

# CLEARWATER RUSSET

## AGRONOMY NOTES

### Clearwater Russet – (AOA95154-1)

Clearwater Russet is a mid-late maturing variety with oblong medium heavy russeted tubers. Clearwater produces a high percentage of U.S. No. 1 tubers. Tubers of Clearwater Russet exhibit excellent fry color out of storage and their attractiveness make them suitable for both processing and fresh market usage. It has high specific gravity and is resistant to sugar ends. Clearwater has a low tuber set, with an optimal tuber size profile. External and internal defects are minimal for Clearwater even under stressed conditions.

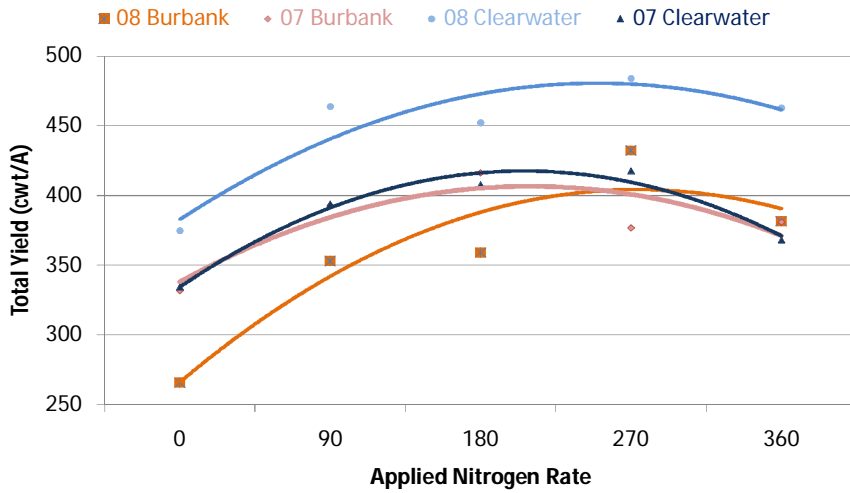
### Fertilization

The following graphs present N response data from 2007 and 2008 for Clearwater Russet in comparison with Russet Burbank grown on a Declo sandy loam soil at the University of Idaho Aberdeen Research and Extension Center. Trials were grown following grain in the rotation. Row spacing was 36" and in-row spacing was 10.6". Crops were irrigated to maintain available soil moisture above 65%. University of Idaho recommendations were followed for herbicide, pesticide, and fungicide applications. Nitrogen response studies were conducted using five application rates (0, 90, 180, 270, 360 lb N/acre) with half of total N applied pre-plant with the remainder divided into three equal applications at 2 week intervals starting at tuber initiation. Pre-plant available soil nitrate concentrations were 20 lb N/acre in 2007 and 30 lb N/acre in 2008.

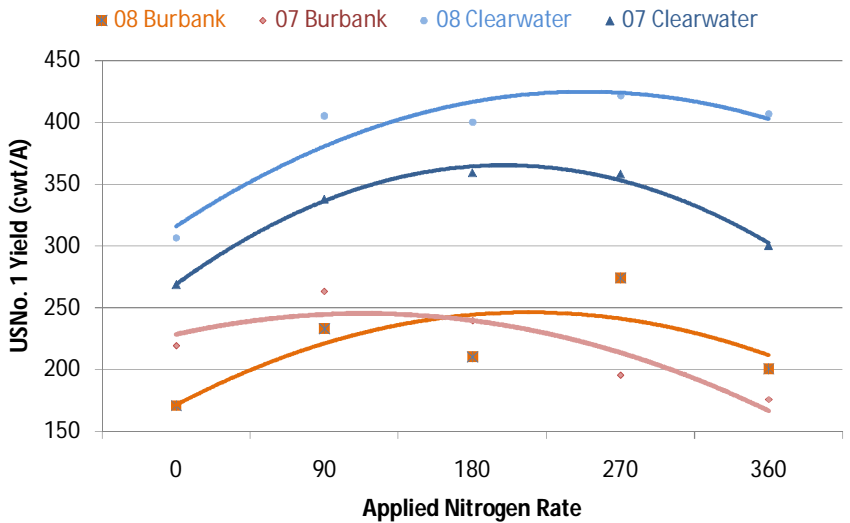
Analysis of the N response data shows that total seasonal nitrogen requirements for Clearwater Russet are about 25% less than Russet Burbank for a given amount of yield produced. Typically, 1/3 to 1/2 of the seasonal N requirement should be applied by row closure, with subsequent in-season applications being based on petiole nitrate concentrations. For southern Idaho, total soil plus fertilizer N recommendations range from about 180 lb N/acre in areas with a 400 cwt/acre yield potential, 210 lb N/acre in areas with a 500 cwt/acre yield potential, and 240 lb N/acre in areas with a 600 cwt/acre yield potential. Nitrogen uptake decreases significantly after mid August so N applications should not be made after that time.

