Blazer Russet (A8893-1)

Proposed name: (Blazer Russet)
Experimental designation: A8893-1
Botanical name: Solanum tuberosum L.
Intended Market: French fry processing/Fresh Market

General Description:

Blazer Russet is a product of the cooperative USDA/ARS, University of Idaho breeding program in Aberdeen. It resulted from a 1988 cross between A7816-14 and Norking Russet (Figure 1). It has been evaluated for over 13 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.

Blazer Russet is an early to mid-season variety notable for its high yield of oblong-long, medium-russeted tubers. This variety has moderate specific gravity and resistances to sugar ends, tuber malformations and most internal and external defects. It shows good potential for both processing and fresh markets, with the processing industry viewing Blazer Russet as a replacement for Shepody—an early harvest variety widely grown in the U.S.

Plant Characteristics:

Blazer Russet has an erect, medium-large vine that matures relatively early in the season. It produces white flowers with limited pollen production and relatively low viability. See Table 1 for a full description of plant characteristics and Figure 2 for photographs.

Table 1. Foliage characteristics of Blazer Russet compared with those of Russet Burbank. Comparisons were made on plants growing in Aberdeen, Idaho in 2000 and 2001.

Characteristic	Blazer Russet	Russet Burbank
Maturity	Early	Late
Flower color	White	White
Pollen production	Limited	None

Tuber Characteristics:

Blazer Russet produces oblong-long tubers with brown, russet skin. The eyes are intermediate in depth and number and are evenly distributed. Tuber set is low, and tuber size is medium to large (Table 2). See Figure 2 for photographs.

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

Characteristic	Blazer Russet	Russet Burbank
Skin Color	Brown	Tan
Skin texture	Russet	Russet
Size[1]	Med-Large (Ave. 8.0 oz)	Medium (Ave. 7.1 oz)
Shape	Oblong –Long (3.6[2])	Long (4.2)
Thickness	Medium-thick	Slightly flattened
Eye depth	Intermediate	Intermediate
Eye number	Intermediate	High
Eye distribution	Evenly distributed	Evenly distributed
Eyebrow prominence	Slight prominence	Slight prominence
Flesh color	White	Cream-white
Tuber set	Low	Low
Dormancy	Medium	Long

[1] Tuber size data were collected from 8 trials grown in California, Colorado, Idaho, Oregon and Texas in 2000 and 2001.

[2] Shape is a 1-5 rating scale with 1 = round and 5 = long and narrow; data taken from 20 trials between 1993 and 2001.

Tuber Yield:

In early harvest trials, Blazer Russet produced higher average total and U.S. No. 1 yields than Shepody in western Idaho, Oregon and Washington (Table 3). Blazer also produced higher total yields than Russet Norkotah in western Idaho and Oregon and higher U.S. No. 1 yields at all three locations (Table 3). Yields of tubers greater than 12 oz were consistently higher for Blazer Russet than Russet Norkotah at all early harvest locations but consistently lower than Shepody.

Blazer Russet produced higher average total yields than Russet Burbank in late harvest trials in eastern, western and central Idaho and Oregon, and lower total yields in Washington (Table 4). However, Blazer Russet produced substantially higher U.S. No. 1 yields than Russet Burbank at all locations (Table 4).

Table 3. Blazer Russet total yield, U.S. No. 1 yield, and percent yield greater than 12 ounces as compared to those of Russet Norkotah and Shepody in Early Harvest Trials.

Location	Variety	Total Yield	U.S. No. 1 Yield	Percent Yield > 12 oz.
		(cwt/A)	(cwt/A)	(%)
Western Idaho [1]	Blazer Russet	491	445	37
	Russet Norkotah	428	375	21
	Shepody	467	416	46
Oregon[2]	Blazer Russet	515	430	23
	Russet Norkotah	440	344	12
	Shepody	419	326	32
Washington[3]	Blazer Russet	568	475	23
	Russet Norkotah	569	465	19
	Shepody	553	407	33

[1] Data from 3 trials conducted from 1993-1997 in Parma, ID.

[2] Data from 6 trials conducted from 1999-2001 in Hermiston and Malheur, OR.

[3] Data from 4 trials conducted from 1998-2001 in Othello, WA.

