Columbia Basin of WA and OR Cultural Management Recommendations for Castle Russet

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Disclaimer: This may change slightly in near future as research and grower feedback increases.

Columbia Basin of WA and OR: To ensure adequate tuber size and yield, Castle Russet should be planted using 2.0 to 3.0 oz seed pieces spaced between 8-10 inches in-row for fresh market and 10-12 inches in-row for processing market (Figures 1 and 2). Final planting depth should be 7-8 inches below the soil level. Recommended row width for the Columbia Basin is 32 inches.

Figure 1. Castle Russet seed cost adjusted gross return for the process market and total yield for 2017-2018 for each in-row spacing treatment. Data averaged across years. Trials located in the Columbia Basin Washington.

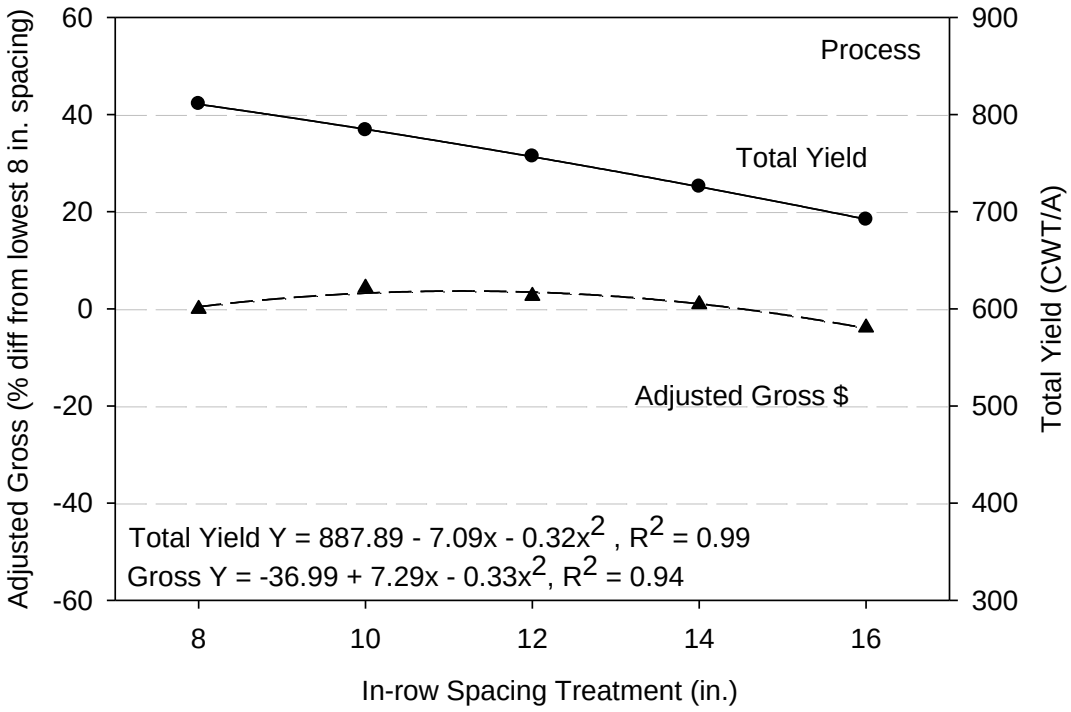
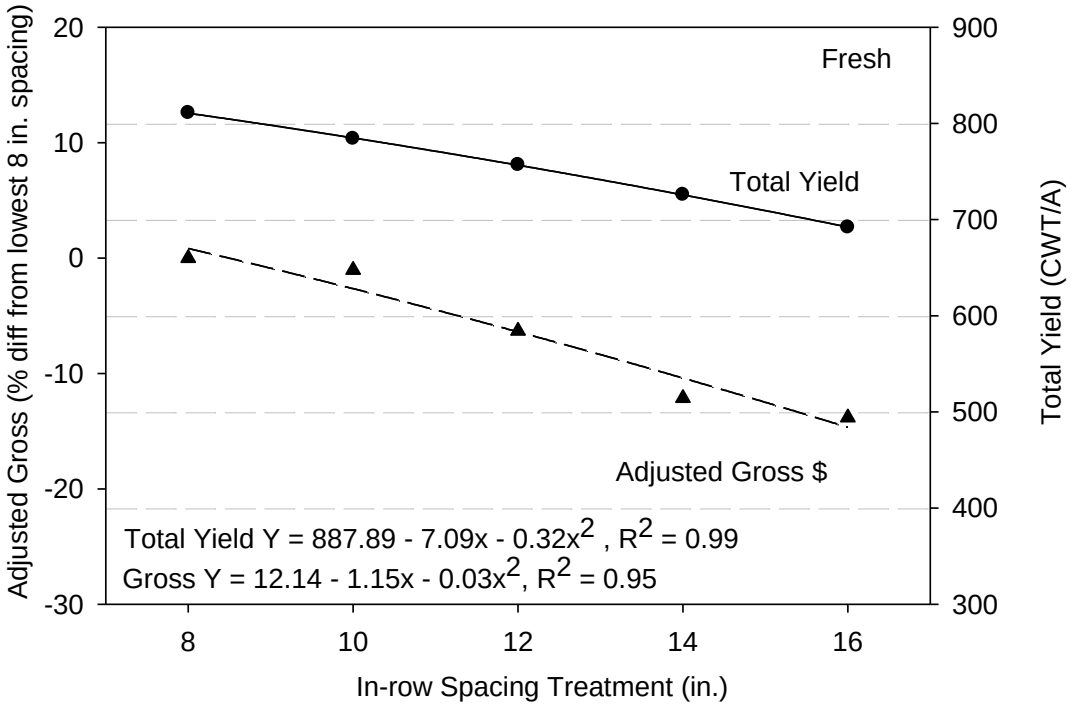
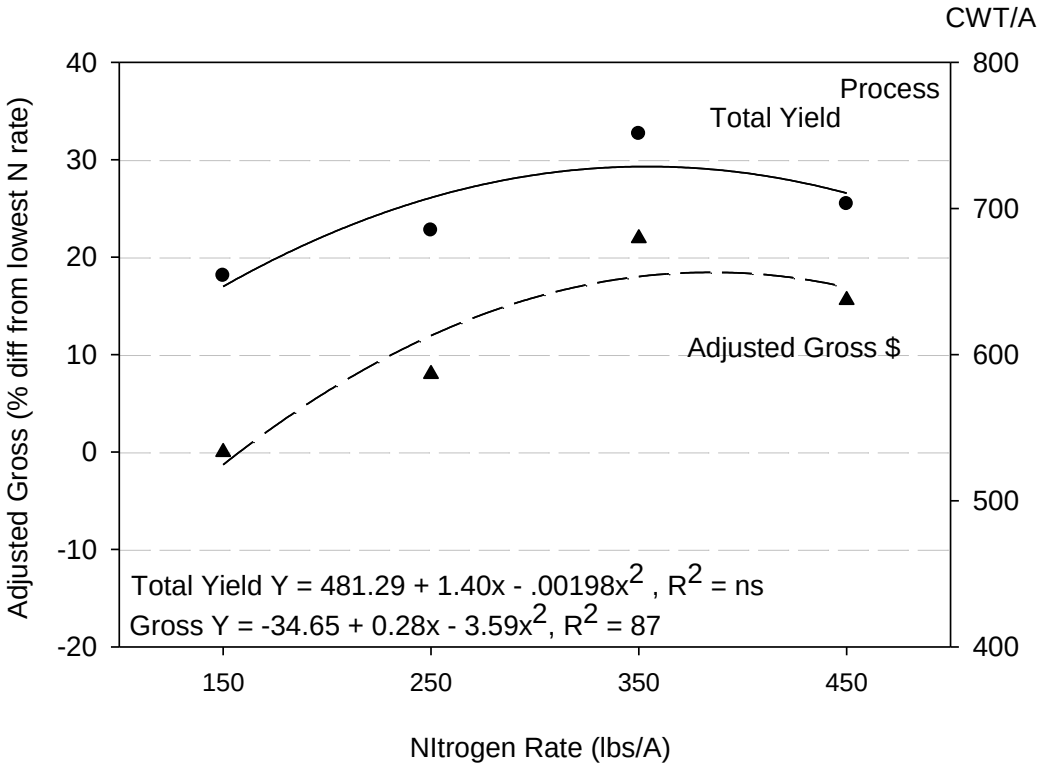


Figure 2. Castle Russet seed cost adjusted gross return for the fresh market and total yield for 2017-2018 for each in-row spacing treatment. Data averaged across years. Trials located in the Columbia Basin Washington.



