

# Cultural Management of Blazer Russet Potatoes

by Jeff Stark, William Bohl, Rich Novy, Jonathan Whitworth, Nora Olsen, and Tina Brandt

Blazer Russet is an early maturing variety notable for its high yield of long to oblong tubers with a medium russet skin. It has moderate specific gravity and is resistant to sugar-ends, tuber malformations, and most internal and external defects. It is suitable for use in both processing and fresh markets. Cultural management guidelines presented are based on small-plot field research studies and commercial trials.

## Field Selection and Preparation

Prepare fields as you would for Russet Burbank. Soils infested with root-knot nematodes or with a history of severe early die problems should be fumigated, or should follow crop rotations that minimize the effect of nematodes and early die.

## Seed and Planting Management

Optimal seed piece spacing for 36-inch wide rows is 9 to 11 inches with a planting depth of 5 to 6 inches as measured from the top of the hill to the top of the seed piece. Blazer Russet has an intermediate number of eyes that are uniformly distributed. Consequently, seed piece size should range from 2.0 to 3.0 ounces. Depending on seed piece size and in-row seed piece spacing, seeding rate per acre will range from 19.8 to 32.3 cwt/acre when planted in rows spaced 36 inches (Table 1).

**Table 1. Amount of seed (cwt/acre) required to plant 1 acre**

Seed piece size (oz)	In-row seed piece spacing (inch)		
	9	10	11
2.0	24.2	22.7	19.8
2.5	30.3	27.2	24.8
3.0	---	32.3	29.7

Note: Amounts do not account for waste for cutting tubers into seed pieces.

Seed should be planted at near optimal soil temperatures of 50°F to minimize the potential for soft rot decay. Determine the potential of dry rot in the seed lot, and treat with an effective fungicide seed piece treatment when needed. To help minimize tuber greening, apply as much soil as possible with available equipment to the surface of the hill at final hilling.

## Nutrient Management

Total seasonal nitrogen requirement for Blazer Russet is about 90 to 100 percent of that required for Russet Burbank (Table 2), but a higher proportion should be applied early in the growing season to support the earlier tuber development that is characteristic of Blazer Russet. Typically, one-half to two-thirds of the total seasonal nitrogen (N) requirement should be applied by the time plants touch across the rows (row closure), with subsequent in-season applications based on petiole nitrate concentrations.

For southern Idaho, the combined total of soil plus fertilizer N recommended for Blazer Russet is given in Table 2. Nitrogen uptake decreases substantially after August 1, so do not make applications after that time. Nitrogen response studies conducted for two years at Aberdeen, Idaho indicate that petiole nitrate-N sufficiency levels for Blazer Russet (Table 3) are similar to those for Russet Burbank.

Phosphorus and potassium requirements have not been established for Blazer Russet. Therefore, phosphorus and potassium fertilizer recommendations for Russet Burbank should be used for Blazer Russet until new guidelines become available (Tables 4 and 5).

## Irrigation Management

Early season irrigation requirements for Blazer Russet are similar to those for Russet Burbank, although Blazer Russet is significantly more resistant to water-stress-related tuber defects. Maintain the available soil moisture (ASM) within the range of 65 to 80% for optimal yield and quality. Plant water uptake decreases appreciably in late August, so less irrigation is needed. Adjust the irrigation application rates according to soil moisture measurements to avoid developing excessively wet soil conditions that promote disease.

## Weed Management

Blazer Russet has exhibited good tolerance to metribuzin applied at labeled rates. Blazer Russet has a semi-erect plant growth habit with medium- to small-sized vines that allow the plants to compete reasonably well with weeds after the plants close across the rows in the early to mid tuber bulking growth stage. However, Blazer Russet becomes susceptible to weed competition later in the growing season as vines senesce.

## Disease Resistance and Management

Blazer Russet exhibits a very high level of resistance to common scab caused by *Streptomyces scabies* and rarely exhibits tuber symptoms even when grown in severely infected soil. It exhibits moderate susceptibility to root infections of powdery scab (*Spongospora subterranea*) but shows good resistance to tuber infections (Table 6).

