

# Soybean Seeding Rate Effect on Yield, Agronomic and Quality Traits in Northeastern North Dakota

Bryan Hanson, North Dakota State University – Langdon Research Extension Center  
Phone 701-256-2582, email bhanson@ndsuext.nodak.edu

Soybeans seeding rate studies were embedded in the Roundup Ready Soybean variety trials at Devils Lake, Cavalier and Park River, ND. The number of seeding rates at each location was determined by the number of entries needed to fill a square lattice experimental plot design for the trial. Target plant populations ranged from 100,000 to 250,000 pure live seeds/acre in 25,000 increments. All locations had adequate nitrogen and phosphorus levels and granular inoculum was also applied. The plots were 3.5 x 16 feet in length and the row spacing was six inches. Planting and harvest dates and previous crop are given in Table 1. The variety used was NK Brand S00-J4 with 00.4 maturity grouping.

The summer was much colder than normal with above average precipitation. A light frost occurred across the region on August 20. No major frost damage was noted in any of the trials. The first killing frost occurred on October 1. The variety S00-J4 matured before the killing frost at all locations.

Plant heights average from 23 to 25 inches across the three locations (Fig. 1). Differences within each location were greatest at Park River where the 250,000 seeding rate had the shortest height. Days to mature ranged from 116 to 118 with the greatest difference occurring at Park River (Fig. 2). Oil percentages for the seeding rates were very similar to one another (Fig. 3). Only the Park River location had significant differences in oil levels with the 225,000 seeding having the highest percentage. Protein levels generally decreased with increasing seeding rates (Fig. 4). This was more evident at the Devils Lake and Park River locations. Difference in test weight were generally less than 0.5 lbs/bu at all locations (Fig. 5). Yield levels at all locations peaked at either 200,000 or 225,000 pls/a (Fig. 6). The 100,000 seeding rate, when average across all locations, yielded three bushels less than the next highest seeding rate. A seven bushel yield difference occurred between the 100,000 and 200,000 seeding rate at Cavalier.

Table 1. Soybean planting, harvest dates and previous crop.

<b>Location</b>	<b>Previous Crop</b>	<b>Planting Date</b>	<b>Harvest Date</b>
Devils Lake	Wheat	May 17	October 7
Park River	Fallow	May 20	October 11
Cavalier	Sugarbeets	May 28	October 12

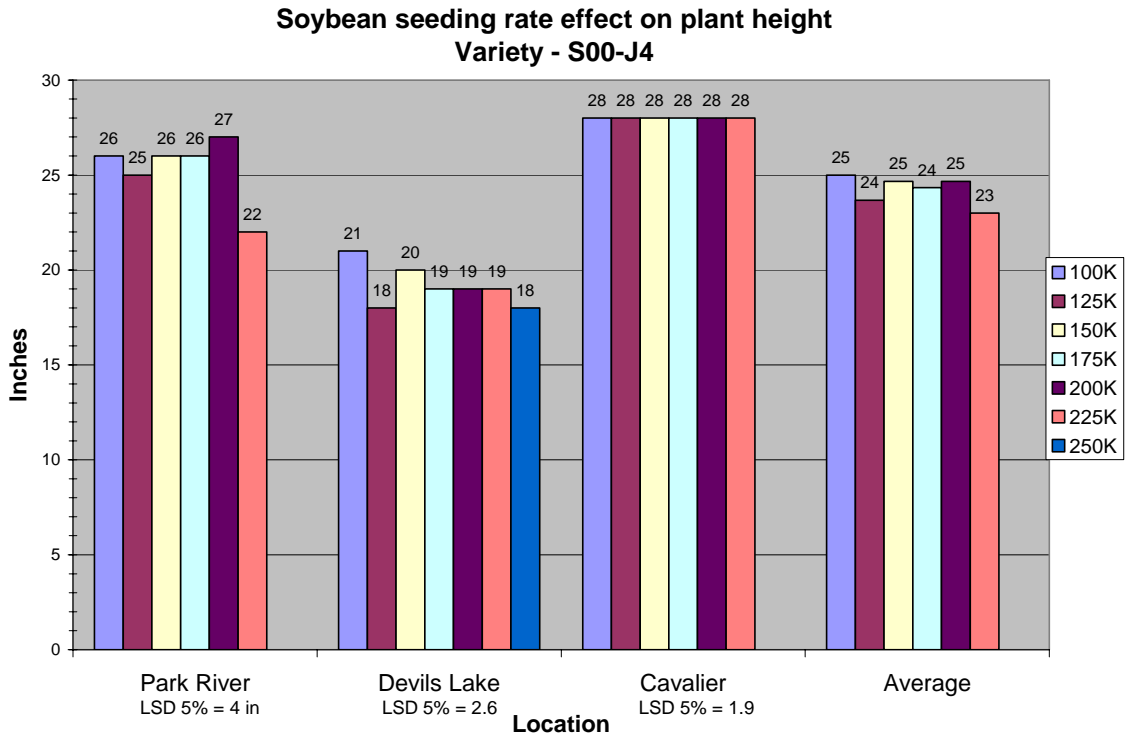


Figure 1. Soybean seeding rate effects on plant height, 2004.

