

2013 Soybean Population Trials — WC and NW Minnesota

Cooperator: C Dziengel, F Johnson, T Bjorgaard, J Paulson, P Kappes, B Klabunde, D Roehl and A Maier
 Nearest Town: Kennedy, Strathcona, Newfolden, Gully, Ada, Wauban, Fergus Falls and Barnesville
 Planting Date: May 24, 28, June 7, May 23, 25, June 6, May 29, 29.
 Row Width: 15 inch
 Weed Management: Roundup
 Planting Population: 75K—200K/ac in 25K increments
 Harvest Date: Oct 1, 8, 7, Sept 30, Oct 10, 9, 2, and Nov 6
 Experimental Design: RCB, 4 replications

Purpose of Study:

Soybean have the ability to compensate for reduced plant populations. Seed costs are increasing with new technologies. Therefore, growers in NW Minnesota would like to maximize their soybean yields with the minimum amount of seed planted/acre.

Results:

Individual Yield results from each of the eight location are presented in Figures 1 and 2, and Table 1. The combined overall yield results are indicated by the heavy black line in Figure 1. There were no significant differences in protein or oil content at any of the eight locations so the data is not included in this brief summary of results. Soybean yields significantly increased from the 75K (31.3 bu/ac) to 150K (36.7 bu/ac) populations. ($LSD_{0.20} = 2.52$ bu/ac). There were no significant differences between populations for 150K, 175K or 200K. The results from 2012 indicated the same trend observed in 2013. Based on the two years of data, 150K plants per acre would be the optimum population based on this statistical analysis.

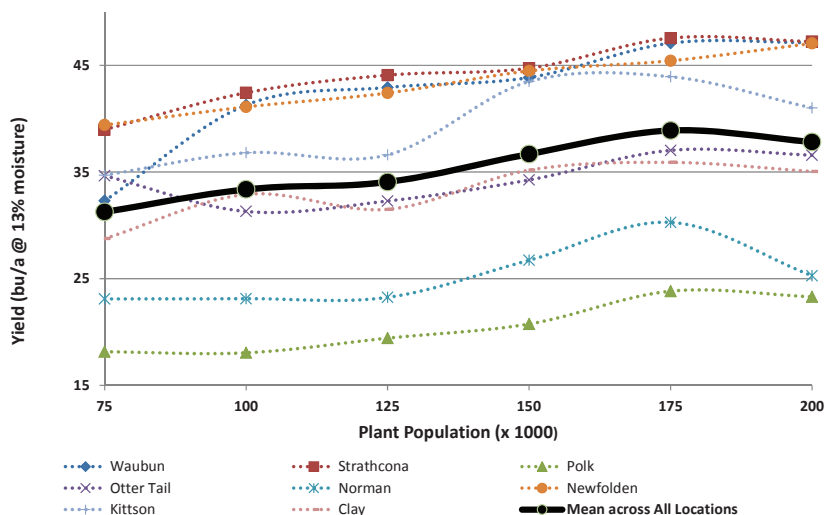


Figure 1. Mean soybean yield recorded for plant populations at eight (8) locations in north central and northwest Minnesota. The mean across all locations by plant population is represented by the heavy black line.

A special thanks goes out to Dr. Phillip Glogoza, U of M Regional Educator, for performing the combined statistical analysis on these trials the past two years.

