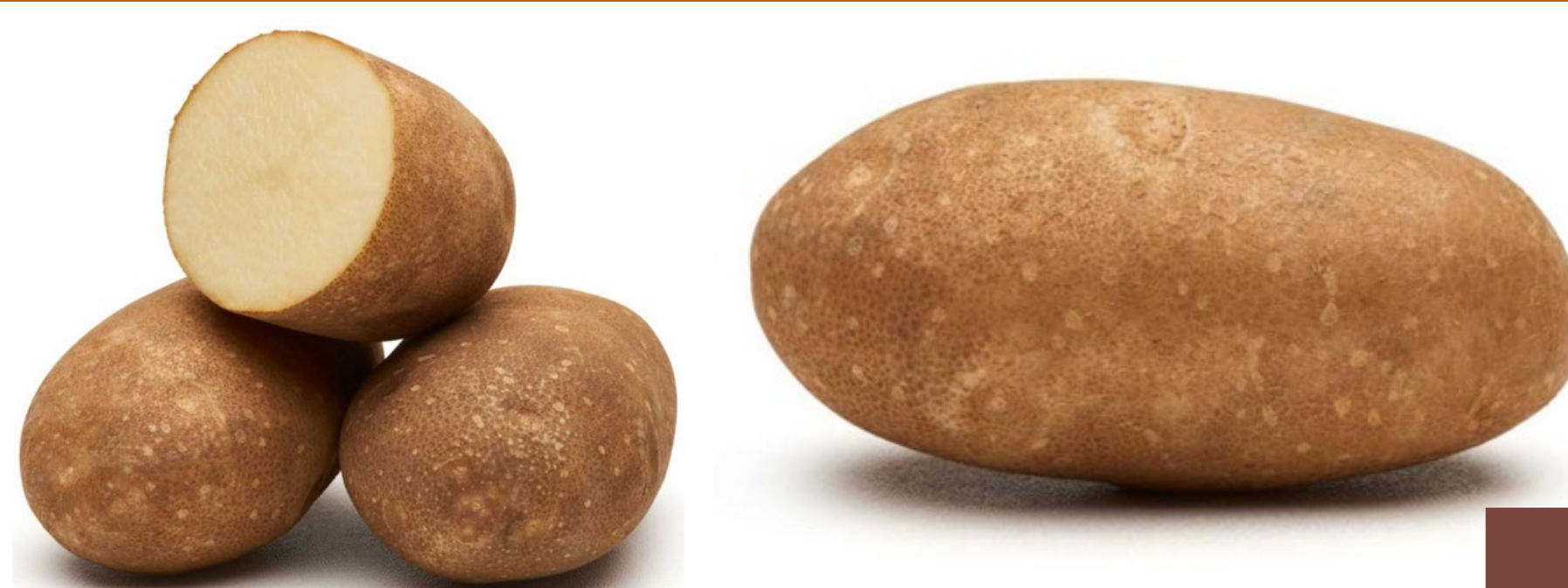
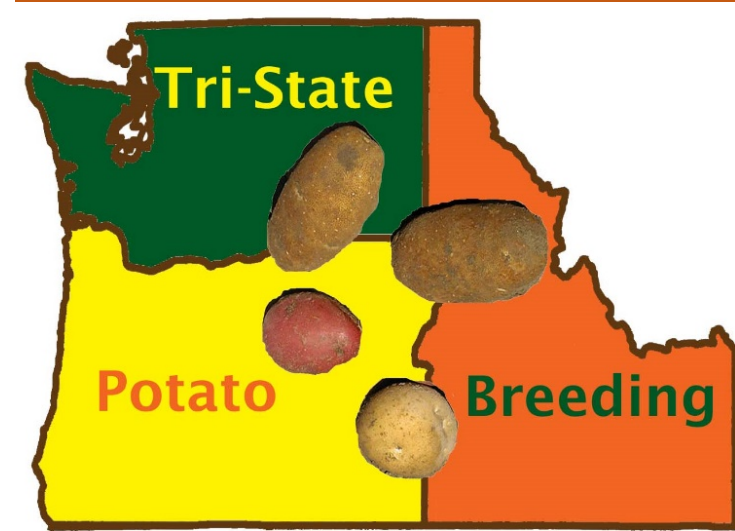


