

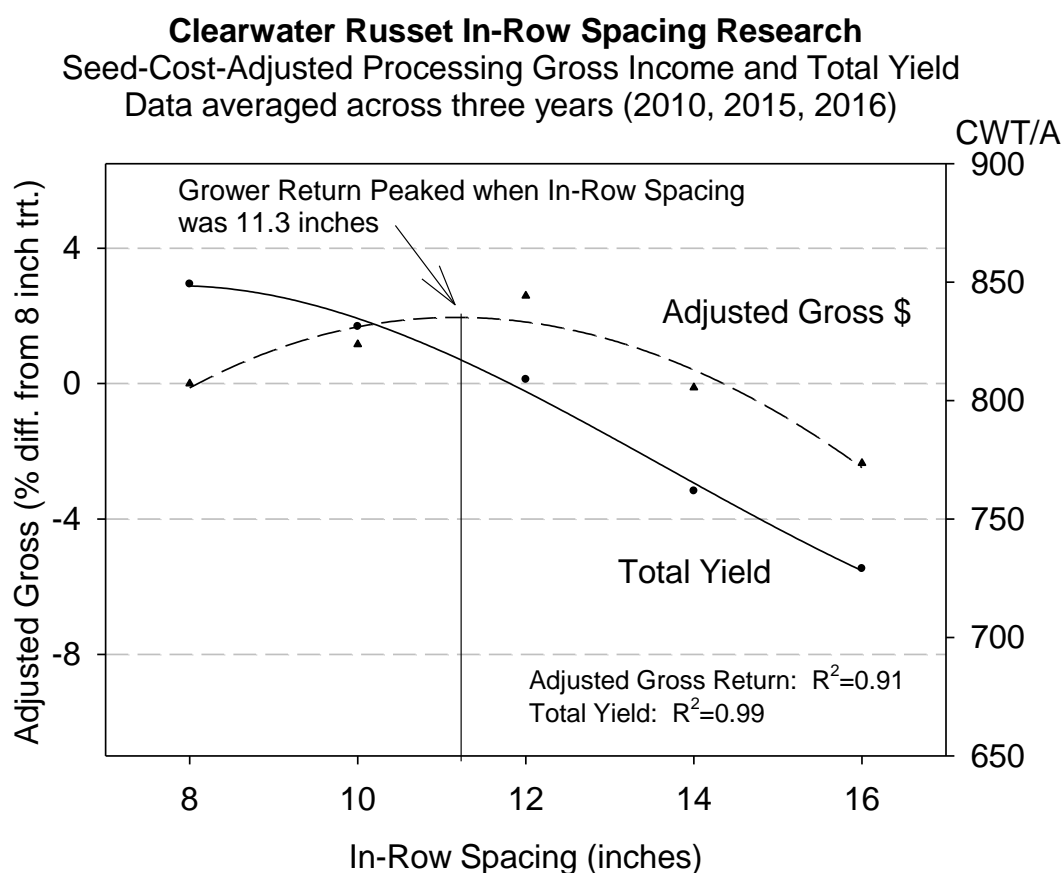
## Columbia Basin of WA and OR Cultural Management Recommendations for Clearwater Russet

February 2021, MJ Pavek, ZJ Holden, R. Garza - WSU

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

Columbia Basin of WA and OR: Clearwater Russet grown in the Columbia Basin typically produces 1-2 tubers more than Russet Burbank. To ensure adequate tuber size and processing yield, Clearwater Russet should be planted using 2.0 to 3.0 oz seed pieces spaced between 11 and 12 inches in-row (Figure 1). Avoiding seed pieces below 2.0 oz is very important for Clearwater Russet. Final planting depth should be 8 inches from the top of the hill to the top of the seed piece. Clearwater Russet performs well in the Columbia Basin when planted into rows 32 or 34 inches wide.

**Figure 1.** Grower return and total yield from in-row spacing research on Clearwater Russet conducted near Othello, WA across 3 years.



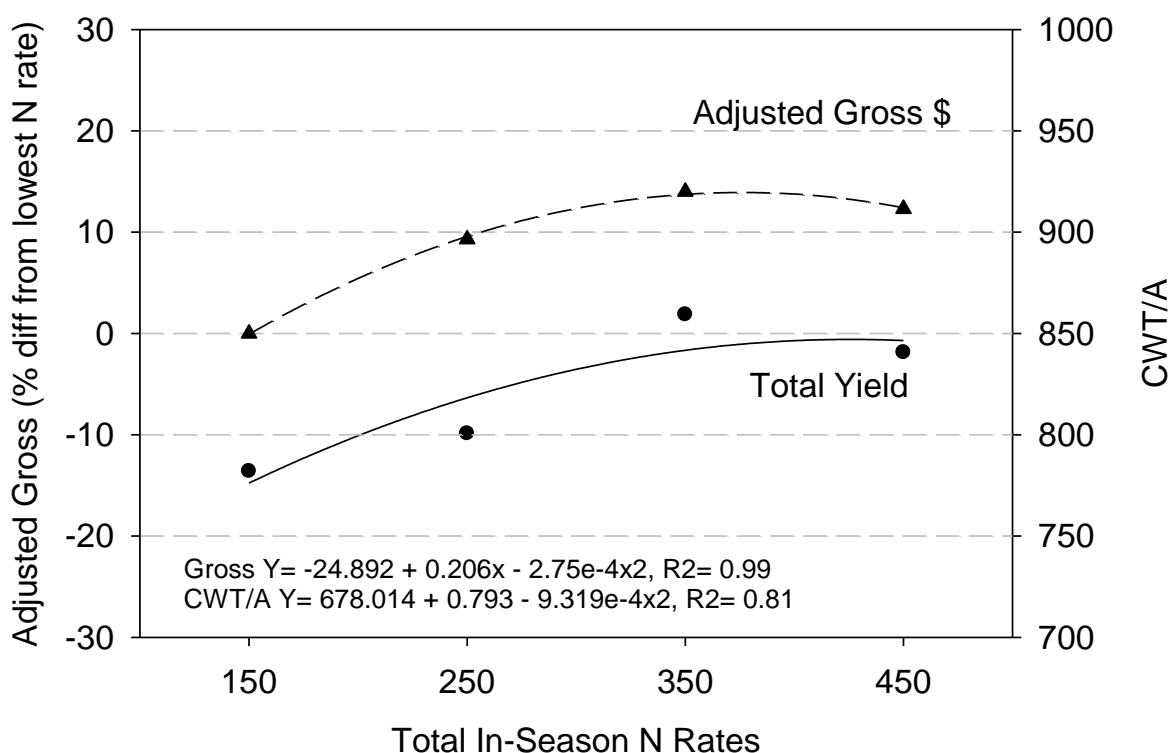
**IMPORTANT:** Clearwater Russet is prone to internal brown spot (IBS) and should not be grown in areas where IBS is known to be a problem. Previous research indicates that later-planted potatoes may produce less IBS compared to those planted early. Calcium fertilizer has been rumored to reduce IBS, but the research evidence is inconclusive.