Total season nitrogen (including soil residual) for Castle Russet should be between 360- and 380-lbs/A for both processing and fresh markets (Figure 3). In a typical growing season, approximately two-thirds of the nitrogen should be applied through the irrigation water between 60 and 115 DAP. Pre-plant or at-planting nitrogen of 125 to 150 lbs/A of available nitrogen (soil residual + applied) in the root zone at emergence is recommended. Petiole and soils during the growing season should be used as a guide, however, growers should strive to hit the season total nitrogen target of 350 to 380 lbs N/A. Petiole and soil samples should be collected prior to row closure and continue through the season until late bulking (once every 2 weeks is adequate, Figure 4) petiole NO3% of 19,000 to 24,000 ppm and total soil nitrogen above 50 lbs/A should be maintained until the start of early bulking (approximately 90 DAP). Thereafter, allow depletion of soil nitrogen with a corresponding decline in petiole reading between 13,000 and 19,000 ppm at mid-bulking (approximately 115 DAP), and then between 9,000 and 16,000 ppm at late bulking (approximately 125 DAP). For nutrient recommendations other than N, growers should follow the nutrient management guidelines established for Russet Burbank (Lang et al. 1999). Specific recommendations for organic production have not been established.

Figure 3. Castle Russet total yield and nitrogen cost-adjusted gross return for processing market (top) and fresh market (bottom) as affected by nitrogen rate when averaged across years (2014-16).



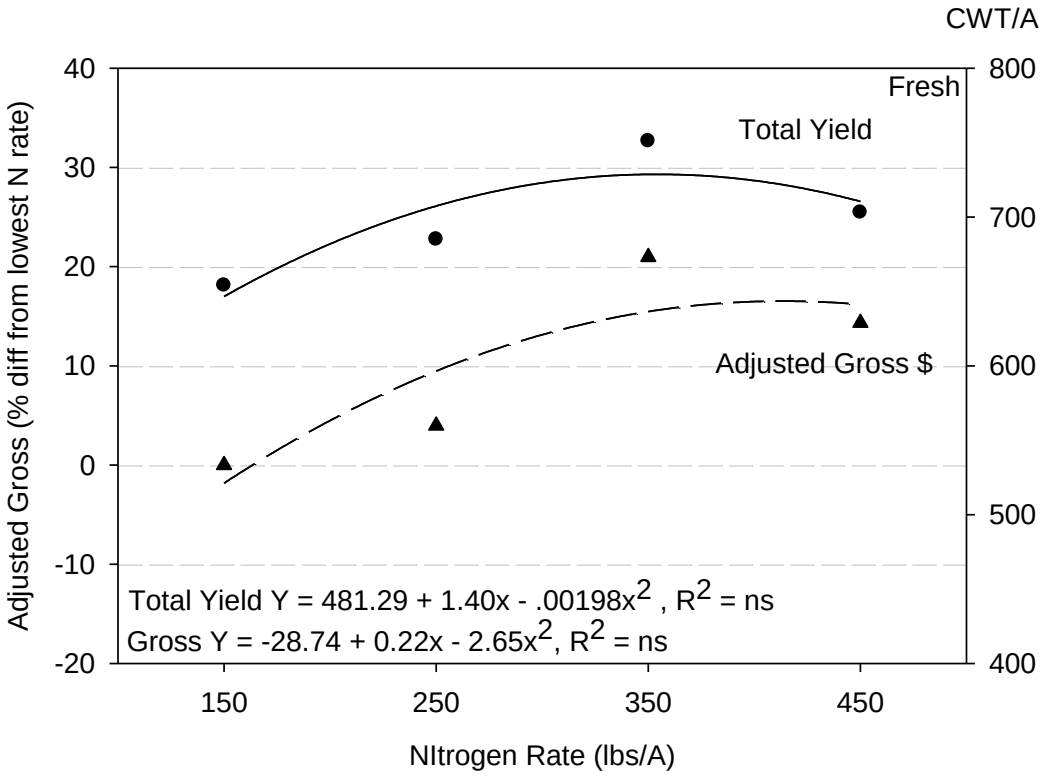
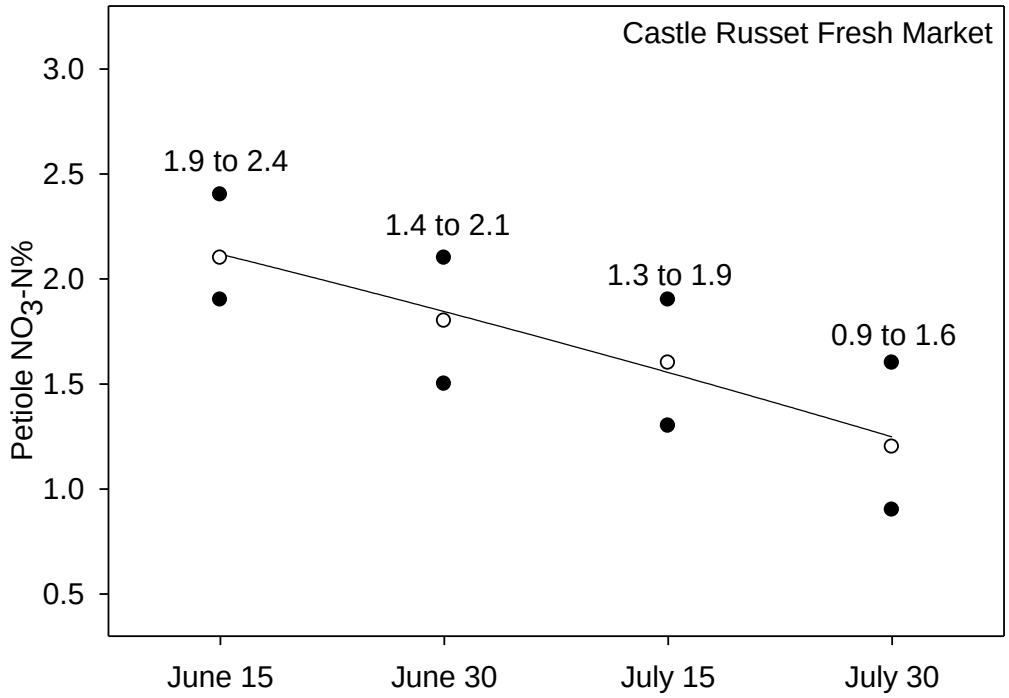


