



## Nebraska On-Farm Research Network

# Soybean Population Research Protocol: Two 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 in silt loam or clay loam soils. Questions farmers may ask include: Is the same true of soybeans planted in non-irrigated environments and using narrower row spacing? Is the same true for soil types other than silt loam or clay loam soils? Is there another comparison I can make if I'm not ready to try 120K?

**Treatment Design:** The following is an example treatment design for a two population comparison. A total of 5 pairs need to be harvested for this trial (7 is preferred). The same variety and management practices (including row spacing) should be used across the entire study area. Because we desire to combine farmer data as much as possible, we recommend the following treatment options below. Option 1 is for those currently planting 150,000-160,000 seeds/ac. Option 2 is for those currently planting 180,000+ seeds/acre.

**Option 1: 150K vs. 120K**

Seeding Rate 1 = 150K  
Seeding Rate 2 = 120K

**Option 2: 180K vs. 150K**

Seeding Rate 1 = 180K  
Seeding Rate 2 = 150K

**NOTE:** Yield from the full header width needs to be obtained for each treatment strip shown below.

Replication 1	Seeding Rate 1	Yield from header width:
	Seeding Rate 2	Yield from header width:
Replication 2	Seeding Rate 2	Yield from header width:
	Seeding Rate 1	Yield from header width:
Replication 3	Seeding Rate 1	Yield from header width:
	Seeding Rate 2	Yield from header width:
Replication 4	Seeding Rate 2	Yield from header width:
	Seeding Rate 1	Yield from header width:
Replication 5	Seeding Rate 1	Yield from header width:
	Seeding Rate 2	Yield from header width:
Replication 6	Seeding Rate 2	Yield from header width:
	Seeding Rate 1	Yield from header width:
Replication 7	Seeding Rate 1	Yield from header width:
	Seeding Rate 2	Yield from 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 5<sup>th</sup> plant of each stand count and count all pods per plant. This will result in 2 pod per plant counts per treatment strip. The two counts will be averaged to 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. Collect stand counts at harvest.
6. Submit harvest data to UNL Extension within 30 days of harvest or by Dec. 15.
7. Allow UNL 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, stalk rot tests, 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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