# La Belle Russet: An Early Maturing, Dual-Purpose Variety With Wide Adaptability And Long Tuber Dormancy



## SUMMARY: LA BELLE RUSSET

## INTRODUCTION

Figure 1. Tubers of La Belle Russet

- Released in 2019 by the Northwest (Tri-State) Potato Variety Development Program
- Early maturing and suitable for fresh market as well as processing from up to seven months storage at 48°F
- Long tuber dormancy comparable to Russet Burbank
- Attractive tuber type (Fig. 1) over varied growing environments (Fig. 2), resulting in high marketable yields that are comparable or higher than Russet Norkotah

La Belle Russet (A06021-1T) was derived from a hybridization between parental breeding clones A99031-1TE and A96013-2 conducted in 2006 at Aberdeen, ID. Varieties in its pedigree include Western Russet, Russet Norkotah, Frontier Russet, and BelRus. It was first selected in 2008 at Tetonia, ID, a research site having a short-growing season, for its early yield potential and was subsequently evaluated for 8 years in public and industry trials throughout the U.S. and in eastern Canada prior to its release. La Belle Russet is male fertile and can be utilized as a male parent in hybridizations.

## AGRONOMIC PERFORMANCE

In early harvest yield trials conducted in Idaho, Oregon, and Washington, La Belle Russet had total yields comparable to early-maturing Russet Norkotah, but lower than those of the full-season varieties, Ranger Russet and Russet Burbank (Table 1). However, the high percentage of U.S. No. 1 tubers of La Belle Russet contributed to higher marketable yield relative to Russet Norkotah and Russet Burbank (Table 1). Specific gravity of La Belle Russet was higher than Russet Norkotah and Russet Burbank, and was comparable to Ranger Russet (Table 1). Fresh and processing merit scores for La Belle Russet during the three years of trials were higher (greater merit) than those of the check varieties (Table 1). The early maturity of La Belle Russet was also evident in these trials across years, with a significantly ( $P=0.05$ ) higher percentage of tubers >10 oz (32%) relative to Russet Norkotah (24%), which is recognized as an early-maturing industry standard.

Table 1. Total yield, U.S. No. 1 yield, percent U.S. No. 1 tubers, tuber specific gravity, fry color, and percentage of sugar ends of La Belle Russet, Ranger Russet, and Russet Burbank in early-harvest irrigated trials grown in Idaho, Oregon, and Washington, 2014 - 2016<sup>1</sup>.

	ID	OR	WA	Mean
<b>Total yield (cwt/Acre)</b>				
La Belle Russet	456	447	467	<b>457</b>
Russet Norkotah	392	447	469	<b>436</b>
Ranger Russet	441	595	489	<b>508</b>
Russet Burbank	508	582	484	<b>524</b>
<b>U.S. No. 1 yield (cwt/Acre)</b>				
La Belle Russet	397	379	420	<b>399</b>
Russet Norkotah	331	339	392	<b>355</b>
Ranger Russet	370	458	432	<b>420</b>
Russet Burbank	338	413	341	<b>364</b>
<b>% U.S. No.1</b>				
La Belle Russet	87.7	84.6	89.8	<b>87</b>
Russet Norkotah	85.3	74.1	83.6	<b>81</b>
Ranger Russet	83.6	76.4	88.2	<b>83</b>
Russet Burbank	64.9	69.6	70.3	<b>68</b>
<b>Specific Gravity</b>				
La Belle Russet	1.081	1.071	1.089	<b>1.081</b>
Russet Norkotah	1.072	1.062	1.078	<b>1.071</b>
Ranger Russet	1.083	1.069	1.085	<b>1.079</b>
Russet Burbank	1.078	1.069	1.082	<b>1.076</b>
<b>Merit Score<sup>2</sup></b>				
<b>(Fresh/Processing)</b>				
La Belle Russet	n.a.	3.1 /3.5	3.0 /3.8	<b>3.0 /3.6</b>
Russet Norkotah	n.a.	3.2 /1.8	2.2 /3.0	<b>2.7 /2.4</b>
Ranger Russet	n.a.	2.1 /2.8	2.7 /3.5	<b>2.4 /3.2</b>
Russet Burbank	n.a.	2.2 /2.2	1.0 /2.1	<b>1.6 /2.2</b>
<b>Field Fry<sup>3</sup></b>				
La Belle Russet	n.a.	0.3	1.0	<b>0.6</b>
Russet Norkotah	n.a.	0.6	n.a.	<b>0.6</b>
Ranger Russet	n.a.	0.1	2.0	<b>1.0</b>
Russet Burbank	n.a.	0.3	2.0	<b>1.2</b>
<b>% Sugar Ends</b>				
La Belle Russet	n.a.	3	n.a.	<b>3</b>
Russet Norkotah	n.a.	24	n.a.	<b>24</b>
Ranger Russet	n.a.	21	n.a.	<b>21</b>
Russet Burbank	n.a.	11	n.a.	<b>11</b>