Nitrogen response studies conducted for two years at Aberdeen, Idaho indicate that optimal petiole nitrate concentrations for Clearwater Russet should be about 18,000 to 22,000 ppm at the end of tuber initiation, and about 15 to 18,000 ppm during mid-bulking. During late bulking, petiole nitrate concentrations should be allowed to decrease to 7,000 to 10,000 ppm.

2007-2008 Total Yield Response to N Rate of Clearwater Russet vs. R Burbank

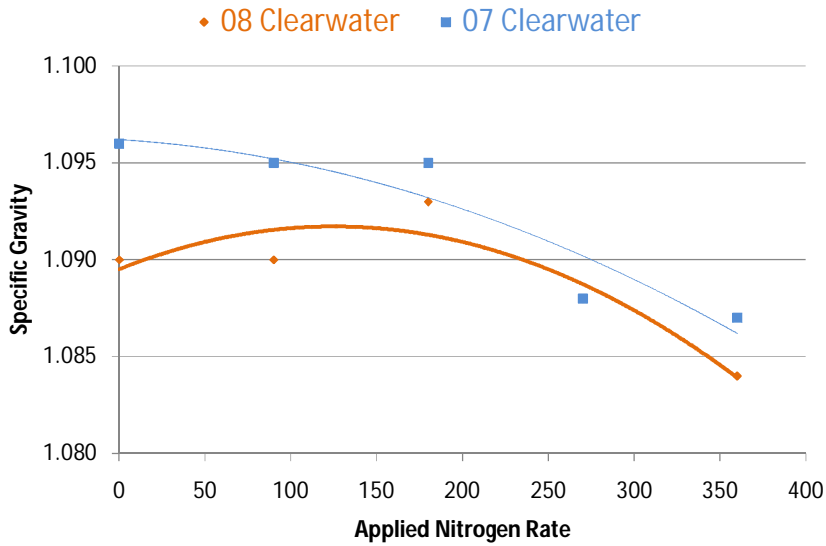


2007-2008 USNo.1 Yield Response to N Rate for Clearwater Russet vs. R Burbank

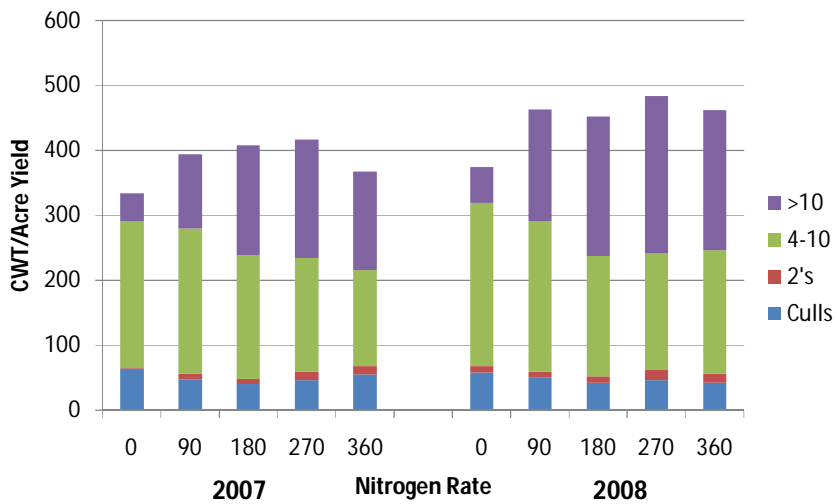


Clearwater Russet has moderately high specific gravity levels. Response to N Rate indicates a decline in gravity with higher nitrogen levels.

