

BANNOCK RUSSET CHARACTERISTICS

Proposed name: Bannock Russet
Experimental designation: A81473-2
Botanical name: Solanum tuberosum L.
Intended Market: Fresh market/french fry processing

General Description:

Bannock Russet is a product of the cooperative USDA/ARS, University of Idaho breeding program in Aberdeen. It resulted from a cross made in 1981 between A75175-1 and A75188-3 (see Appendix 1 for full pedigree). It has been evaluated for 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.

Bannock Russet is a late maturing variety producing oblong to long tubers with heavily russeted skin and white flesh (Appendix 2). It will be grown mainly for the market supplied primarily with the Russet Burbank variety. This variety is exceptional for its high proportion of marketable tubers and its ability to maintain high yield and grade in growing areas typically experiencing periods of hot, dry conditions. Bannock Russet is best adapted to central and western Idaho and the Columbia Basin of Washington and Oregon.

Plant Characteristics:

Bannock Russet has a large, spreading vine that matures late in the season. It produces a medium amount of large, white flowers that have no viable pollen. See Table 1 for a full description of plant characteristics and Appendix 2 for photographs.

Table 1. Foliar plant characteristics of Bannock Russet as compared to those of Russet Burbank. Comparisons were made on plants growing in Aberdeen, Idaho, in 1997.

Characteristic	Bannock Russet	Russet Burbank
Growth habit	Spreading	Semi-erect
Maturity	Very late	Late
Leaf type (silhouette)	Half-open	Open
Leaflet shape (terminal)	Broadly ovate	Medium ovate
Leaflet number - primary	Ave. 4.0, Range 3-5	Ave. 4.3, Range 3-5
Leaflet number - secondary	Ave. 3.1, Range 0-5	Ave. 2.6, Range 0-4
Leaflet number - tertiary	Ave. 1.2, Range 0-6	Ave. 1.3, Range 0-5
Flower color	White	White
Pollen Production	None	None

Tuber Characteristics:

Bannock Russet produces oblong tubers with medium brown, heavily russeted skin. The russetting pattern is finely textured. The eyes are few in number and not well distributed. Tuber set is low, size is large, and dormancy is medium (Table 2). See Appendix 2 for photographs.

Table 2. Physical tuber characteristics of Bannock Russet as compared with those of Russet Burbank. Comparisons were made using tubers grown at Aberdeen, Idaho, in 1997.

Characteristic	Bannock Russet	Russet Burbank
Skin color	Medium brown	Light brown
Skin texture	Heavy russet	Medium russet
Size'	Large (Ave. 8.3 oz)	Medium (Ave. 5.3 oz)
Shape	Oblong (L/W ratio = 1.5)	Long (L/W ratio = 1.7)
Thickness	Round	Slightly flattened
Eye depth	Few - intermediate	Intermediate
Eye number	Few	Many
Eye distribution	Predominantly apical	Evenly distributed
Eyebrow prominence	Not prominent	Not prominent
Flesh color	White	White
Tuber set'	Low (ave. 5.6, range 3-8)	Medium (ave. 8.9, range 6-12)
Dormancy	Medium	Long

' Tuber size and set data were collected from Aberdeen grown trials in 1991, 1992, and 1993.

Tuber Yield:

Overall Bannock Russet had similar total yields as did Russet Burbank, slightly higher in the Idaho trials, and slightly lower in the Oregon and Washington trials (Table 3). However, by consistently producing greater than 85% U.S. No. 1's, it substantially outyielded Russet Burbank for marketable potatoes (Table 3).

Table 3. Total and U.S. No. 1 yields of Bannock Russet as compared with those of Russet Burbank.

Location	Variety	Total Yield (cwt/A)	U.S. No. 1 Yield (cwt/A)
Eastern Idaho ¹	Bannock Russet	383	333
	Russet Burbank	373	239
Western and Central Idaho ²	Bannock Russet	499	444
	Russet Burbank	487	312
Washington and Oregon ³	Bannock Russet	563	479
	Russet Burbank	596	370

¹ Data from 19 trials conducted from 1986-1996 in Aberdeen, Shelley, and Rexburg.

² Data from 18 trials conducted from 1987-1996 in Parma, Raft River, and Kimberly.

³ Data from 13 trials conducted from 1989-1995 in Othello, Washington, and Hermiston, Ontario, and Klamath Falls, Oregon.

Tuber Quality Characteristics:

Bannock Russet produced tubers with higher specific gravity and tuber solids than Russet Burbank. It also produced better fry color after storage at 40°F and similar color after storage at 45°F (Table 4).

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

Characteristic	Bannock Russet	Russet Burbank
Specific gravity ¹	1.083	1.080
Dry matter (%) ²	23.4	22.5
Fry color (40°F storage) ³	3.1	3.7
Fry color (45°F storage) ³	1.6	1.7

¹ Specific gravity data from 50 trials grown in Idaho, Washington, and Oregon.