Table 4. Blazer Russet total and U.S. No. 1 yields as compared to those of Russet Burbank in late harvest trials.

Location	Variety	Total Yield	U.S. No. 1 Yield
		(cwt/A)	(cwt/A)
Eastern Idaho[1]	Blazer Russet	415	324
	Russet Burbank	346	173
Western and Central Idaho [2]	Blazer Russet	509	431
	Russet Burbank	457	266
Oregon[3]	Blazer Russet	612	471
	Russet Burbank	580	324
Washington[4]	Blazer Russet	632	492
	Russet Burbank	643	360

[1] Data from 10 trials conducted from 1998-2002 in Aberdeen, Shelley and Rexburg.
[2] Data from 11 trials conducted from 1993-2001 in Kimberly and Parma.
[3] Data from 8 trials conducted from 1998-2001 in Hermiston, Klamath Falls, and Malheur, OR.
[4] Data from 3 trials conducted from 1998-2001 in Othello, WA.

Tuber Quality Characteristics

In 20 trials grown in Idaho, Oregon, and Washington, average specific gravity for Blazer Russet was similar to that of Russet Burbank, but percent solids were slightly higher. Blazer Russet also produced lighter fry color than Russet Burbank out of 45°F storage (Table 5).

Table 5. Tuber specific gravity french fry color of Blazer Russet as compared with Russet Burbank.

Characteristic	Blazer Russet	Russet Burbank
Specific gravity[1]	1.084	1.084
Fry color (45°F storage)[2]	0.9	1.3
Solids (%)	22.7	21.7

[1] Specific gravity data from 20 trials grown in Idaho, Oregon and Washington.
[2] 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

Blazer Russet has demonstrated less susceptibility to growth cracks, secondary growth, and shatter bruise than Russet Burbank, particularly under stress conditions (Table 6). It also has shown resistance to sugar ends. Blackspot bruise susceptibility of Blazer Russet is similar to that of Russet Burbank, while hollow susceptibility is slightly higher.

Table 6. Internal and external defects of Blazer Russet tubers compared with those of Russet Burbank. Data taken are from trials grown in Idaho, Oregon and Washington from 1999 – 2003.

Defect	Blazer Russet	Russet Burbank
Growth cracks[1]	4.7	4.0
Second growth[1]	4.7	3.1
Shatter bruise[1]	2.8	2.7
Blackspot bruise[1]	3.1	3.1
Hollow heart/Brown Center[2]	10%	8%

[1] 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.
[2] Hollow heart/Brown Center measured as percent of >12 oz tubers with the defect.

Biochemical Composition:

Blazer Russet tubers have similar sugar concentrations and slightly higher glycoalkaloid, vitamin C, and protein concentrations than Russet Burbank (Table 7).

Table 7. Biochemical composition of Blazer Russet tubers compared with those from Russet Burbank. Data was taken from three trials grown from 1999-2001 at Aberdeen, Idaho.

Component	Blazer Russet	Russet Burbank
Glycoalkaloids (mg/100g)	7.0	5.7
Reducing sugars (% FWB)	0.08	0.08
Sucrose (% FWB)	0.22	0.17
Protein (%DWB)	6.8	5.3
Vitamin C (mg/100g)	24.8	21.2

Disease Reactions:

Blazer Russet resistance to most diseases is comparable to that of Russet Burbank (Table 8). It is more resistant to PVY, Verticillium wilt and Fusarium dry rot and more susceptible to tuber early blight and late blight than Russet Burbank.

Table 8. Disease reactions of Blazer Russet tubers compared with those of Russet Burbank.

Disease[1]	Blazer Russet	Russet Burbank
Common Scab (Streptomyces)	0	1
Verticillium wilt (Verticillium)	6	7
Foliar Early Blight (Alternaria)	7	7
Tuber Early Blight (Alternaria)	7	2
Dry Rot (Fusarium)	3	5
Soft Rot (Erwinia)	4	4
PVY	5	7
PLRV Foliar Infection	9	9
PLRV Net Necrosis	3	4
Late Blight (Phytophthora)	9	7

[1] Data are from trials grown in Aberdeen, ID, Corvallis Hermiston, OR from 1999-2001. Rated using 0-9 scale with 0 = resistant to the given disease and 9 = susceptible.