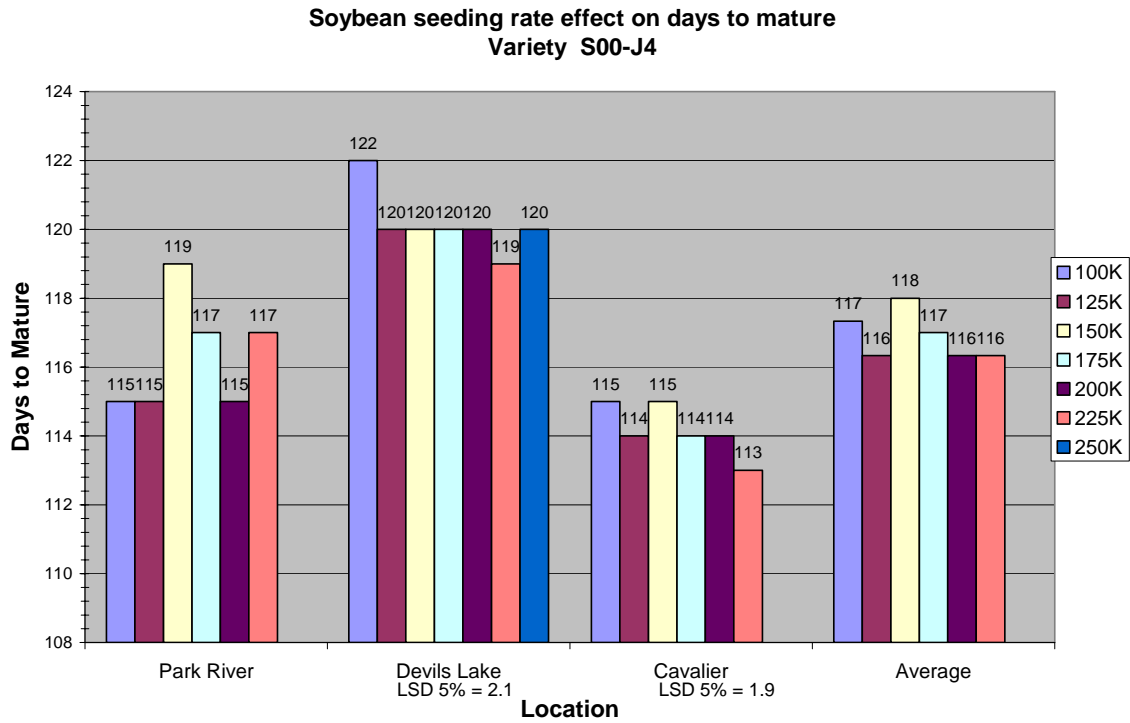


Figure 2. Soybean seeding rate effect on days to mature, 2004.