<sup>1</sup>Trial locations were Parma (ID), Hermiston (OR), and Othello (WA). Means represent combined data from the 2014 to 2016 Western Regional Potato Variety Trials.

<sup>2</sup>Merit ratings: 1=Very Poor, 2=Poor, 3=Average, 4=Good, 5=Excellent

<sup>3</sup>French fry scores rated using USDA standards, with 0=light and 4=dark. A rating < 2.0 is an acceptable score.

The high marketable yield of La Belle Russet is a consequence of low external defects, with little or no growth cracks and second growth observed in 4 years of multi-state evaluations in the Tri-State and Western Regional Trials (Table 2). Susceptibility to shatter bruise is slightly greater relative to control cultivars. Internal defects (hollow heart, internal brown spot, blackspot bruise, and net necrosis/vascular discoloration) are similar or lower than the check varieties (Table 2). Tuber glycoalkaloid concentrations for La Belle Russet were low at 3.3 mg/100 g Fresh Weight Basis over four years of evaluations at Aberdeen, ID, with Russet Norkotah, Ranger Russet, and Russet Burbank glycoalkaloid concentrations at 3.5, 5.4, and 2.9 mg/100 g FWB, respectively.

Table 2. Evaluation of internal and external defects of La Belle Russet, Ranger Russet, and Russet Burbank in Tri-State and Western Regional Trials (2013-16).

Cultivar	Growth cracks <sup>1,3</sup>	Second growth <sup>1,4</sup>	Shatter bruise <sup>1,5</sup>	Hollow Heart/BC <sup>2,6</sup>	% Internal brown spot <sup>7</sup>	% Net necrosis / Vasc. Discol. <sup>8</sup>	Blackspot bruise <sup>9</sup>
La Belle Russet	4.8	4.9	4.0	2.5	2.1	3.6	3.9
Russet Norkotah	4.9	4.7	4.6	3.7	0.4	4.2	4.1
Ranger Russet	4.5	4.4	4.6	0.4	2.2	5.8	3.5
Russet Burbank	4.2	3.5	4.3	6.8	1.0	3.1	3.7

