

## WESTERN RUSSET CHARACTERISTICS

Proposed name: (Western Russet)

Experimental designation: A7961-1

Botanical name: Solanum tuberosum L.

Intended Market: French fry processing/Fresh Market

### General Description:

Western Russet is a product of the cooperative USDA/ARS, University of Idaho breeding program in Aberdeen. It resulted from a 1979 cross between A68113-4 and Belrus (Figure 1). It has been evaluated for over 8 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.

Western Russet can be marketed mid-season. It is a medium to high yielding variety with oblong medium-russetted tubers (Figure 2). It will be useful for both processing and fresh markets. This variety has moderate specific gravity and resistance to malformations and internal defects.

### Plant Characteristics:

Western Russet has a medium-large vine that remains green late into 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 Western Russet as compared to those of Russet Burbank. Comparisons were made on plants growing in Aberdeen, Idaho in 2001 and 2002.

Characteristic	Western Russet	Russet Burbank
Maturity	Med-Late	Late
Flower color	White	White
Pollen production	Some, Viable	None

### Tuber Characteristics:

Western Russet produces oblong tubers with russet skin. The eyes are intermediate in number and apically distributed. Tuber set is low, and tuber size is moderate to large (Table 2). See Figure 2 for photographs.

Table 2. Physical tuber characteristics of Western Russet as compared with those of Russet Burbank. Comparisons were made using tubers grown at Aberdeen, Idaho in 1987-1988 and 2003.

Characteristic	Western Russet	Russet Burbank
Skin Color	Brown	Tan
Skin texture	Russet	Russet
Size <sup>1</sup>	Med-Large (Ave. 8.3oz)	Medium (Ave. 7.1oz)
Shape	Oblong (3.8 <sup>2</sup> )	Long (4.2)
Thickness	Slightly flattened	Slightly flattened
Eye depth	Shallow	Intermediate
Eye number	Intermediate	High
Eye distribution	Predominately apical	Evenly distributed
Eyebrow prominence	Slight prominence	Slight prominence
Flesh color	White	Cream-white
Tuber set	Low	Low
Dormancy	Medium	Long

<sup>1</sup> Tuber size data were collected from 12 trials grown in California, Colorado, Idaho, Oregon and Texas from 1988 through 1989 and 2003.

<sup>2</sup> Shape is a 1-5 rating scale with 1 = round and 5 = long and narrow; data taken from 16 trials between 1988 through 1989 and 2003.

#### Tuber Yield:

Western Russet produced higher total yields than Russet Burbank in eastern Idaho, and lower total yields in Oregon and Washington (Table 3). Western Russet has produced higher U.S. No. 1 yield than Russet Burbank at all locations except Oregon (Table 3).

Table 3. Total and U.S. No. 1 yields of Western Russet 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>	Western Russet	357	276
	Russet Burbank	351	208
Western and Central Idaho <sup>2</sup>	Western Russet	447	346
	Russet Burbank	482	281
Oregon <sup>3</sup>	Western Russet	430	339
	Russet Burbank	515	360
Washington <sup>4</sup>	Western Russet	700	520
	Russet Burbank	726	442

<sup>1</sup> Data from 18 trials conducted from 1983-2003 in Aberdeen, Shelley and Rexburg.

<sup>2</sup> Data from 11 trials conducted from 1985-2003 in Kimberly and Parma.

<sup>3</sup> Data from 8 trials conducted from 1987-1989 in Hermiston, Klamath Falls, and Malheur, OR.

<sup>4</sup> Data from 3 trials conducted from 1987-1989 in Othello, WA.

### Tuber Quality Characteristics

In 31 trials grown in Idaho, Oregon, and Washington, Western Russet produced tubers with higher specific gravity than Russet Burbank. 7961-1 also produced fry color comparable to Russet Burbank out of 45°F storage (Table 4).

Table 4. Tuber specific gravity french fry color of Western Russet as compared with Russet Burbank.

