

Selected Red/Yellow Skin Varieties Appearance and Quality After Storage, Washing, and Polishing

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Introduction:

Red and specialty type potatoes are an expanding segment of the Klamath Basin potato industry. Red and yellow skin potatoes are increasing in popularity with consumers, and growers are always looking for new varieties to fill a niche or match industry preferences. IREC has evaluated red, yellow, and specialty potatoes in variety tests for more than 20 years, and we've collected a lot of information on agronomic traits at harvest. However, little information is collected on the varieties appearance and quality after storage and commercial washing and polishing. This study examined external appearance of multiple red- and a yellow-skinned variety following storage and commercial polishing to identify varieties resistant to skinning and external blemishes.

Trial Information

Location:	IREC, Tulelake, CA
Soil Type:	Tulebasin mucky silty clay loam
Planting Date:	May 14 th , 2015
Harvest Date:	September 23, 2015
Harvest Pulp Temperature:	59
Irrigation:	Solid-set sprinklers
Plot Size:	2 rows (6 ft) wide by 20 ft long
In-Row Seed Spacing:	10 inches
Number of Replications:	4
Fertilizer per Acre:	204.6 N, 104 P2O5, 100 K, 36 S
Seed Treatment:	Fir Bark Dust, Maxim 4FS
Weed Control:	Prowl H ₂ O & Roundup (pre-emergence), Outlook, Matrix
Insecticides:	Admire Pro (in-furrow), Vydate

Fungicides: Quadris, Endura, Omega, Bravo Weatherstick, Tanos, Tattoo, Curzate
Vine Kill Method: Rolling vine, Reglone

Methods

Plots were harvested by laying potatoes up on top of the beds with a single row digger. Two ten-tuber sub-samples were collected off the primary chain, and then put into climate-controlled storage at 50°F. The rest of the plot was dug and run across the potato grade line. Two ten-tuber samples were pulled after the grade line and stored with the digger samples. One set of each, digger and gradeline subsamples, were washed then evaluated for internal/external defects. After 90 days the remaining samples were washed, allowed to warm at 65°F for 24 hours, and then polished using commercial equipment. 10 tuber sub-samples of washed and polished tubers were evaluated separately one day after polishing.

Results

Varieties differed mainly in their Lenticel scarring, sheen, and appearance merit at harvest (Figures 2,4, and 5). Peppermint and A05182-7Y had a high amount of skinning after storage compared to most other varieties in the trial. Chieftan had noticeably less sheen than all other varieties. NDA0502378-1R had a significantly higher appearance and sheen rating than all other red varieties.

Black dot was not severe for all varieties except Yukon Gold. Lenticel scarring was moderately severe on most varieties except NDTX5438-11R, Modoc, and Chieftain which had little incidence.

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Table 1. Harvest Evaluation and Yield Results

Variety	Total Yield	Culls ¹	Avg. Tuber Size	Tubers Per Plant	Early Die Rating ²	Early Season Vine Vigor 6/10/15 ³	Specific Gravity	Knobs	Growth Crack	Irregular Shape
	CWT/A	%	ounces	#	A.U.D.P.C	1-10		%	%	%
NDTX5438-11R	499	5	6.1	7.9	291	6.8	1.068	0.5	2.5	0.1
Modoc	521	19	5.4	10.0	597	7.6	1.065	2.2	7.1	0.0
Chieftain	558	13	6.9	7.8	301	7.8	1.073	1.6	4.5	0.2
Red Luna	504	13	5.7	8.6	74	8.0	1.078	1.5	4.7	2.1
Colorado Rose	528	15	6.8	7.9	269	7.5	1.075	3.3	4.5	0.9
Peppermint	297	26	7.9	7.0	58	8.3	1.075	3.2	6.2	0.0
95% Conf. Interval	33	3	0.3	0.5	73	0.4	0.004	1.0	1.6	1.1

¹ Percent of total tubers.

² Area Under Disease Progress Curve based on foliar early-dying ratings. Higher value is more susceptible.