² Dry matter data from 3 trials grown at Aberdeen, Idaho.

³ French fry color data from 42 trials grown in Idaho and Oregon. Fry color evaluated using the USDA color chart with a rating of 0-4 where lower number = lighter color.

Internal and External Defects:

Bannock Russet is more resistant to most defects than Russet Burbank. Exceptions are shatter bruise, a defect that can occasionally be severe in Bannock Russet, and hollow heart, where it is similar.

Table 5. Occurrence of internal and external defects with tubers of Bannock Russet as compared with those of Russet Burbank. Data taken from trials grown at Aberdeen from 1986-1993.

Defect	Bannock Russet	Russet Burbank
Growth cracks	1	3
Second growth	1	5
Shatter bruise	5	4
Blackspot bruise	3	5
Hollow heart	3	3

' Growth cracks, second growth, shatter bruise, blackspot bruise, and hollow heart rated on a scale of 1-9 where 1 = no occurrence, 9 = severe gradeout due to defect.

Biochemical Composition:

Bannock Russet tubers are very low in tuber glycoalkaloids and lower than those of Russet Burbank. Its tubers are similar in reducing sugars and higher in sucrose, protein, and vitamin C (Table 6).

Table 6. Biochemical composition of tubers from Bannock Russet in comparison with those from Russet Burbank. Data was taken from three trials grown in 1991-1993 at Aberdeen, Idaho.

Component	Bannock Russet	Russet Burbank
Glycoalkaloids (mg/100g)	1.2	8.3
Reducing sugars (% FWB)	0.14	0.19
Sucrose (% FWB)	0.84	0.55
Protein (% DWB)	5.8	4.5
Vitamin C (mg/100g)	21.6	18.8

Disease Reactions:

Bannock Russet has exceptional resistance to several common diseases, including common scab, Verticillium wilt, foliar early blight, soft rot, and PVY. It also has a high degree of resistance to net necrosis, caused by PLRV. It is not more susceptible to any common disease than is Russet Burbank.

Table 7. Disease reactions of Bannock Russet in comparison with those of Russet Burbank. Ratings were made from trials grown at Aberdeen and Kimberly, Idaho, from 1991-1996.

Disease	Bannock Russet	Russet Burbank
Common scab (Streptomyces)	1	1
Verticillium wilt (Verticillium)	2	7
Foliar early blight (Alternaria)	3	7
Tuber early blight (Alternaria)	3	3
Late blight (Phytophthora)	7	8
Soft rot (Erwinia)	3	7
Dry rot (Fusarium)	7	7
PVX	7	7
PVY	1	7
PLRV foliar infection	7	7
PLRV net necrosis	2	7

' Diseases are rated using a 1-9 scale where 1 = very resistant reaction and 9 = very susceptible reaction.

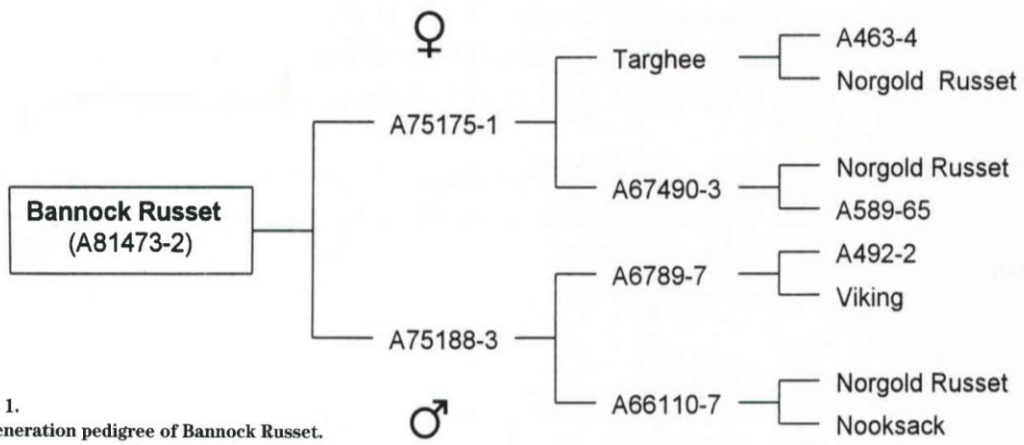


FIGURE 1.
Three-generation pedigree of Bannock Russet.

A81473-2
BANNOCK RUSSET

A81473-2 - A late maturing, medium to high yielding selection with heavy russet skin and oblong tuber type. It is scheduled for release in 1998. It will be useful for fresh market and processing, especially in areas with a long, warm growing season. A81473-2 has medium to high specific gravity and excellent fry color from 45 degree storage. Strengths: excellent appearance, acceptable and consistent specific gravity, excellent fry color, resistance to early dying, early blight, external defects and blackspot bruise. Weaknesses: short tuber shape, occasional hollow heart, susceptibility to shatter bruise and skinning, extremely late maturity if fertilized late into the growing season.

