Defect Incidence

- **External Defects**
  Dakota Pearl and AC01151-5W had the most knobs, 3502 and CO00270-7W had the most growth cracks, and CO00197-3W and AC01151-5W had the most greening.

- **Internal Defects**
  Hollow Heart: Dakota Pearl (15.0%)
  Vascular Discoloration: 6212 (16.7%), no statistical significance
  Stem End Necrosis: 8402 (15.0%), no statistical significance

Specific Gravity

- **Taken During Grading Process**
  Highest: CO02033-1W (1.097) and 3502 (1.096)
  Lowest: Dakota Crisp (1.082), AC01151-5W (1.083) and Dakota Pearl (1.083)

Table 10. Tuber Yield & Size Grade of Experimental & Standard Chipping Potato Entries. Tulelake 2010.

		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	434	78	236	120	74	20	9	22	558	77
Chipeta	WR/SWR	347	123	176	48	23	109	22	28	528	66
A00188-3C	WR	260	22	117	122	111	1	10	10	392	67
A01143-3C	WR	371	74	186	112	62	24	15	9	481	77
CO00188-4W	WR	313	25	137	152	108	2	6	10	439	71
CO00197-3W	WR	288	38	152	98	96	5	11	40	441	65
CO00270-7W	WR	259	73	127	59	35	38	10	16	357	73
AC01151-5W	SWR	338	35	177	126	86	3	20	30	477	71
CO02024-9W	SWR	373	21	177	174	125	0	8	15	521	71
CO02033-1W	SWR	334	29	162	144	95	4	5	16	454	74
CO02321-4W	SWR	354	106	175	73	40	79	8	25	505	70
Pike	IREC	314	52	157	104	67	14	9	15	419	75
Dakota Pearl	IREC	302	58	160	84	58	16	25	10	411	74
CO97043-14W	IREC	369	92	175	102	48	37	14	15	482	76
Dakota Crisp	IREC	470	108	250	112	57	49	11	11	599	78
3502	IREC	349	93	188	67	41	49	16	12	467	75
8402	IREC	276	113	124	39	22	103	13	24	438	63
6212	IREC	290	14	120	156	138	1	12	17	458	63
Mean		336	64	166	105	71	31	12	18	468	72
LSD {0.05}		58	28	36	32	24	26	8	15	67	6

Table 11. External Tuber Characteristics of Experimental & Standard Chipping Potato Entries. Tulelake 2010.

Clone/Variety	Trial	Merit Score[1]	Russeting[2]	Eye Depth[3]	Tuber Shape[4]	Shape Uniformity[5]	Length/ Width Ratio[6]
Atlantic	WR/SWR	3.4	2.2	2.8	1.3	3.6	1.1
Chipeta	WR/SWR	3.3	1.3	3.3	1.4	3.5	1.2
A00188-3C	WR	4.1	1.5	3.6	1.2	3.5	1.1
A01143-3C	WR	3.3	1.8	3.3	1.3	3.8	1.1
CO00188-4W	WR	3.5	1.4	3.0	1.2	4.2	1.1
CO00197-3W	WR	3.9	1.4	3.8	1.3	3.6	1.2
CO00270-7W	WR	3.7	1.3	3.9	1.5	3.7	1.1
AC01151-5W	SWR	3.8	1.3	3.2	1.2	3.6	1.1
CO02024-9W	SWR	3.7	1.4	3.5	1.2	3.6	1.1
CO02033-1W	SWR	3.5	1.4	3.7	1.2	3.6	1.2
CO02321-4W	SWR	3.5	1.3	2.9	1.3	4.0	1.1
Pike	IREC	3.7	1.5	3.2	1.1	3.9	1.1
Dakota Pearl	IREC	3.8	1.3	3.5	1.2	3.9	1.1
CO97043-14W	IREC	3.9	1.3	3.1	1.2	3.8	1.1
Dakota Crisp	IREC	3.6	1.5	2.6	1.2	4.1	1.1
3502	IREC	3.0	1.4	3.5	1.5	3.4	1.3
8402	IREC	3.6	1.2	3.5	1.3	3.7	1.1
6212	IREC	2.8	1.9	2.8	1.5	2.9	1.3
Mean		3.6	1.5	3.3	1.3	3.7	1.1
LSD {0.05}		NS	0.3	0.4	0.2	NS	0.6

Rating Scales

[1] 1=Worst, 5=Best - Chipper Merit Score takes into account multiple factors important to the process market including tuber shape, shape uniformity, & eye depth.