³ Vine vigor based on 1-10; 10 being the most vigorous

Table 2. Additional Varieties from Western Regional Trial

Variety	Total Yield	Culls ¹	Avg. Tuber Size	Tubers Per Plant	Early Die Rating ²	Specific Gravity	Knobs ¹	Growth Crack ¹	Irregular Shape ¹
	CWT/A	%	Ounces	#	A.U.D.P.C		%	%	%
NDA050237B-1R	506	2	5.3	8.8	65	1.064	0.1	0.8	0.1
Yukon Gold	435	3	7.3	6.0	505	1.076	1.4	0.8	1.4
A05182-7Y	464	2	3.9	11.2	68	1.079	0.5	0.1	0.5
NDA081451CB-1CY	624	9	5.5	10.7	106	1.086	0.1	2.1	0.6

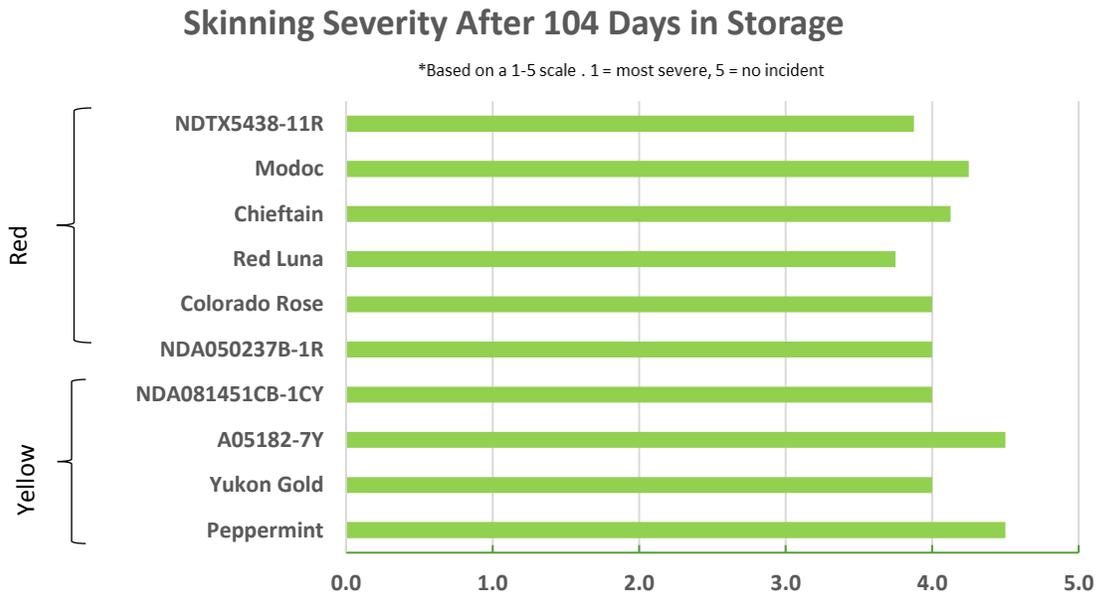
¹ Percent of total tubers.

² Area Under Disease Progress Curve based on foliar early-dying ratings. Higher value is more susceptible.

Table 3. Summary Notes for Varieties (Regional Trial Entries Included)