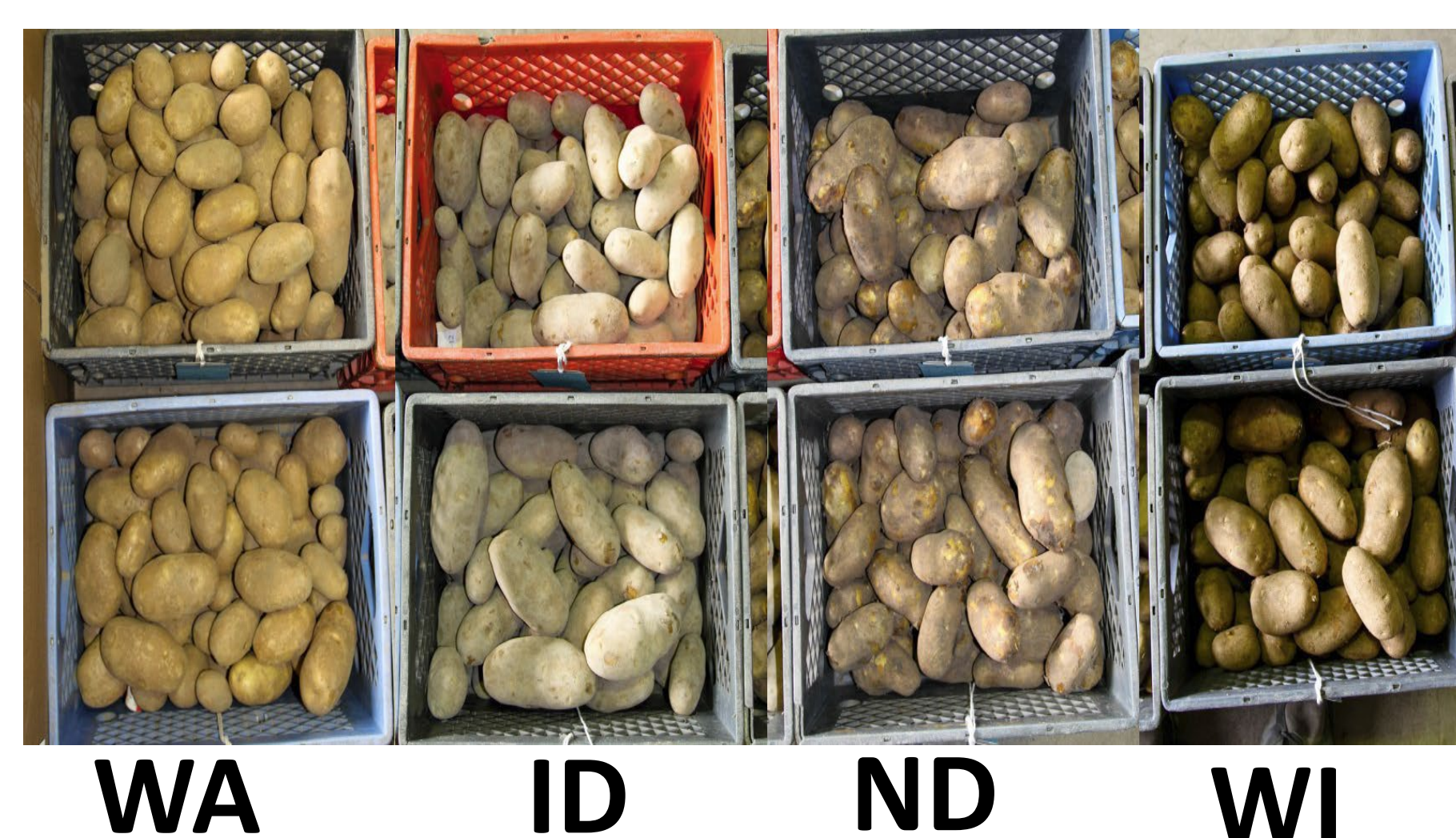
<sup>1</sup>Rated using a 1-5 scale with 1=severe and 5=none observed.

<sup>2</sup>Rated as the percentage of tubers >341 g with hollow heart and brown center.

<sup>3</sup>Average of 38 ratings; <sup>4</sup>Average of 36 ratings; <sup>5</sup>Average of 30 ratings; <sup>6</sup>Average of 37 ratings; <sup>7</sup>Average of 34; <sup>8</sup>Average of 24 ratings;

<sup>9</sup>Average of 27 ratings

## 2013



## 2014



Figure 2. La Belle Russet maintains attractive tuber type over years and growing environments. Two replicates of La Belle Russet tubers are shown from four sites of the National Fry Processing Trial over a 2 year period (2013-14).