**Table 2. Nitrogen fertilizer recommendations for Blazer Russet potatoes**

Soil test NO <sub>3</sub> -N (0-12 inches)	Potential yield (cwt/acre)			
	300	400	500	600
(ppm)	----- (lb N/acre) -----			
0	180	220	260	300
5	160	200	240	280
10	140	180	220	260
15	120	160	200	240
20	100	140	180	220
25	80	120	160	200

**Table 3. Recommended petiole and soil (0-18 inches) NO<sub>3</sub>-N concentrations for Blazer Russet potatoes during different growth stages**

	Vegetative	Tuber initiation	Tuber bulking	Maturation
	----- (ppm NO <sub>3</sub> -N) -----			
Petiole	---	20,000-25,000	15,000-20,000	10,000-15,000
Soil	>20	20	15-20	<15

**Table 4. Phosphorus broadcast fertilizer recommendations for Blazer Russet potatoes for yields up to 400 cwt/acre<sup>a</sup>**

Soil test P (0-12 inches)	Percentage free lime			
	0	4	8	12
(ppm)	----- (lb P <sub>2</sub> O <sub>5</sub> /acre) -----			
0	320	360	400	440
5	240	280	320	360
10	160	200	240	280
15	80	120	160	200
20	0	40	80	120
25	0	0	0	40
30	0	0	0	0

Note: Apply an additional 40 to 80 lbs P<sub>2</sub>O<sub>5</sub>/acre in a band application at mark-out or in a band as a starter fertilizer for soil test P levels below 30 ppm.

<sup>a</sup> Add 25 lb P<sub>2</sub>O<sub>5</sub>/acre for each additional 100 cwt/acre above 400 cwt/acre.

**Table 5. Potassium fertilizer recommendations for Blazer Russet potatoes**

Soil test K (0-12 inches)	Potential yield (cwt/acre)			
	300	400	500	600
(ppm)	----- (lb K <sub>2</sub> O/acre) -----			
25	550	600	650	700
50	450	500	550	600
75	350	400	450	500
100	250	300	350	400
125	150	200	250	300
150	50	100	150	200
175	0	0	50	100

**Table 6. Disease responses of Blazer Russet, Russet Burbank, and Ranger Russet to several common diseases<sup>a</sup>**

Disease	Blazer Russet	Russet Burbank	Ranger Russet
Scab			
Common	VR	MR	S
Powdery <sup>b</sup>	MS(r),R(t)	MS(r),R(t)	MS(r),MR(t)
Verticillium wilt	S	S	MS
Pink rot	S	MS	MS
Early blight			
Foliar	S	MS	MS
Tuber	MS	MS	MR
Late blight			
Foliar	VS	S	S
Tuber	MR	S	S
Viruses <sup>c</sup>			
PVX	R	S	R
PLRV	S	S	S
PLRV net necrosis	S	S	S
PVY <sup>o</sup>	MS	S	MR
Corky ringspot	S	S	MS
Erwinia soft rot	MS	S	MR
Fusarium dry rot	MS	S	MS

<sup>a</sup> Based on a minimum of 2 years of controlled field evaluations. Responses defined as very resistant (VR), resistant (R), moderately resistant (MR), moderately susceptible (MS), susceptible (S), very susceptible (VS).

<sup>b</sup> (r) = root gall, (t) = tuber

<sup>c</sup> Virus responses are based on an ELISA-tested grow-out of tubers collected from plants infected the previous season.

Blazer Russet is susceptible to Verticillium wilt (*Verticillium dahliae*). Its susceptibility is similar to that of Russet Burbank but greater than that of Ranger Russet. To manage this disease, use one or more of the following practices: incorporate a green manure crop in the fall or fumigate the field with an approved fumigant; use long rotations of four or five years; avoid excessive early season irrigation; and use a balanced fertility program.

Blazer Russet is susceptible to pink rot (*Phytophthora erythroseptica*). Use cultural management options such as avoiding excessive irrigation, ensuring potatoes have a good skin set before harvesting, minimizing bruising at harvest, and avoiding harvesting tubers with excessively warm pulp temperatures, along with applying labeled fungicide if necessary.

Blazer Russet is susceptible to foliar early blight (*Alternaria solani*) and moderately susceptible to tuber early blight infections. Properly irrigate and fertilize to minimize plant stress, which exacerbates this disease. Also, closely monitor environmental conditions for early blight development, and treat when necessary with an approved foliar fungicide. Early blight control is essential to minimize tuber infections in fields scheduled for storage. To minimize tuber infections, harvest only mature tubers and, during harvesting and handling operations, avoid bruising or skinning tubers, both of which provide an entry point for infection. Additionally, avoid harvesting in wet weather conditions.