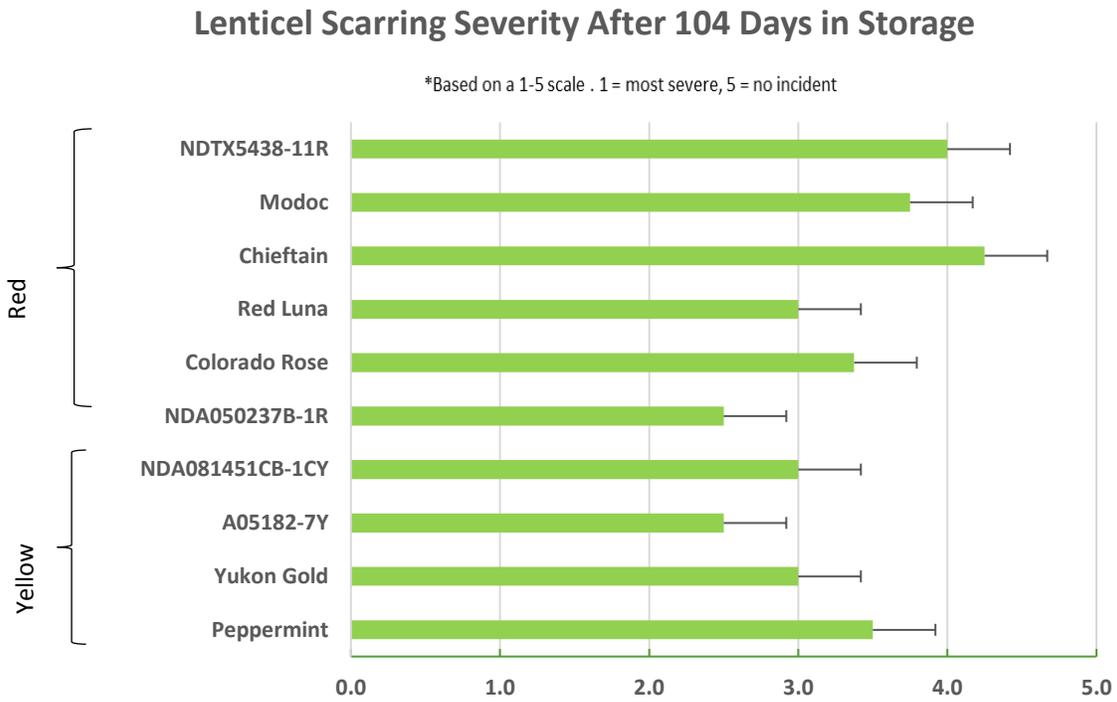
Variety	Notes
NDTX5438-11R	Low cull percentage, similar to Modoc in appearance
Modoc	High cull percentage
Chieftain	Low tuber skin sheen when polished
Red Luna	Pointy, pear shaped, resistant to early dying
Colorado Rose	
Peppermint	Inconsistent skin coloring, high cull percentage, resistant to early dying, low total yield
NDA050237B-1R	Resistant to early dying, high sheen when polished
Yukon Gold	Large average tuber size, high incidence to black dot on tuber surface
A05182-7Y	Resistant to early dying , small tubers, deep yellow coloring
NDA081451CB-1CY	High total yield, looks like Yukon

Figure 1.



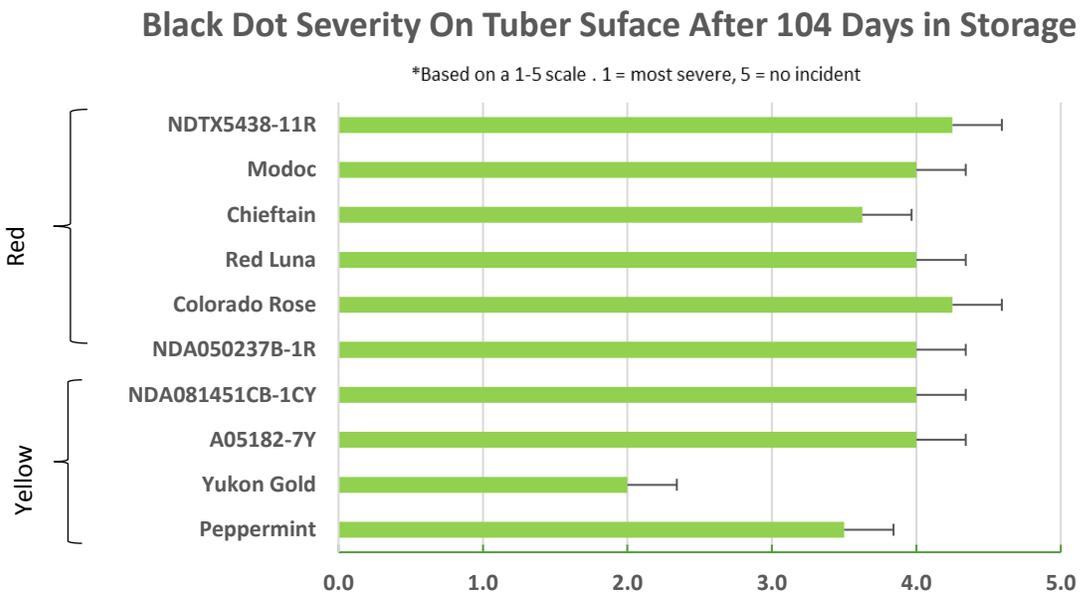
Treatments were not statistically different.