[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. Performance, Average Tuber Size & Specific Gravity of Experimental & Standard Chipping Potato Entries. Tulelake 2010.

Clone/Variety	Trial	Stand Count[1]	% Stand	Tubers/ Plant	Plants/ Acre	Avg Tuber Size (oz)	Specific Gravity
Atlantic	WR/SWR	42.0	87.5	8.7	16940	5.8	1.093
Chipeta	WR/SWR	44.0	91.7	5.7	17243	8.6	1.086
A00188-3C	WR	45.0	93.8	7.2	18150	4.5	1.091
A01143-3C	WR	45.7	95.1	6.9	18419	5.9	1.086
CO00188-4W	WR	43.3	90.1	8.1	17444	4.7	1.090
CO00197-3W	WR	43.0	89.6	8.3	17343	4.9	1.089
CO00270-7W	WR	41.7	86.8	5.2	16806	6.7	1.089
AC01151-5W	SWR	43.3	90.1	8.9	17444	5.2	1.083
CO02024-9W	SWR	43.0	89.6	10.2	17343	4.7	1.087
CO02033-1W	SWR	43.0	89.6	8.6	17343	4.9	1.097
CO02321-4W	SWR	43.3	90.3	6.7	16638	7.3	1.092
Pike	IREC	36.0	75.0	8.5	14520	5.5	1.091
Dakota Pearl	IREC	38.5	80.2	7.1	15528	6.0	1.083
CO97043-14W	IREC	42.5	88.5	7.0	17142	6.4	1.090
Dakota Crisp	IREC	44.5	92.7	7.2	17948	6.6	1.082
3502	IREC	44.0	91.7	5.6	17747	6.9	1.096
8402	IREC	40.8	84.9	4.7	16436	8.4	1.090
6212	IREC	40.3	84.0	10.4	16268	4.3	1.095
Mean		42.4	88.4	7.5	17039	6.0	1.089
LSD {0.05}		3.0	6.3	1.0	1413	0.6	0.008

[1] Number of plants counted in two rows 18ft long

Table 13. Internal Characteristics, & External Defects of Experimental & Standard Chipping Potato Entries. Tulelake 2010.

Clone/Variety	Trial	Hollow Heart[1] (%)	Vascular Discoloration[1] (%)	Stem End Necrosis[1] (%)	Knobs[2]	Growth Cracks[2]	Irregular Shaped[2]	Green[2]
Atlantic	WR/SWR	2.5	7.5	2.5	1.8	1.8	0.0	18.0
Chipeta	WR/SWR	0.0	7.5	5.0	5.0	2.5	0.0	13.5
A00188-3C	WR	0.0	10.0	5.0	6.3	1.0	0.0	11.3
A01143-3C	WR	0.0	5.0	2.5	2.8	2.5	0.0	8.8
CO00188-4W	WR	0.0	7.5	2.5	2.5	0.8	0.0	9.8
CO00197-3W	WR	0.0	12.5	5.0	5.0	0.8	0.0	30.8
CO00270-7W	WR	0.0	7.5	10.0	0.7	5.0	0.0	9.0
AC01151-5W	SWR	5.0	12.5	2.5	9.3	1.5	0.0	23.5
CO02024-9W	SWR	10.0	10.0	5.0	2.3	0.0	0.0	13.3
CO02033-1W	SWR	0.0	7.5	7.5	1.3	1.0	0.0	15.5
CO02321-4W	SWR	0.0	12.5	0.0	1.3	1.3	0.0	18.0
Pike	IREC	0.0	2.5	5.0	2.0	3.0	0.0	13.0
Dakota Pearl	IREC	15.0	7.5	5.0	11.0	1.5	0.0	6.3
CO97043-14W	IREC	0.0	6.7	10.0	1.3	1.3	0.0	11.3
Dakota Crisp	IREC	0.0	10.0	10.0	2.3	2.3	0.0	9.0
3502	IREC	2.5	10.0	2.5	3.3	6.0	0.0	12.5
8402	IREC	0.0	0.0	15.0	1.0	3.0	0.0	11.5
6212	IREC	0.0	16.7	0.0	5.0	1.7	0.0	18.7
Mean		1.9	8.5	5.3	3.5	2.0	0	14.1
LSD {0.05}		0.8	NS	NS	3.6	3.0	NS	9.6

