

Classic Russet Management Recommendations- Idaho

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A number of studies on the management of Classic Russet have been conducted in southern Idaho and the results of these studies may provide growers in these and other production regions with the basis for developing appropriate management guidelines for their locale.

Seed and Pest Management

Optimal seed size for Classic Russet is about 2 to 3 oz. Dry rot potential of seed lots should be determined and seed should be treated with an effective fungicide when needed. Planting depth should be 6 to 8 inches from the top of the seed piece to the top of the hill. For early harvest, seed piece spacing should be 8 to 9 inches for fresh market use, but spacing should be increased to 9 to 11 inches for processing. For late season harvest for either fresh market or processing, seed piece spacing should be about 7 to 8 inches.

Classic Russet has exhibited good resistance to metribuzin when applied at labeled rates. It has an erect, medium-maturing, medium-sized vine but competes reasonably well with weeds after row closure during early to mid-tuber bulking.

Soils infested with root-knot nematodes or a history of severe early die problems should be fumigated. Fungicide applications should be made as needed to prevent serious early blight infections. Early blight control for tubers in fields scheduled for storage can be facilitated by minimizing tuber skinning and bruising during harvest and subsequent handling and avoiding harvesting in wet weather conditions.

Nutrient Management:

The total seasonal nitrogen requirements for Classic Russet are about 20% less than Russet Burbank for a given amount of yield produced. For production in southern Idaho, total soil plus fertilizer N recommendations should range from about 190 lb N/acre in areas with a 400 cwt/acre yield potential, 220 lb N/acre with a 500 cwt/acre yield potential and 250 lb N/acre in areas with a 600 cwt/acre yield potential. About 125 to 150 lb N/acre (soil plus applied N) should be available at tuber initiation, with the remaining N applied via sprinkler irrigation prior to the last week of July. To promote skin set, N applications should be completed at least 30 days prior to harvest. Nitrogen response studies conducted for two years at Aberdeen, Idaho indicate that petiole nitrate levels for Classic Russet should be about 20,000 ppm at the end of tuber initiation and decrease to 12,000 to 15,000 ppm during mid-bulking and 6,000 to 8,000 ppm during late bulking.

Phosphorus, potassium and micronutrient requirements have not been established for Classic Russet. Therefore, it is recommended that growers follow local nutrient management recommendations for Russet Burbank until new guidelines for Classic Russet become available.

Irrigation Management:

Seasonal irrigation requirements for Classic Russet are similar to those for Russet Burbank, although Classic Russet is significantly more resistant to water stress-related tuber defects. Therefore, available soil moisture (ASM) should be maintained within the range of 70 to 85% for optimal yield and quality. Plant water uptake decreases appreciably in late August, so irrigation application rates need to be adjusted according to soil moisture measurements to avoid developing excessively wet soil conditions that promote disease and enlarged lenticels. Low soil moisture (<60% ASM) conditions should be avoided during tuber maturation and harvest to minimize tuber dehydration and blackspot bruise. However, since significant amounts of shatter bruise have sometimes been observed in commercial operations when Classic Russet is well hydrated, it should be harvested with a moderate tuber hydration level.

Harvest Management:

Since shatter bruise can sometimes be a problem with Classic Russet, it should be handled as gently as possible to minimize bruising. Irrigation rates should be gradually reduced during the last couple of weeks prior to vine kill to allow tuber hydration to decrease to an intermediate level during skin set. Standard practices for minimizing tuber impact damage should be followed to reduce the potential for shatter bruise.

Storage:

Classic Russet has shorter dormancy than Russet Burbank (20-30 days shorter depending on temperature and year). On average, Classic Russet has a dormancy length of 155 days at 42°F, 130 days at 45°F, and 100 days at 48°F. Fusarium dry rot results indicate that this cultivar is similar in susceptibility to Russet Burbank and thus classified as moderately resistant. Weight loss during extended storage was significantly higher than Russet Burbank at all temperatures, although differences between Russet Burbank and Classic Russet were relatively small; on average Classic Russet was approximately 2 percentage points higher in total weight loss than Russet Burbank. Glucose concentrations at 42°F in Classic Russet increase steadily in storage and reach a maximum at ~150 days after harvest (DAH) of 0.15-0.20% fresh weight (FW), depending on the year. At both 45°F and 48°F, glucose increases at a much lower rate than at 42°F. Maximum concentrations of glucose occurred at approximately 130 DAH in all years, but were below the 0.10% threshold for acceptable processing. Overall, the glucose and sucrose profiles over the three storage seasons were similar to Russet Burbank. On average, mean stem end fry color was USDA 3 and 4 at 42°F, USDA 2 at 45°F and USDA 1 or below at 48°F. Mottling, which is a dark, thread-like coloration within the fries, was observed at a moderate level at 42°F, mild at 45°F and mild to none at 48°F.

Storage Recommendations

The following recommendations are based on data collected over a three-year period at the University of Idaho Kimberly R&E Center on Classic Russet potatoes grown in Southern Idaho.

Curing Conditions: Cure at 55°F and 95% relative humidity for 14 days

Storage Conditions: Maintain 95% relative humidity throughout storage. Weight loss is about 1.5 times higher in Classic Russet than Russet Burbank.

To minimize weight loss, store at 45°F.

- **Frozen Processing:** hold at 48°F
- **Fresh Market:** hold at 42 to 45°F
- **Dehydration Processing:** 42 to 45° F depending on intended product

Sprout Inhibition: Apply CIPC before dormancy break but after curing

- 42°F - apply CIPC between 14 and 155 days after harvest
- 45°F - apply CIPC between 14 and 130 days after harvest
- 48°F - apply CIPC between 14 and 100 days after harvest

Because this is a shorter dormancy potato, CIPC residues should be checked to ensure long season sprout inhibition

Duration of Storage: High processing quality persists throughout 250 days after harvest when stored at 48 °F.

Fry mottling: Mottling occurs in Classic Russet at lower storage temperatures. Store at 45 to 48° F to minimize mottling.

Fusarium Dry Rot: Moderate susceptibility similar to Russet Burbank.