**MH-30 (Maleic Hydrazide) should not be used** on Clearwater Russet. Clearwater Russet tuber yield and grower revenue was reduced significantly following label recommended applications of MH-30 across three years in research conducted by WSU near Othello, WA.

**Water management:** available soil moisture (ASM) should be maintained at 75% to 100 % of field capacity from full emergence until late bulking (2-3 weeks prior to vine kill). Two to three weeks prior to vine kill, ASM should be reduced to 60% to 65%, allowing plants to mature.

**Nitrogen:** total season nitrogen (including soil residual) for Clearwater Russet should be between 350- and 375-lbs/A in a typical growing season with approximately two-thirds applied through the irrigation water between 60 and 115 DAP. *In-season N applications should be finished by first week of August to allow plants to mature prior to vine kill and harvest.* Four years of research indicate maximum economic gain is found between 350- and 375-lbs/A of nitrogen (Figure 2). This total does not account for N needed to break down the crop residue from the previous season.

**Figure 2**



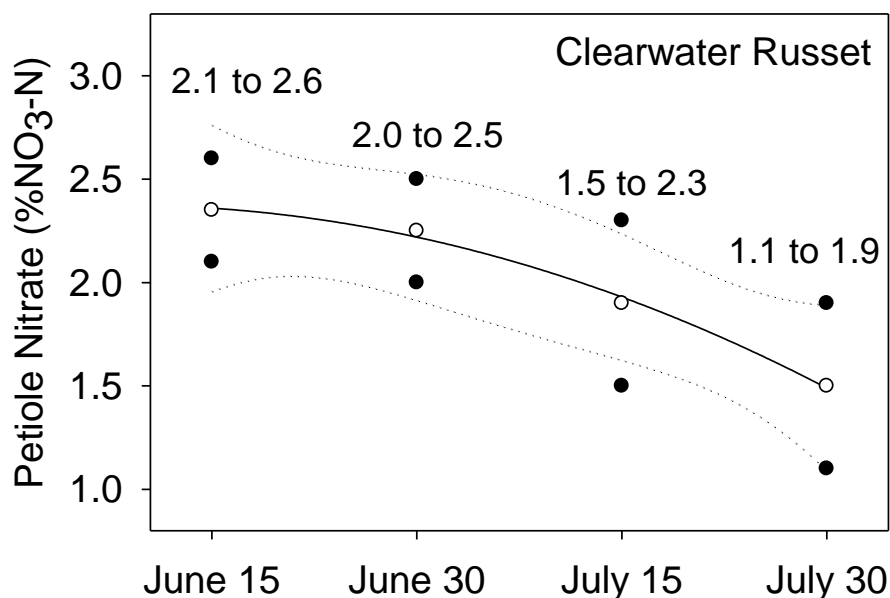
Pre-plant or at-planting nitrogen of 125- to 150-lbs/A of available nitrogen (soil residual + applied) in the root zone at emergence is recommended. **Petiole and soils during the growing season should ONLY be used as a guide to hit season fertilizer targets. Growers should strive to hit the season total nitrogen target of 350- to 375-lbs/A.** Petioles should be collected prior to row closure and continue through the season until late bulking (once every 2 weeks is adequate, see figure 3 below) petiole NO<sub>3</sub>% of 21,000 to 26,000 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 15,000 and 23,000 ppm at mid-bulking (approximately 115 DAP), and then between 11,000 and 19,000 ppm at late bulking (approximately 125 DAP). *NOTE: these petiole values are for what might be considered a “typical season”, void of early season temperature extremes.*

**Phosphorus:** available phosphorus rates of 250 to 300 lbs/A  $P_2O_5$  should be adequate for full season production in most soil types. Split applications of P work best with 80% at or prior to planting (band or broadcast) and 20% applied via irrigation early to mid-July.

**Potassium:** potassium should be available to Clearwater Russet in rates between 400-450 lbs/A K. If soils contain around 90-110 ppm, Columbia Basin growers should add 400-450 lbs/A K to the soils – preplant incorporated is ideal. Excessive rates (600-800 lbs/A K) of potassium chloride (KCL) have been shown to reduce russeting and increase skinning at harvest. Skinning incidence was reduced at rates of 400 lbs/A K or less. For all potato varieties: as K rate per acre increases, specific gravity (tuber solid content) decreases.

For additional nutrient recommendations, 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**



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.