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

[2] Number of tubers pulled from each plot with defects

Figure 3. 2010 Chipper Trial Entries.

Entry	Tulelake Notes	Entry	Tulelake Notes
Atlantic (WR/SWR)		**Chipeta (WR/SWR)**	
	• High yield • Deep eye • Heavier russeting • Internal defects • Some greening		• High yield • Variety with the most >14oz tubers • Knobs
A00188-3C (WR)		**A01143-3C (WR)**	
	• Low yield • High merit score • Shallower eye • Small tubers, 4.5 oz avg size • Knobs		• Some russeting • Low internal and external defects
CO00188-4W (WR)		**CO00197-3W (WR)**	
	• Very uniform shape • Low external defects		• Good appearance • Good merit score • Shallow eye • Knobs • Greening
CO00270-7W (WR)		**AC01151-5W (SWR)**	
	• Low yield • Light russeting • Shallow eye • Internal defects • Growth cracks		• Good appearance • Light russeting • Low specific gravity • Internal defects • Knobs • Greening

Figure 3. 2010 Chipper Trial Entries Continued.

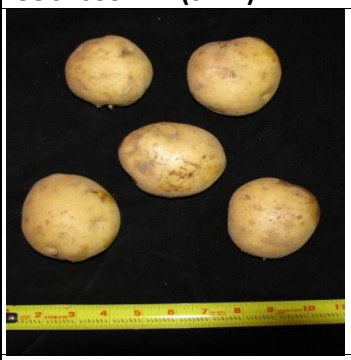
Entry	Tulelake Notes	Entry	Tulelake Notes
CO02024-9W (SWR)		**CO02033-1W (SWR)**	
	• High yield • Round shape • Internal defects, 10% hollow heart • Low external defects		• Shallow eye • High specific gravity • Internal defects • Greening
CO02321-4W (SWR)		**Pike (IREC)**	
	• High yield • Very uniform shape • Deep eye • Greening		• Good appearance • Poor stand emergence • Low internal and external defects
Dakota Pearl (IREC)		**CO97043-14W (IREC)**	
	• Desirable appearance • Low specific gravity • Internal defects, 15% hollow heart • Knobs		• Good merit score • Internal defects • Low external defects
Dakota Crisp (IREC)		**3502 (IREC)**	
	• High yield • Deep eye • Low specific gravity • Low external defects		• High specific gravity • Internal defects • Growth cracks

Figure 3. 2010 Chipper Trial Entries Continued.

Entry	Tulelake Notes	Entry	Tulelake Notes
8402 (IREC)		**6212 (IREC)**	
	• Larger tubers, 8.4 oz avg size • Lumpy • Stem end necrosis • Low external defects		• Smaller tubers, 4.3 oz avg size • Low merit score • Deep eye • Low uniformity • Knobs, Greening

Storage

Entries from all three trials are stored in a controlled environment for assessment of dormancy and storability. The Russet and Red Specialty entries are stored for 180 days after harvest (DAH) at 40^0F each, with evaluations at 60 DAH, 120 DAH, and 180 DAH. The Chipper entries are stored for 120 DAH at 50^0F. Sprout inhibitor is not applied during any time of the storage duration. Storage evaluation results will be reported separately upon completion of the storage period.