

## A9014-2

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Intended Market: French fry processing/fresh

### General Description:

A9014-2 is a product of the cooperative USDA/ARS, University of Idaho breeding program in Aberdeen. It resulted from a 1990 cross between Gem Russet and A8341-5 (Figure 1). It has been evaluated for 9 years in public and industry trials throughout the western U.S. The release will be made jointly by the USDA/ARS and the experiment stations of Idaho, Washington, and Oregon.

A9014-2 is a medium to late maturing, medium to high yielding variety with oblong, heavily russeted tubers (Figure 2). It has excellent appearance and would be useful for both processing and fresh markets. This variety has medium to high specific gravity and excellent fry color from long-term storage.

### Plant Characteristics:

A9014-2 has a semi-erect vine that matures in the middle of the season. It produces white flowers with viable pollen. See Table 1 for a full description of plant characteristics and Figure 2 for photographs.

Table 1. Foliage characteristics of A9014-2 as compared to those of Russet Burbank. Comparisons were made on plants growing in Aberdeen, Idaho in 2000 and 2001.

Characteristic	A9014-2	Russet Burbank
Growth Habit	Semi-erect	Spreading
Maturity	Mid-season	Late
Leaf type (silhouette)	Medium	Medium-open
Leaflet Shape (terminal)	Broadly ovate	Medium ovate
Leaflet number – primary	Ave. 3.6, Range 2-5	Ave. 3.3, Range 2-5
Leaflet number – secondary	Ave. 3.0, Range 1-5	Ave. 3.3, Range 1-5
Leaflet number – tertiary	Ave. 1.7, Range 0-5	Ave. 3.2, Range 0-7
Flower color	White	White
Pollen production	Abundant, viable	None

<sup>1</sup> University of Idaho and ARS/USDA, Aberdeen, Idaho; <sup>2</sup>Oregon State University, Corvallis

### Tuber Characteristics:

A9014-2 produces oblong tubers with heavily russetted skin. The eyes are intermediate in number and not well distributed. Tuber set is low, with average size typically medium, although large tubers are common (Table 2). See Figure 2 for photographs.

Table 2. Physical tuber characteristics of A9014-2 as compared with those of Russet Burbank. Comparisons were made using tubers grown at Aberdeen, Idaho in 2000 and 2001.

Characteristic	A9014-2	Russet Burbank
Skin Color	Brown	Tan
Skin texture	Heavily russetted	Russetted
Size <sup>1</sup>	Medium (Ave. 7.5oz)	Medium (Ave. 6.5oz)
Shape	Long (L/W ratio <sup>2</sup> = 1.75)	Long (L/W ratio = 2.1)
Thickness	Slightly flattened	Slightly flattened
Eye depth	Shallow	Intermediate
Eye number	Intermediate	Intermediate – high
Eye distribution	Predominantly apical	Evenly distributed
Eyebrow prominence	Slight prominence	Slight prominence
Flesh color	Cream-white	Cream-white
Tuber set	Low	Low
Dormancy	Medium-long	Long

<sup>1</sup> Tuber size data were collected from 16 trials grown in Idaho, Oregon and Washington from 1995 through 2002.

<sup>2</sup> L/W ratio data were collected using 100 tubers from 2000 and 2001 Aberdeen trials.

### Tuber Yield:

A9014-2 produced higher total yields than Russet Burbank in eastern Idaho, but slightly lower yields in the longer season areas of Western Idaho, Oregon and Washington (Table 3). On average, A9014-2 produced higher U.S. No. 1 yields than Russet Burbank at all locations (Table 3).

Table 3. Total and U.S. No. 1 yields of A9014-2 as compared to those of Russet Burbank.

Location	Variety	Total Yield (cwt/A)	U.S. No. 1 Yield (cwt/A)
Eastern Idaho <sup>1</sup>	A9014-2	395	334
	Russet Burbank	348	215
Western and Central Idaho <sup>2</sup>	A9014-2	404	335
	Russet Burbank	443	249
Oregon <sup>3</sup>	A9014-2	718	613
	Russet Burbank	761	442
Washington <sup>4</sup>	A9014-2	706	571
	Russet Burbank	738	359

<sup>1</sup> Data from 12 trials conducted from 1996-2002 in Aberdeen, Shelley and Rexburg.

<sup>2</sup> Data from 7 trials conducted from 1995-2001 in Parma and Kimberly.

<sup>3</sup> Data from 4 trials conducted from 1998-2001 in Hermiston, OR.

<sup>4</sup> Data from 4 trials conducted from 1998-2001 in Othello, WA.

### Tuber Quality Characteristics

In 27 trials in Idaho, Oregon, and Washington, A9014-2 produced tubers with higher specific gravity than those of Russet Burbank. A9014-2 also produced much better fry color out of both 40 and 45°F storage (Table 4).

Table 4. Tuber specific gravity, dry matter, and french fry color of A9014-2 as compared with those of Russet Burbank.

Characteristic	A9014-2	Russet Burbank
Specific gravity <sup>1</sup>	1.085	1.080
Fry color (40°F storage) <sup>2</sup>	1.7	3.5
Fry color (45°F storage) <sup>2</sup>	0.4	1.2

<sup>1</sup> Specific gravity data from 27 trials grown in Idaho, Oregon and Washington.

<sup>2</sup> French fry color data from 20 (40°F) and 22 (45°F) trials grown in Idaho, Oregon and Washington.

### Internal and External Defects

A9014-2 has demonstrated less susceptibility to growth cracks and secondary growth, but slightly more susceptibility to shatter bruise and much greater susceptibility to hollow heart than Russet Burbank (Table 5). Blackspot bruise susceptibility of A9014-2 is slightly less or similar to that of Russet Burbank.

