



Nebraska On-Farm Research Network

Soybean Population Research Protocol: Four Populations

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Objective: Identify the most profitable seeding rate and soybean plant population.

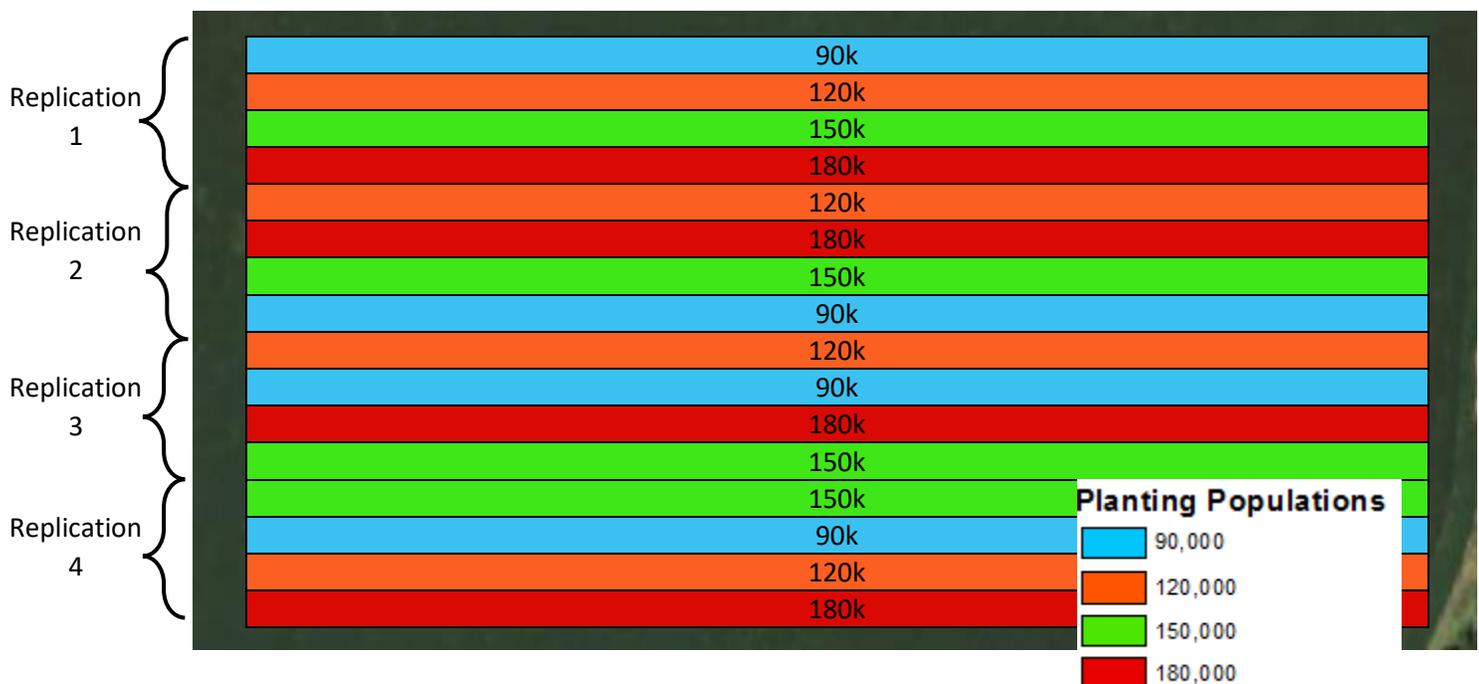
Rationale: Numerous research studies conducted by the Nebraska On-Farm Research Network since 2006 have demonstrated an opportunity to increase profitability by reducing soybean planting populations. The results suggest that seeding rates greater than 120,000 seeds per acre resulting in more than 100,000 plants per acre rarely increase yield. The majority of this research was conducted by growers using 30" row spacing in irrigated environments. Is the same true of soybeans planted in rainfed environments and using narrower row spacing? The goal of this study is to extend this research to rainfed and/or narrower row environments.

Procedure: To accurately determine the optimum planting rate it is suggested that four seeding rates be tested. These will be replicated in the field minimum of 4 times, for a total of 16 strips (see diagram below).

The following soybean seeding rates are being suggested as a starting point. If these are not acceptable, the participant may choose their own. It is strongly suggested the differences between each population be 30,000 seeds/acre. The highest treatment needs to be sufficient to plateau or maximize yield response in order to estimate optimum populations.

Seeding rates to compare			
Seeding Rate 1	Seeding Rate 2	Seeding Rate 3	Seeding Rate 4
90K	120K	150K	180K

Treatment Design: The following is the treatment design for a four population trial. A total of 4 replications are needed for this trial. The same variety and management practices should be used across the entire study area. **NOTE:** Rows planted in each strip need to be equal to or greater than soybean header width.



Data to Collect:

1. Harvest stand counts. In each treatment strip, 2 stand counts will be taken and averaged. Stand counts should be taken from an area of 1/1000 of an acre
2. In the same plants for harvest stand counts, determine the percent infected with dectes stem borer.
3. Indicate if there's more lodging and weed pressure in any treatments visually.
4. (Optional) Pods per plant. When doing stand counts, take the 5th plant of each stand count and count all pods per plant. This will result in 3 pod per plant counts per treatment strip. The three counts will be averaged to one determine one pod per plant number for each treatment strip.
5. Yield. Yield can be collected using a well-calibrated yield monitor or with a weigh wagon.
6. Any observations such as weed pressure, lodging, photos, etc.

Grower Requirements:

1. Flag or mark GPS location of each treatment.
2. Provide all necessary inputs for crop production.
3. Complete background agronomic form about site and practices.
4. Collect yield data and grain moisture with weight wagon or yield monitor. If using yield monitor, please designate a separate "load" for each treatment and set up separate "products" names for each treatment harvested. Yield monitor must be **well calibrated**. Contact UNL Extension if assistance with this process is needed.
5. Submit harvest data to Nebraska Extension within 30 days of harvest or by Dec. 15.
6. Allow Nebraska Extension to use submitted and collected data for research, educational, and informational purposes.

Nebraska On-Farm Research Network will:

1. Provide technical assistance in setting up replicated and randomized experimental design.
2. Provide assistance upon request with treatment implementation, flagging, stand counts, pod per plant counts, and recording yield.
3. Analyze raw data using statistical analysis and provide this information to the grower.

Disclaimer: The Nebraska On-Farm Research Network does not endorse the use of products tested in on-farm replicated strip trials. While treatments are replicated within trials and may be replicated across multiple sites under various conditions, your individual results may vary.

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