Figure 4. Castle Russet petiole nitrate (NO3-N%) recommendations.



Nutrients other than Nitrogen:
Management guidelines for nutrients other than N have not been established for Castle Russet, however, preliminary research results indicate Castle Russet responds well to 250 lbs P_2O_5/A when soil phosphorus is between 10-20 ppm. Soil pH and phosphorus tie-up can alter results. For additional info, growers should follow local nutrient management recommendations for Russet Burbank (Lang et al. 1999) until new guidelines for Castle Russet become available. (Lang, N.S., R.G. Stevens, R.E. Thornton, W.L. Pan, and S. Victory. 1999. Nutrient Management Guide: Central Washington Irrigated Potatoes. Washington State University Experiment Station Extension Bulletin EB1882.)

Irrigation Management:
Available soil moisture (ASM) should be maintained at 75% to 85% from full emergence until late bulking, avoid excessive irrigation. As vines senesce, ASM should be reduced to 60% to 65%. Avoid excessive soil moisture from mid to late bulking to prevent disease, rot, and shatter bruising at harvest.

Harvesting and Handling
Like many varieties, Castle Russet is susceptible to shatter and blackspot bruising at harvest. Shatter, mechanical cracking, thumbnail cracks, and air checks are terms that refer to hairline fractures in the tuber that typically result when turgid tubers collide with a solid surface. Susceptibility to shatter is often variety specific and heavily influenced by a variety's genetics.

Genetic potential plus the environmental conditions conducive for shatter can be financially devastating. Shatter can reduce marketability and lead to excessive rot in storage. Turgid tubers (firm, well hydrated, high fluid content) are more susceptible to shatter bruise than flaccid tubers.

To prevent shatter:

1) Your goal should be to dehydrate (reduce turgor) the tubers to a level that will minimize shatter
2) Warm temperatures and dry soils facilitate dehydrating tubers
3) Best to harvest tubers when it is warm (pulp temp as warm as possible ~ 65F might be Ideal)
4) Allow 14-21 days after vine kill
5) If possible, irrigate just prior to harvest to reduce bruising from clods, etc.
6) Follow steps outlined in the "Preventing Potato Bruise Damage" by Mike Thornton & Bill Bohl located at: www.cals.uidaho.edu/edcomm/pdf/BUL/BUL0725.pdf
7) Review also: "Thumbnail Cracks of Potato Tubers" By Bill Bohl & Mike Thornton, located at: www.cals.uidaho.edu/edcomm/pdf/CIS/CIS1129.pdf

   Unfortunately, some of the things, like warmer temperatures and tuber turgidity, that help to prevent shatter bruising can exacerbate blackspot bruising and vice versa. Do your best to handle all tubers gently and minimize conveyor drop heights.

REFERENCE: Lang, N.S., R.G. Stevens, R.E. Thornton, W.L. Pan, and S. Victory. 1999. Nutrient Management Guide: Central Washington Irrigated Potatoes. Washington State University Experiment Station Extension Bulletin EB1882.