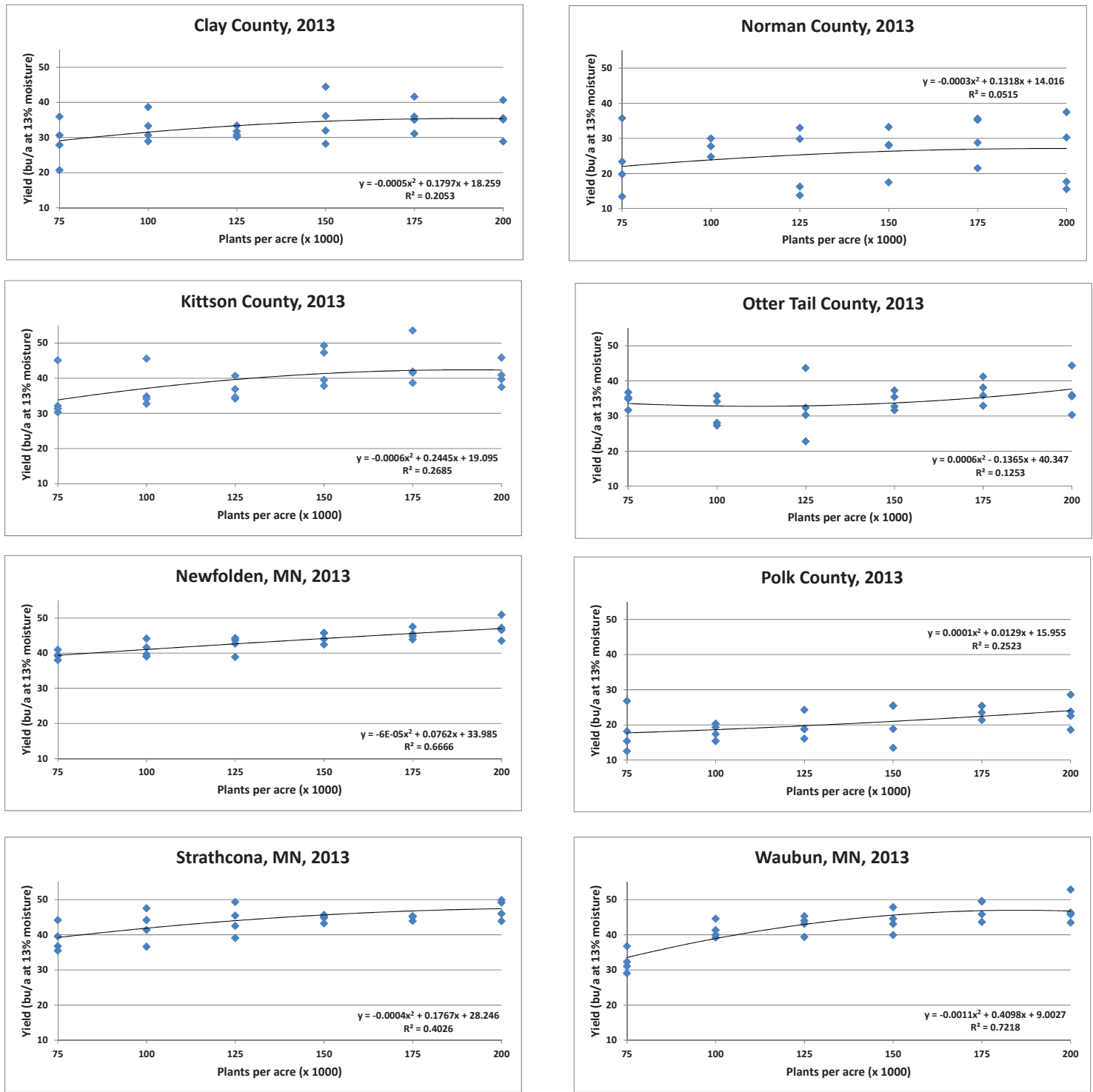
Table 1. Soybean yields obtained with different plant populations from eight (8) locations in west central and northwest Minnesota. 2013.

Plant Population (x 1000)	Plot Location								Overall Mean*
	Otter Tail	Clay	Norman	Waubun	Polk	Newfolden	Strathcona	Kittson	
	<i>bu/A at 13% moisture</i>								
75	34.7	28.8	23.1	32.3	18.2	39.4	39.0	34.7	31.3 C
100	31.3	32.9	23.1	41.3	18.1	41.1	42.4	36.8	33.4 BC
125	32.3	31.5	23.3	42.9	19.4	42.4	44.1	36.6	34.1 B
150	34.3	35.2	26.7	43.9	20.8	44.5	44.7	43.5	36.7 A
175	37.0	35.9	30.3	47.1	23.8	45.4	47.6	43.9	38.9 A
200	36.6	35.1	25.3	47.1	23.3	47.1	47.2	41.0	37.8 A
<i>LSD_{0.20} =</i>	<i>4.7</i>	<i>NS</i>	<i>NS</i>	<i>2.8</i>	<i>4.0</i>	<i>2.0</i>	<i>3.9</i>	<i>5.6</i>	

* Means followed by the same letter are not statistically different from one another at the $P = 0.05$ level of significance with an $LSD_{0.05} = 2.5$.

Soybean Plant Population (continued) — WC and NW MN

Figure 2. Soybean yields by plant population from eight (8) locations in west central and northwest Minnesota. The trendline is a second order polynomial depicting the non-linear relationship between population and yield observed at the study sites. The models and their R^2 value are provided for reference.



For Additional Information:
 Russ Severson rseverson@umn.edu

Project Funding Provided by:
 MN Soybean Research & Promotion Council