### 2007-2008 Specific Gravity Response to N Rate



### 2007-2008 Size Distribution Clearwater Russet

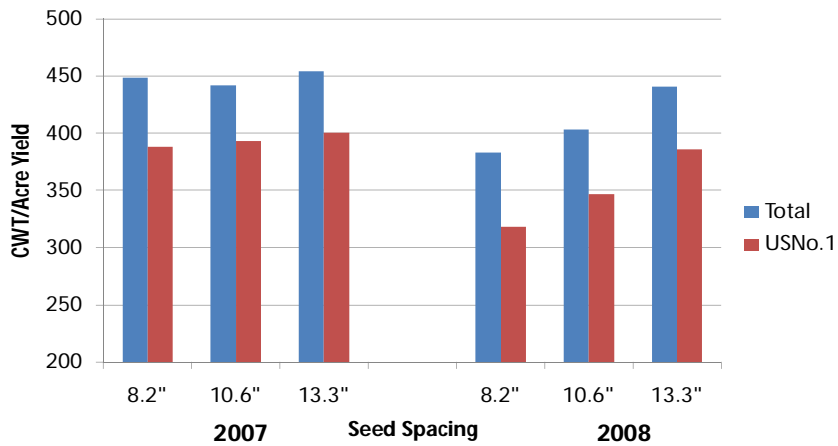


Increasing N significantly increases the proportions of large (>10 oz) tubers and decreases the proportion of 4-10 oz tubers.

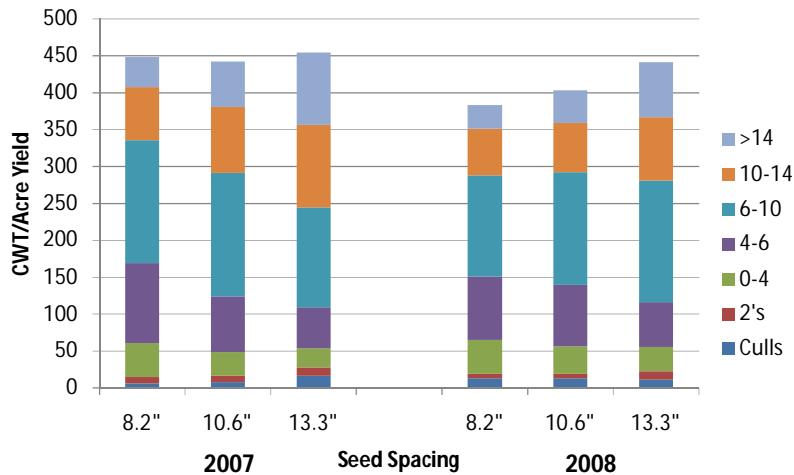
## Clearwater Russet - Spacing

The following graphs combine 2007 and 2008 years of data for Clearwater Russet grown at the University of Idaho Aberdeen Research and Extension Center. Row spacing was 36" and in-row spacing was 8.2", 10.6", 13.3". Yield increased with increased spacing up to 13.3" in 2008 but spacing had little effect on yield in 2007. Wider spacing also increased the proportions of large tubers.

2007-2008 Total & USNo.1 Yield  
Clearwater Russet – Seed Spacing



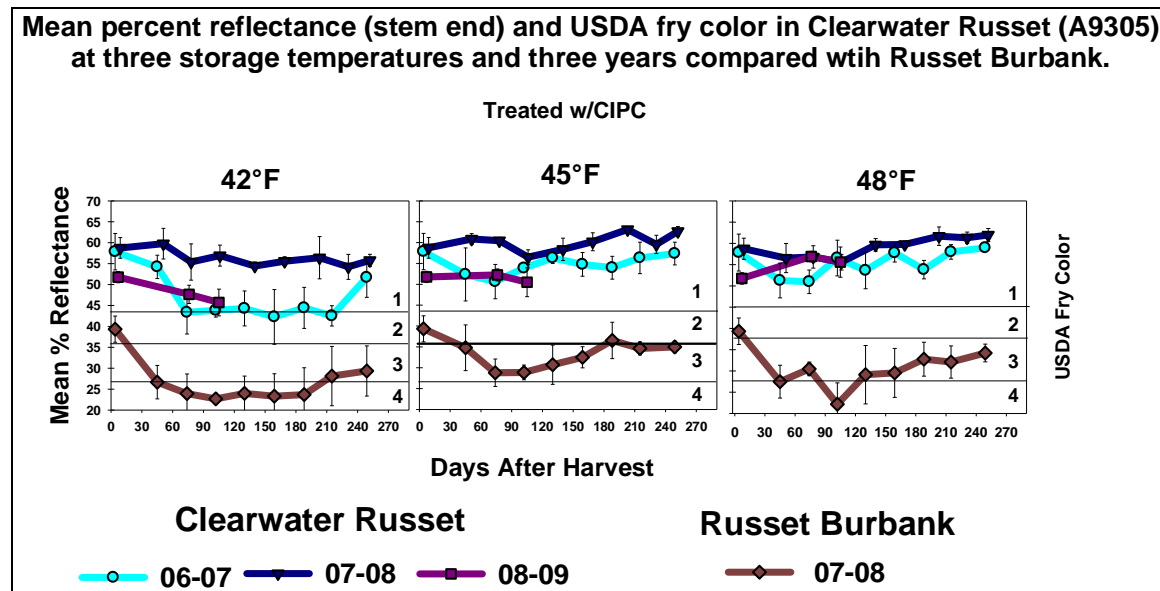
2007-2008 Size Distribution  
Clearwater Russet – Seed Spacing