Figure 2.



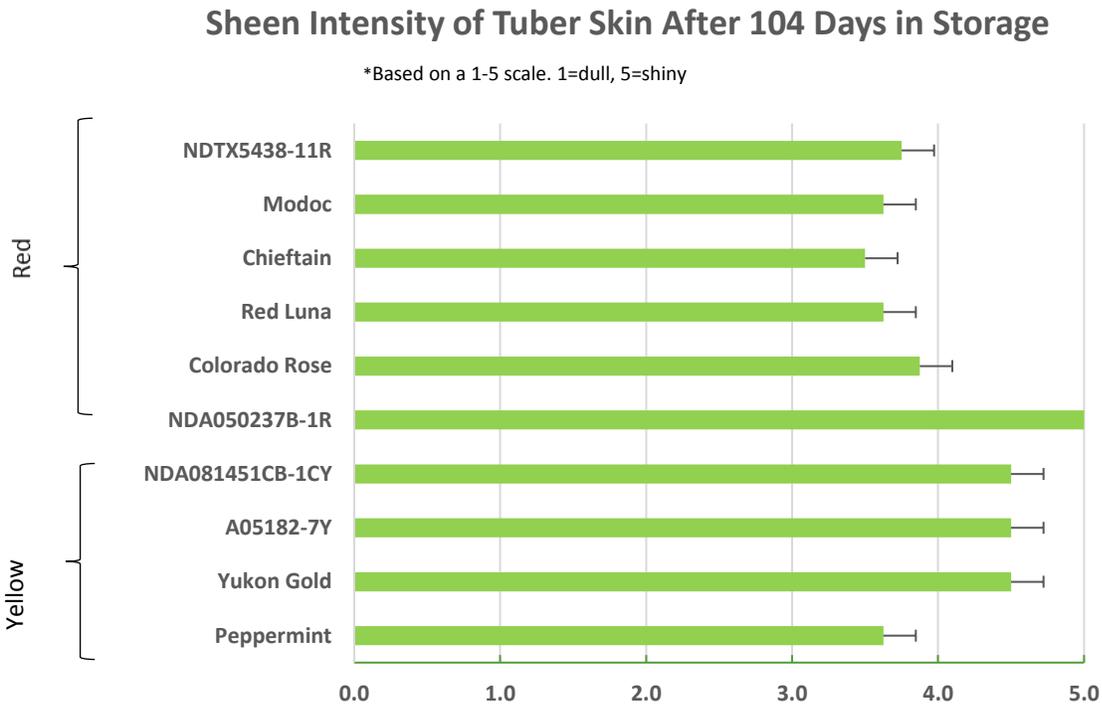
Error bars indicate a 95% confidence interval.

Figure 3.