Characteristic	Western Russet	Russet Burbank
Specific gravity <sup>1</sup>	1.086	1.080
Fry color (45°F storage) <sup>2</sup>	2.1	1.9
Solids (%)	22.6	21.8

<sup>1</sup> Specific gravity data from 31 trials grown in Idaho, Oregon and Washington.

<sup>2</sup> French fry color data from 24 (45°F) trials grown in Idaho, Oregon and Washington. USDA color chart [00 – 4.0(darkest)]

### Internal and External Defects

Western Russet has demonstrated less susceptibility to growth cracks, secondary growth shatter bruise, and hollow heart than Russet Burbank (Table 5). Blackspot bruise susceptibility of Western Russet is slightly higher than that of Russet Burbank.

Table 5. Occurrence of internal and external defects with tubers of Western Russet as compared with those of Russet Burbank. Data taken from trials grown in Idaho, Oregon and Washington from 1983 – 2003.

Defect	Western Russet	Russet Burbank
Growth cracks <sup>1</sup>	4.6	4.0
Second growth <sup>1</sup>	4.4	3.1
Shatter bruise <sup>1</sup>	3.9	2.7
Blackspot bruise <sup>1</sup>	2.5	3.2
Hollow heart/Brown Center <sup>2</sup>	5%	10%

<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/Brown Center measured as percent of >12 oz tubers with the defect.

### Biochemical Composition:

Western Russet tubers are lower in glycoalkaloids, higher in Vitamin C, and similar in sugars and protein to those of Russet Burbank (Table 6).

Table 6. Biochemical composition of tubers from Western Russet in comparison with those from Russet Burbank. Data was taken from three trials grown from 1987-1989 at Aberdeen, Idaho.

Component	Western Russet	Russet Burbank
Glycoalkaloids (mg/100g)	2.0	8.1
Reducing sugars (% FWB)	0.08	0.10
Sucrose (% FWB)	0.18	0.12
Protein (%DWB)	5.4	5.0
Vitamin C (mg/100g)	25	18

Disease Reactions:

Western Russet is comparable for common scab resistance to Russet Burbank (Table 7). It is slightly more resistant to soft rot and more susceptible to tuber early blight than Russet Burbank.

Table 7. Disease reactions of Western Russet in comparison with those of Russet Burbank.

Disease <sup>1</sup>	Western Russet	Russet Burbank
Common Scab (Streptomyces)	2	2
Verticillium wilt (Verticillium)	5	8
Foliar Early Blight (Alternaria)	5	6
Tuber Early Blight (Alternaria)	8	4
Dry Rot (Fusarium)	6	5
Soft Rot (Erwinia)	4	6
PVY	5	7
PLRV Foliar Infection	9	9
PLRV Net Necrosis	5	7
Late Blight (Phytophthora)	7	7

<sup>1</sup> Data are from trials grown in Aberdeen, ID, Corvallis Hermiston, OR from 1987-1989. Rated using 0-9 scale with 0 = resistant to the given disease and 9 = susceptible.