**Soybean seeding rate effects on percent oil  
Variety S00-J4**

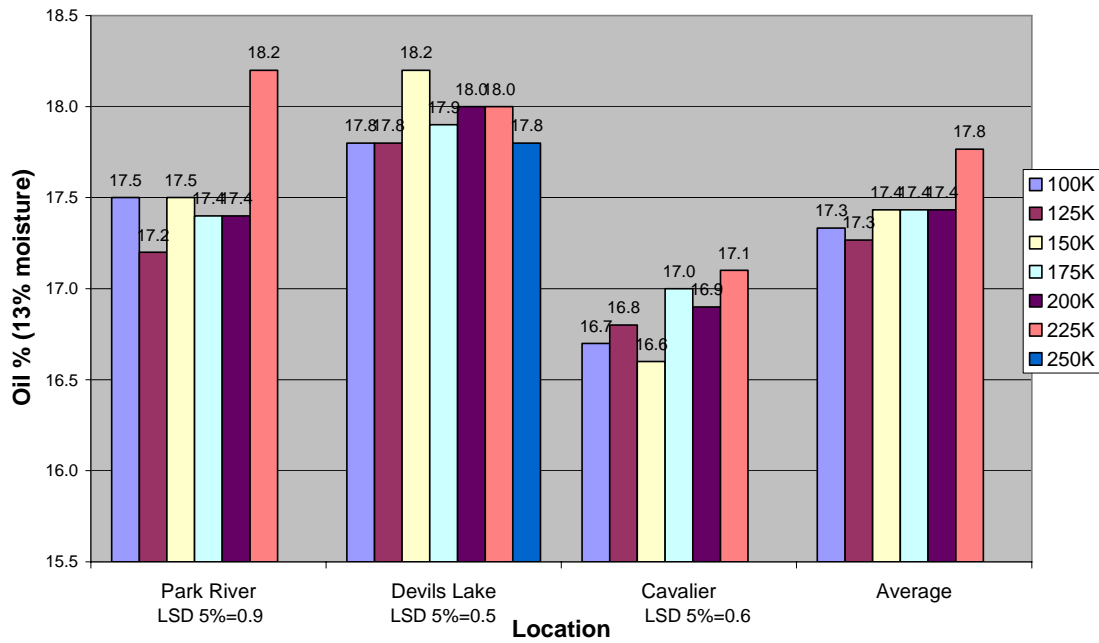


Figure 3. Soybeans seeding rate effect on percent oil, 2004.

**Soybean seeding rate effect on percent protein  
Variety S00-J4**

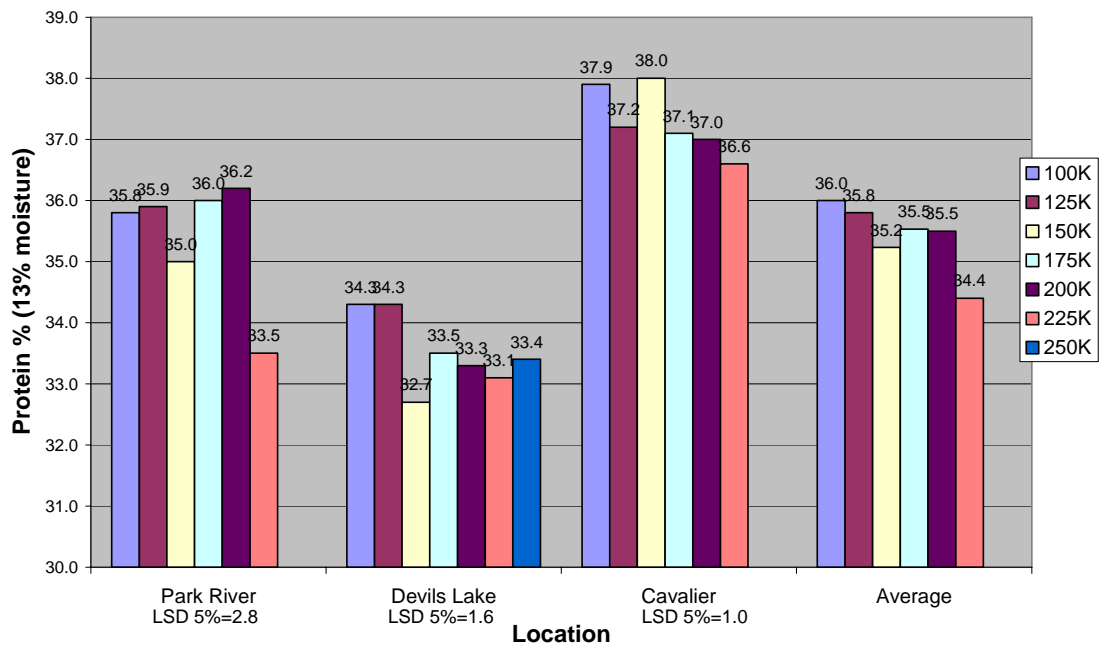


Figure 4. Soybean seeding rate effect on percent protein, 2004.