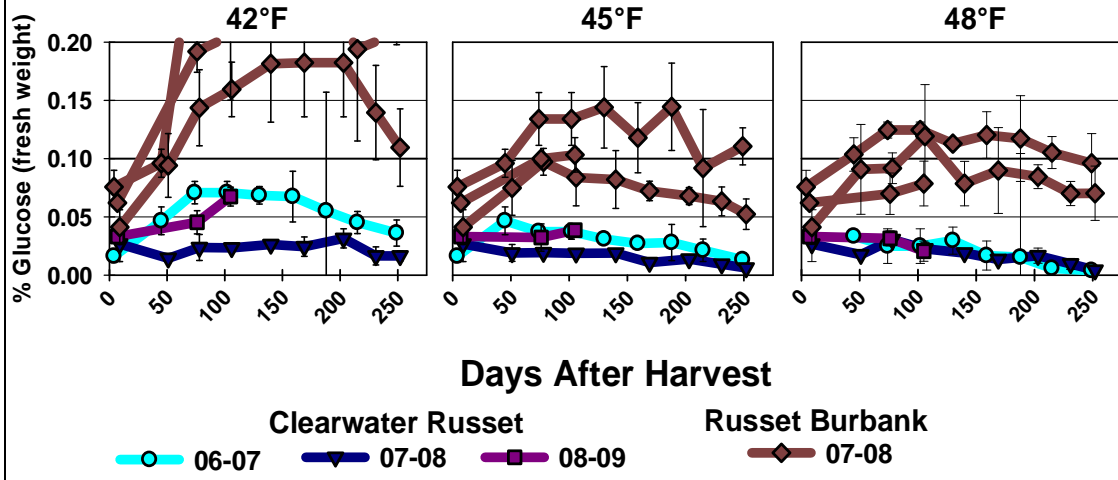
Total and U.S.No.1 Yield of Clearwater Russet is optimized at the 10-12" in-row spacing.

## Clearwater Russet – Storage Characteristics

The dormancy of Clearwater Russet is relatively short, about 60 days shorter than Russet Burbank (RB). At 48°F, Clearwater Russet has a dormancy of 85 days, 90 days at 45°F and 110 days at 42°F. Clearwater Russet has a relatively high Fusarium dry rot potential. In two years of disease testing, means were 30% decay (severity) and 73% incidence compared to 11% decay and 48% incidence for RB. Weight loss was higher in Clearwater Russet than RB at 42°F (9.2% and 5.6%). At 45 and 48F, there were no significant differences between the cultivars in the two year means and values ranged from 5 to 6% for the total weight loss. In the first year of the study weight loss was significantly higher in Clearwater Russet than RB, but in the second year few differences were measured. Percent glucose in storage was very low, <0.05% fresh weight (fwt) at 42, and <0.03% fwt at 45 and 48°F. Percent sucrose was similar in Clearwater Russet to RB, values ranged from a high of 0.15% to a low of 0.07% fwt. Stem end fry color remained at ≤ USDA 1 throughout the 9-month storage period at the three temperatures in both storage seasons. Mottling, a dark, uneven coloration which can occur in fried products, scored at a mild level at 42°F, and mild to none at 45 and 48°F.



Percent glucose (fresh weight) in Clearwater Russet potatoes in 2 1/2 storage seasons at storage at three temperatures compared to Russet Burbank (2006-09).



Revised March 5, 2010