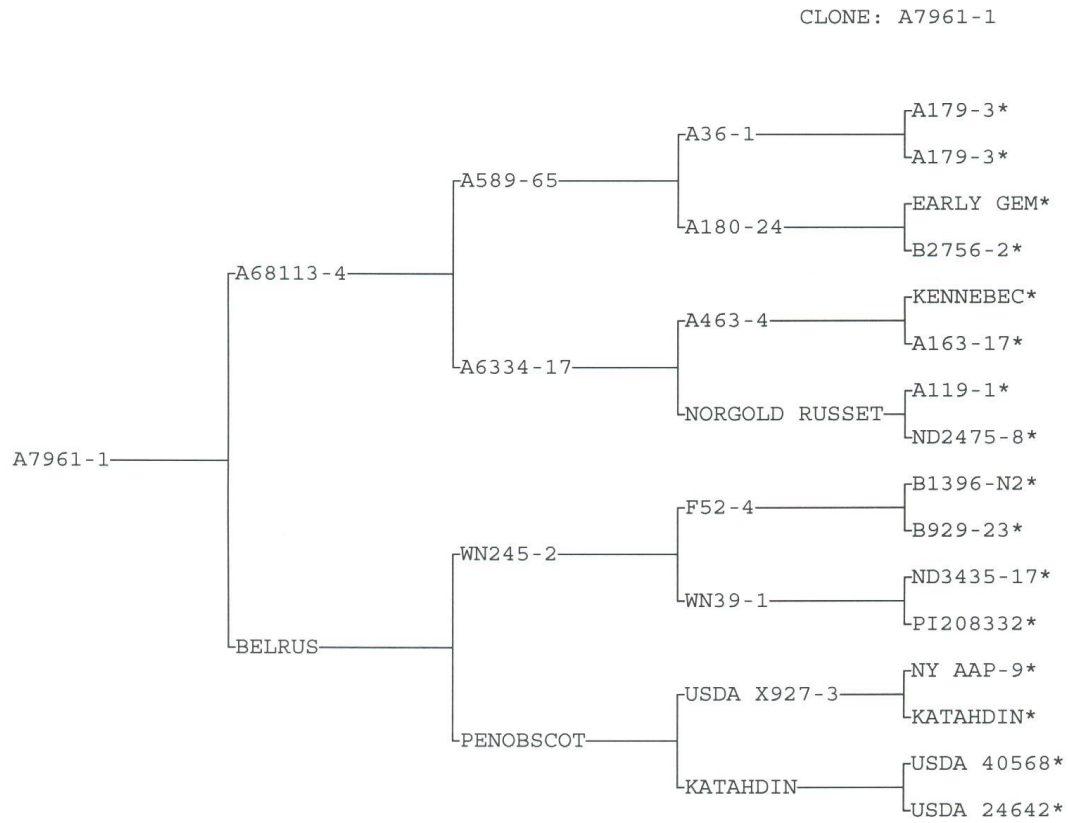


Figure 1. Pedigree of A7961-1.

A7961-1

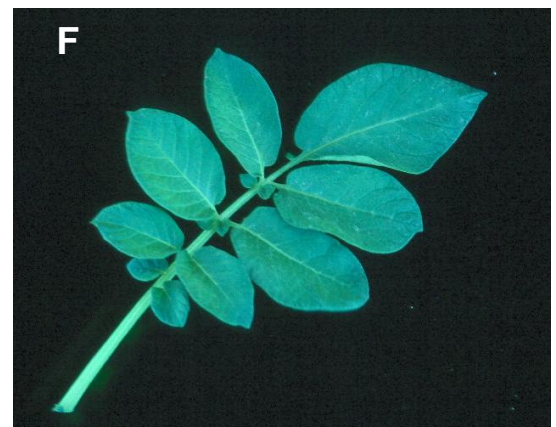
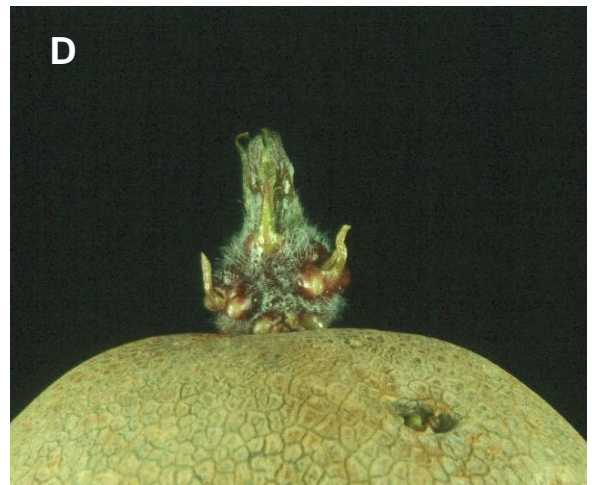


Figure 2. Photographs of A7961-1 showing: a) external tuber appearance and tuber flesh color, b) field tubers, c) whole plant, d) light sprout, e) flower, and f) compound leaf.