

## **Teton Russet Management Recommendations for Idaho**

### **General Description:**

Teton Russet is an early fresh variety with maturity similar to Russet Norkotah. It has early bulking potential and high yield of attractive oblong-long tubers with brown-russeted skin. Teton Russet is notable for its resistances to *Fusarium* dry rot caused by *F. sambucinum* and to common scab, and has higher protein and vitamin C content than those of most standard varieties. Teton Russet has moderate specific gravity and resistances to sugar ends and most internal and external defects. Teton Russet also has excellent culinary qualities that are comparable to Russet Burbank—the industry standard for culinary quality. It shows good potential for the early fresh market, with potential as a replacement for Russet Norkotah—an early harvest variety widely grown in the U.S. Industry evaluations of processing quality indicate that Teton Russet has excellent potential for producing premium quality fries. In addition, laboratory analyses by industry and university researchers have confirmed that Teton Russet has relatively low concentrations of asparagine, indicating a reduced acrylamide forming potential. As a result, Teton Russet has excellent potential as a dual purpose, early russet variety, having outstanding fresh market and processing characteristics.

### **Cultural Management Guidelines**

#### **Seed and Pest Management**

Optimal seed size for Teton Russet is about 2 to 3 oz. Planting depth should be 6 to 8 inches from the top of the seed piece to the top of the hill. Seed should be treated with an effective fungicide for soft rot. For early harvest, seed piece spacing should be 9 to 10 inches for fresh market use, but spacing should be increased to 10 to 11 inches for processing. For late season harvest for either fresh market or processing, seed piece spacing should be about 9 to 11 inches.

Teton Russet has exhibited good resistance to metribuzin when applied at labeled rates. There have been observations, however, that Teton Russet has experienced cracking when Matrix has been applied.

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 Teton Russet are about 20-30% 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 160-180 lb N/acre

in areas with a 400 cwt/acre yield potential, 200-220 lb N/acre with a 500 cwt/acre yield potential and 240-260 lb N/acre in areas with a 600 cwt/acre yield potential. It is important to note that these amounts include the amount of residual N in the soil prior to planting. About 65% of the fertilizer N should be applied by 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 Teton Russet should be as follows:

- ✓ 18,000-22,000 ppm at tuber initiation
- ✓ 16,000-20,000 ppm midseason
- ✓ 10,000-12,000 ppm late season

Phosphorus, potassium and micronutrient requirements have not been established for Teton Russet. Therefore, it is recommended that growers follow local nutrient management recommendations for Russet Burbank until new guidelines for Teton Russet become available. However, since phosphorus is important for enhancing crop maturity, growers should make sure adequate P is available for their crop.

#### **Irrigation Management:**

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 early 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 shatter bruise has been observed in commercial operations when Teton Russet is well hydrated, it should be harvested with a moderate tuber hydration level.

#### **Storage Characteristics**

Teton Russet was tested in the Kimberly Potato Storage Variety Trial in 2009-11. Results indicate that dormancy length in Teton Russet is approximately 30-40 days shorter than Russet Burbank, depending upon storage temperature. Teton Russet had a dormancy length in 45°F storage of approximately 115 days and 100 days at 48°F. Teton Russet had significantly lower susceptibility to Fusarium dry rot as compared to Russet Burbank. Teton Russet had an average of 2.3% dry rot severity and 5.6% incidence (>5%), as compared to 21.1% severity and 56.7% incidence for Russet Burbank. Percent glucose in Teton Russet was generally higher than Russet Burbank at 42 and 45 storage temperatures, but lower than Russet Burbank when stored at 48°F. Fry color values for Teton Russet were dark ( $\geq$ USDA 2) out of storage at 42 and 45°F. At 48°F, fry color values were USDA 1 – 2 throughout the nine months of storage for Teton Russet, and were lighter than those for Russet Burbank. Teton Russet had a lower incidence of sugar end (darker fry color at the stem end of the tuber) than Russet Burbank. Mean percent weight loss in Teton Russet after nine months of storage was equivalent to that of Russet Burbank at 5.1% (average of three storage temperatures).

## **Storage Management Guidelines**

### **Holding Temperatures:**

- Frozen Processing 48°F
- Fresh Market 45°F
- Dehydration Processing 45°F

### **Dormancy Length**

- 42°F - 135 days
- 45°F - 115 days
- 48°F - 100 days

### **Mottling:**

None to mild mottling has been observed in Teton Russet only at 48°F storage, at 45°F mottling was mild to moderate.