Blazer Russet is more susceptible to foliar late blight infections (*Phytophthora infestans*) than Russet Burbank or Ranger Russet. However, Blazer Russet has moderate resistance to tuber late-blight infections, which is a higher level of resistance than that exhibited by either Russet Burbank or Ranger Russet. If conditions are conducive for developing late blight in the growing area, apply a foliar fungicide at regular intervals before the disease is found in the field.

Blazer Russet has a high level of resistance to potato virus X (PVX), which is similar to Ranger Russet but greater than Russet Burbank. Blazer Russet has a similar level of susceptibility to potato leaf roll virus (PLRV) and PLRV-induced net necrosis as Russet Burbank and Ranger Russet. Blazer Russet is more resistant to potato virus Y (PVY<sup>o</sup>) than Russet Burbank but more susceptible than Ranger Russet. Blazer Russet is susceptible to PVY<sup>N</sup> strains, as are Russet

Burbank and most other varieties, but as yet no studies have been done to compare the levels of susceptibility.

Significant yield losses from PVY are caused mainly by infected seed. Therefore, to minimize losses from PVY, purchase certified seed with little to no PVY infection. Certification agencies certify seed lots based on visual and/or ELISA lab tests. If an ELISA test is available, ask for a copy of the results to supplement the visual readings.

To manage PLRV, apply a seed piece treatment or an in-furrow at-planting insecticide that controls green peach aphid in areas that have a history of green peach aphid infestation. Closely monitor fields for green peach aphids and make additional insecticide applications if warranted.

Blazer Russet is susceptible to corky ringspot. If possible, avoid planting Blazer Russet in fields at risk for developing corky ringspot, or use a labeled soil-applied chemical or fumigant to control stubby root nematodes.

In storage, Blazer Russet shows moderate susceptibility to *Erwinia* soft rot and *Fusarium* dry rot. Susceptibility of Blazer Russet to dry rot is similar to Ranger Russet and both are slightly less susceptible than Russet Burbank. Blazer Russet is less susceptible to soft rot than Russet Burbank and slightly more susceptible than Ranger Russet.

In bacterial ring rot (*Clavibacter michiganensis*) evaluations at Colorado State University, Blazer Russet demonstrated consistent and relatively early vine symptoms following seed inoculation and showed consistent and strong tuber symptoms. In most states, there is a zero tolerance for ring rot in certified seed. Therefore, this disease should be managed by purchasing and planting only certified seed.

## Harvest Management

Blazer Russet's resistance to black spot bruise is similar to Russet Burbank but better than Ranger Russet. Consequently, available soil moisture after vine kill should be maintained above 60% to minimize tuber dehydration. Ideally, harvest tubers at 50 to 60°F tuber pulp temperatures, and minimize tuber drop heights to reduce tuber damage.

## Storage Management

Tuber dormancy for Blazer Russet is about 40 to 50 days shorter than Russet Burbank. Consequently, apply a sprout inhibitor after two to four months when tubers are stored at relatively warm temperatures of 45 to 48°F. In the absence of tuber dry- or wet-rot problems, Blazer Russet can be stored up to nine months for processing or fresh-market uses.

During three years of storage research at Kimberly, Idaho, Blazer Russet exhibited low sucrose sugar concentrations from harvest throughout nine months of storage at 45 to 48°F. Glucose and fry color from non-stressed tubers also remained acceptable throughout nine months of storage with glucose concentration peaking at about 120 days in storage and then progressively decreasing. Research with Blazer Russet indicates that in growing seasons with normal growing temperatures, a storage temperature of 45°F is appropriate for potatoes destined for processing. However, in years with significant periods of high temperature stress during the growing season, a storage temperature in the 46 to 48°F range may be necessary to maintain optimum processing quality.

## Authors:

**Jeff Stark** is Division Chair, Horticultural Sciences, University of Idaho, Idaho Falls, Idaho.

**William Bohl** is Extension Educator, University of Idaho Cooperative Extension System, Bingham County, Blackfoot, Idaho.

**Rich Novy** is Research Geneticist/Breeder, USDA-Agricultural Research Service, Aberdeen, Idaho.

**Jonathan Whitworth** is Research Plant Pathologist, USDA-Agricultural Research Service, Aberdeen, Idaho.

**Nora Olsen** is a Potato Specialist with the University of Idaho Twin Falls Research and Extension Center, Twin Falls, Idaho.

**Tina Brandt** is Research Support Scientist, University of Idaho Kimberly Research and Extension Center, Kimberly, Idaho.

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