Table 5. Occurrence of internal and external defects with tubers of A9014-2 as compared with those of Russet Burbank. Data taken from trials grown at Idaho, Oregon and Washington from 1995 – 2002.

Defect	A9014-2	Russet Burbank
Growth cracks <sup>1</sup>	4.8	3.6
Second growth <sup>1</sup>	4.7	3.2
Shatter bruise <sup>1</sup>	2.9	3.2
Blackspot bruise <sup>1</sup>	2.7	3.1
Hollow heart <sup>2</sup>	13%	7%

<sup>1</sup> Growth cracks, second growth, shatter bruise, and blackspot bruise rated on a scale 1-5 where 1 = severe occurrence of the defect and 5 = no occurrence of the defect.

<sup>2</sup> Hollow heart measured as percent of >12 oz tubers with the defect.

### Biochemical Composition:

A9014-2 tubers are lower in glycoalkaloids and reducing sugars, and higher in Vitamin C, sucrose, and protein than those of Russet Burbank (Table 6).

Table 6. Biochemical composition of tubers from A9014-2 in comparison with those from Russet Burbank. Data was taken from three trials grown during 1999-2001 at Aberdeen, Idaho.

Component	A9014-2	Russet Burbank
Glycoalkaloids (mg/100g)	1.5	5.7
Reducing sugars (% FWB)	0.04	0.08
Sucrose (% FWB)	0.44	0.17
Protein (%DWB)	6.7	5.3
Vitamin C (mg/100g)	31.3	21.2

Disease Reactions:

A9014-2 is susceptible or moderately susceptible to most common diseases of potato (Table 7). It is resistant to common scab and shows some tolerance to verticillium wilt, Fusarium dry rot, and bacterial soft rot. A9014-2 is highly susceptible to PVY and spread within a crop is rapid.

Table 7. Disease reactions of A9014-2 in comparison with those of Russet Burbank.

Disease <sup>1</sup>	A9014-2	Russet Burbank
Common Scab (Streptomyces)	1	1
Verticillium wilt (Verticillium)	4	6
Foliar Early Blight (Alternaria)	6	6
Dry Rot (Fusarium)	3	6
Soft Rot (Erwinia)	2	6
PVX	8	8
PVY	9	7
PLRV Foliar Infection	9	9
PLRV Net Necrosis	7	7
Late Blight (Phytophthora)	8	8

<sup>1</sup> Data are from trials grown in Aberdeen, ID, Corvallis and Mt. Vernon, OR from 1996-1999. Rated using 0-9 scale with 0 = resistant to the given disease and 9 = susceptible.

CLONE: A9014-2

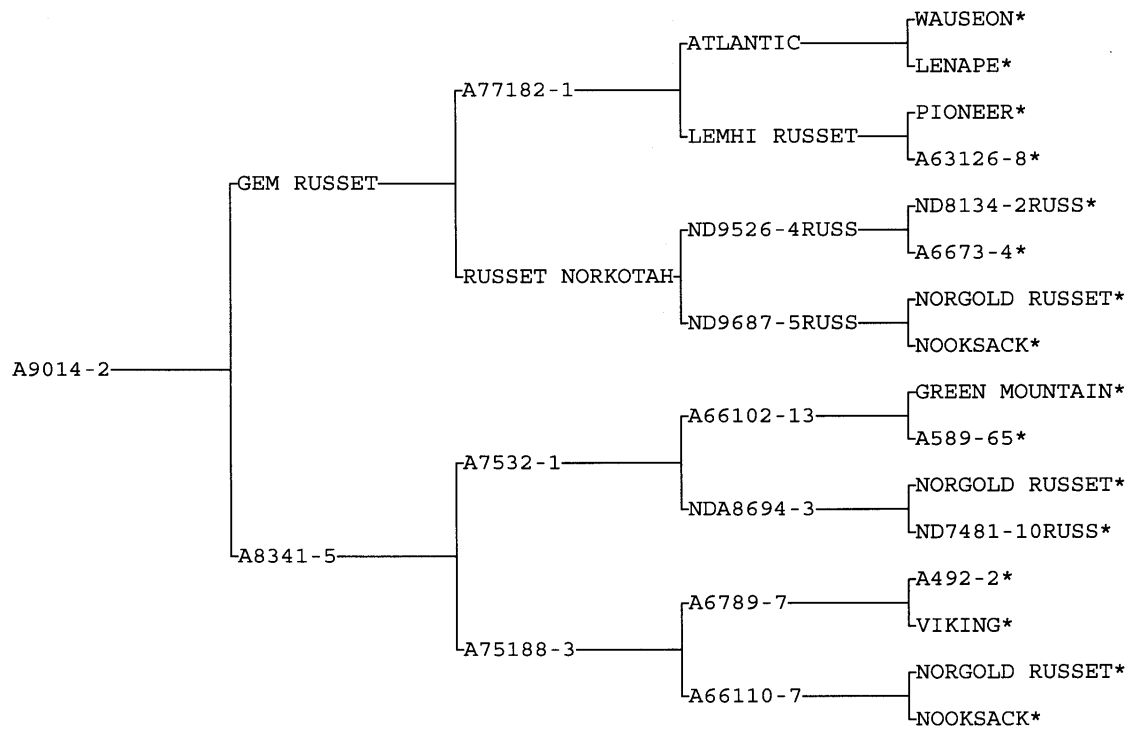


Figure 1. Pedigree of A9014-2

A



B



C



D



E



Figure 2. Photographs of A9014-2 showing: a) external tuber appearance and tuber flesh color, b) whole plant, c) light sprout, d) compound leaf and flower, e) tubers.