**Soybean seeding rate effect on test weight  
Variety S00-J4**

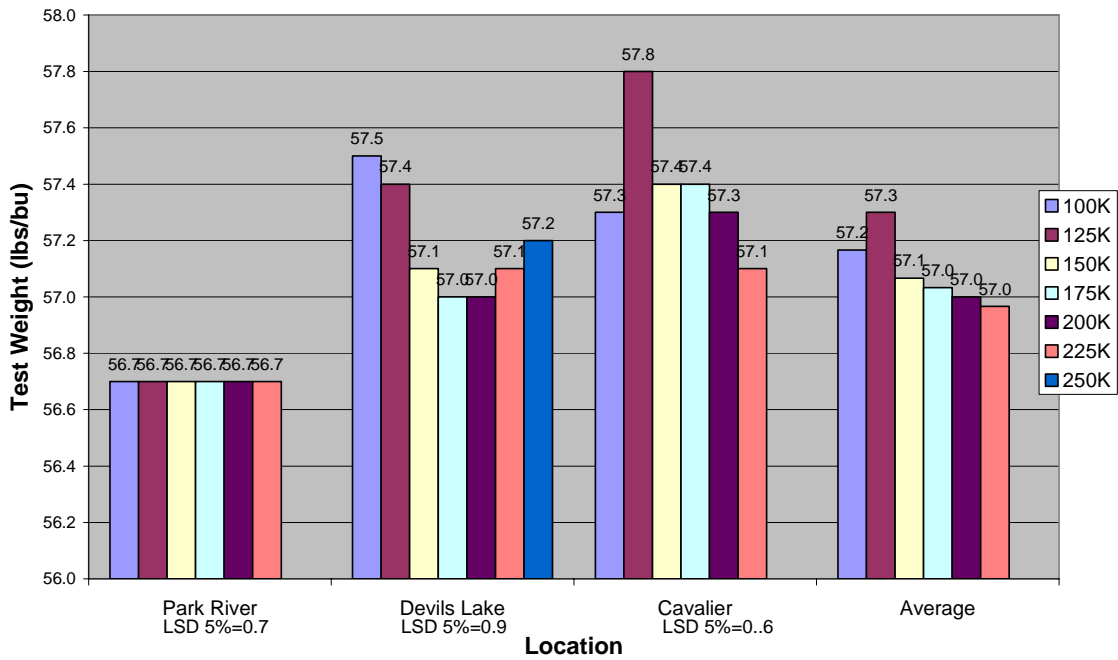


Figure 5. Soybean seeding rate effect on test weight, 2004.

**Soybean seeding rate effect on yield  
Variety S00-J4**

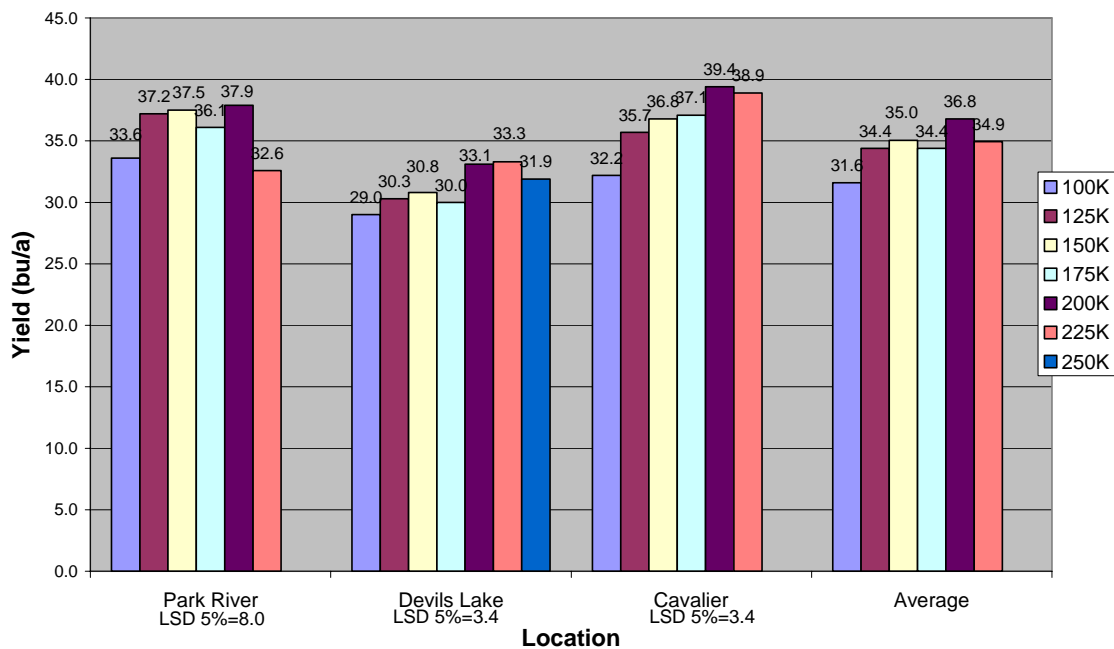


Figure 6. Soybean seeding rate effect on yield, 2004.