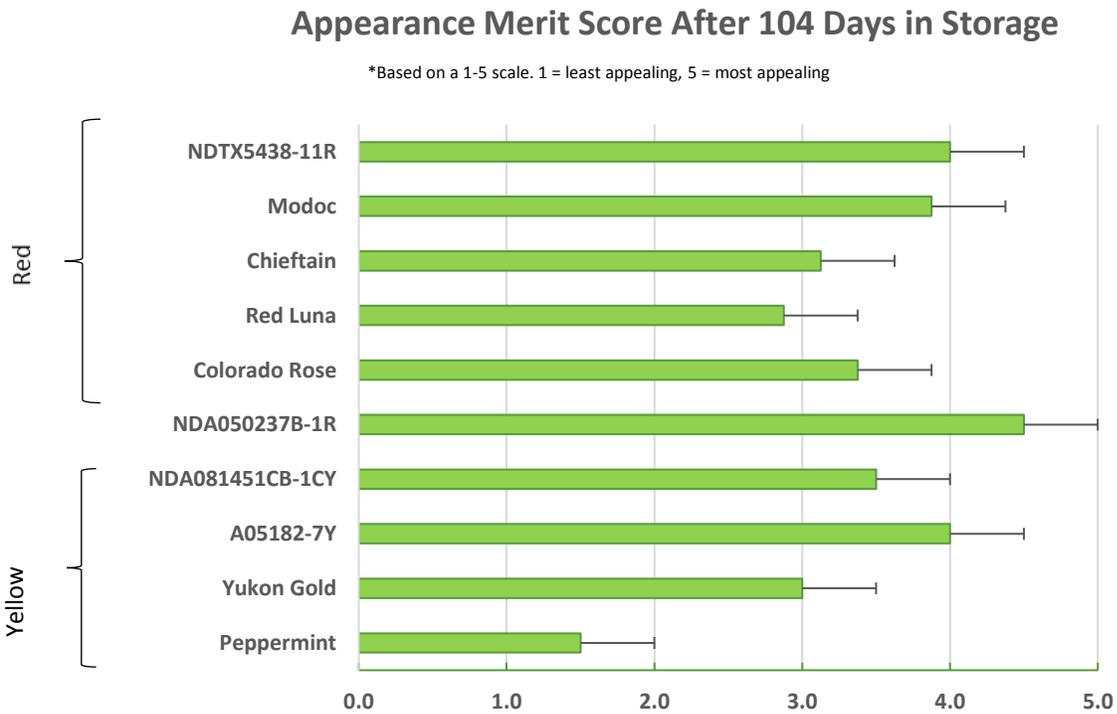
Error bars indicate a 95% confidence interval.

Figure 4.



Error bars indicate a 95% confidence interval.

Figure 5.



Error bars indicate a 95% confidence interval.

Entry

NDTX5438-11R



Washed

Polished

Basket After Polishing

NDTX5438-11R

Modoc

Modoc



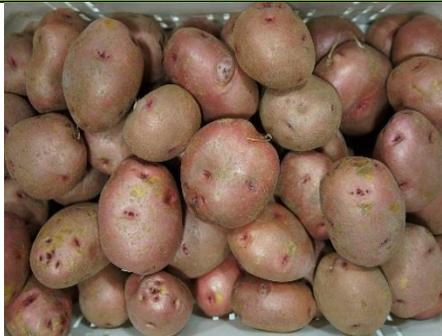
Washed

Polished

Basket After Polishing

Modoc

Chieftain



Washed

Polished

Basket After Polishing

Chieftain

Modoc

Red Luna



Washed

Polished

Basket After Polishing

Red Luna

Modoc

Entry

Colorado Rose



Washed

Polished

Basket After Polishing

Colorado Rose

Modoc

NDA050237B-1R



Washed

Polished

Basket After Polishing

NDA050237B-1R

Modoc

Peppermint



Washed

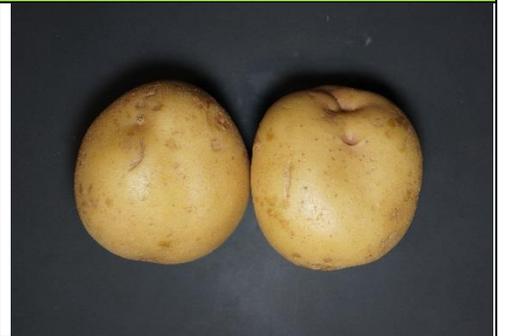
Polished

Basket After Polishing

Peppermint

Yukon Gold

Yukon Gold



Washed

Polished

Basket After Polishing

Yukon Gold

Entry

A05182-7Y



Washed

Polished



Basket After Polishing



A05182-7Y

Yukon Gold

NDA081451CB-1CY



Washed

Polished



Basket After Polishing



NDA081451CB-1CY

Yukon Gold