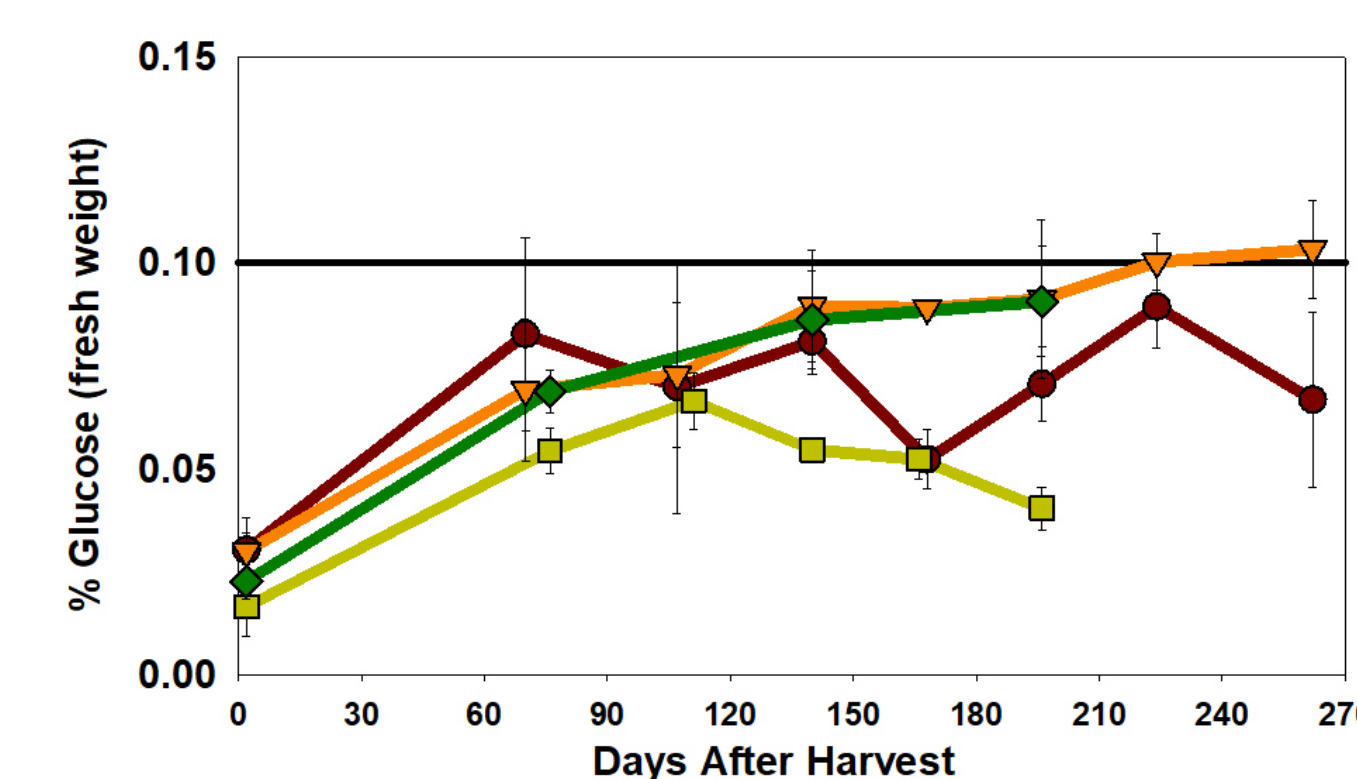


Figure 3. Mean percent tuber glucose of La Belle Russet and Russet Burbank following up to 270 days of storage at 48°F over two years of evaluation at Kimberly, ID. Tubers were treated with CIPC.

