
Potatoes Respond to Irrigation and Seed Piece Spacing

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The Potato industry is expanding very rapidly in Saskatchewan. It is a high value crop that requires intensive management and significant inputs. Profitable potato production demands suitable agronomic practices including careful water management and appropriate plant stand. Proper stand establishment and water management is critical to maximize yields and ensure tuber quality for seed, processing, or table potato. Excess or deficient moisture conditions can significantly affect both yield and quality. Water requirement and plant density can vary for different cultivars depending on the intended market class.

A study was conducted at the Saskatchewan Irrigation Development Centre to examine the effects of seed piece spacing (15,20,30 cm) for five potato cultivars (Atlantic, Norland, Russet Burbank, Russet Norkotah, and Shepody) on 'seed' and 'consumption' grade tuber yield when grown under different moisture levels. Standard management practices were used to raise the crop. The desired soil moisture levels were maintained through supplemental irrigation based on tensiometer readings (60 cm depth). Growing-season soil moisture status was monitored using a neutron moisture meter. The crop was harvested at maturity. Grading was done according to tuber diameter. 'Seed' grade included tubers <90 mm diameter, and 'consumption' grade included tubers > 45 mm diameter. This poster summarizes the effects of irrigation and seed piece spacing on water use and tuber yields ('seed' and 'consumption' grade) for the five potato cultivars.

RESULTS

Irrigation Effects and Water Use:

The 1997 growing season (May-September) received 174 mm rain. Soil maintained at 40% F.C., that required 229 mm supplemental irrigation, produced on the average 2.5 times higher seed grade yield and 4.7-fold consumption grade yield than dryland. Soil at 65% F.C (305 mm irrigation) produced 24% higher seed grade yield and 32% higher consumption grade yield than the 40% F.C. treatment.

Late maturing Atlantic, Russet Burbank, and Shepody utilized significantly more water than early maturing Norland and Russet Norkotah on both dryland and under irrigation.

There was no difference in total water use for the highest and lowest population densities under dryland and the two irrigation regimes.

Cultivar Effects:

Under dryland conditions, Atlantic and Norland produced significantly higher seed grade yields than the other cultivars. At 40% F.C., Norland, Russet Burbank, and Russet Norkotah, outyielded the other cultivars. Under 65% F.C., all cultivars produced similar yields.

Atlantic and Shepody produced significantly higher consumption grade yields in dryland than the other cultivars and all cultivars produced similar yields under 40% F.C. Under 65% F.C., Atlantic, Norland, and Shepody outyielded the other cultivars.

Seed Piece Spacing Effects:

The 30 cm spacing produced lower seed grade yields than 15 and 20 cm spacing under 40% F.C. and 65% F.C. Under dryland all spacings produced similar yields.

Seed piece spacing had no effect under the different irrigation treatments.

A C K N O W L E D G M E N T

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