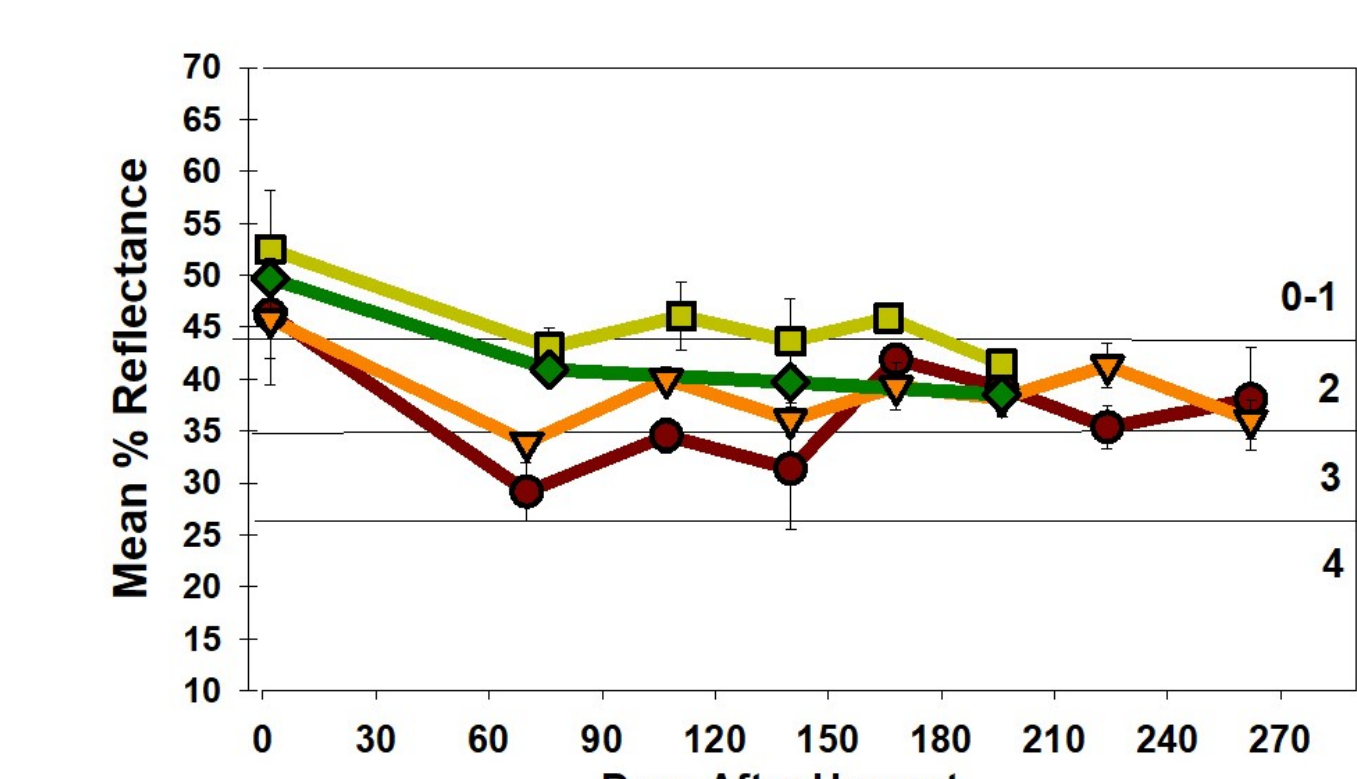


Figure 4. Mean percent reflectance (stem end) and USDA fry color of La Belle Russet and Russet Burbank following up to 270 days of storage at 48°F over two years of evaluation at Kimberly, ID. Tubers were treated with CIPC.

## PROCESSING AND STORAGE ATTRIBUTES

La Belle Russet is notable for having a long tuber dormancy, comparable to that of Russet Burbank, which is the industry standard for long-term potato storage (Table 3). Long dormancy makes La Belle Russet tubers suitable for long-term storage for both fresh and processing purposes. La Belle Russet processes well following field harvest and had a low incidence of sugar ends at Hermiston, OR (Table 1). It is not considered cold-sweetening resistant, with tuber glucose exceeding 0.10% (concentration for acceptable fry color) within 1 to 2 months of storage at 42 and 45°F, respectively. However, La Belle Russet can be stored up to 7 months at 48°F with acceptable glucose concentrations and fry color (Figs. 3 & 4). Fry mottling, which represents thin, thread-like areas of dark coloration found in the cortex of the fried potato tissue, has been observed in fries from tubers of La Belle Russet stored at 48°F with time in storage. Mottling, while more pronounced for La Belle Russet than for Russet Burbank, was nonetheless considered mild with regard to expression at 48°F.

Table 3. Tuber dormancy length of La Belle Russet and Russet Burbank at three storage temperatures (2015-16); Tubers were not treated with sprout inhibitor

Cultivar	Dormancy Length (Days)		
	42°F	45°F	48°F
La Belle Russet	170	160	145
Russet Burbank	170	158	143

Dormancy length is defined as the number of days from harvest until 80% potatoes have at least one sprout  $\geq 5$  mm in length.

## DISEASE RESPONSE

On the basis of disease evaluations conducted from 2011-14, La Belle Russet is considered to be moderately resistant to common scab, tuber necrosis associated with *Potato mop-top virus* (PMTV), and dry rot (*F. sol* var. *coeruleum*). Susceptibility to other diseases is similar to that of Russet Burbank and Russet Norkotah, with exceptions being greater susceptibility to PLRV net necrosis and dry rot (*F. sambucinum*) relative to Russet Norkotah. PVY susceptibility was similar to that of Russet Norkotah in two years of virus screening trials conducted at Kimberly, ID.

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**Acknowledgements:** Funding was provided by NIFA Grant: *Potato Variety Development in the Northwest* and by the Northwest Potato Research Consortium. Evaluation and identification of La Belle Russet as a variety suitable for eastern Canada was conducted by Pommes de terre Laurentiennes Inc., Notre-Dame-de-la-Paix, QC.

