Soybean Seeding Rate Trials

Evaluating different soybean seeding rates on-farm

Long-term Results (2012 – 2023)

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Trial Information:

- 120 trials from 2012 – 2023
- Seeding rates tested are the farmer's traditional practice vs. 30,000 seeds/ac higher and lower.
- All other crop management activities are the same (row spacing, weed control, fertility, etc.).
- Most common comparisons have been 130 vs. 160 vs. 190,000 seeds/ac and 150 vs. 180 vs. 210,000 seeds/ac.
- Equipment: 60% of trials have used an air seeder, 40% have used a planter.
- Row spacings: 51% on narrow rows (7-12"), 32% on intermediate rows (15-20") and 17% on wide rows (22-30").

Supporting Data:

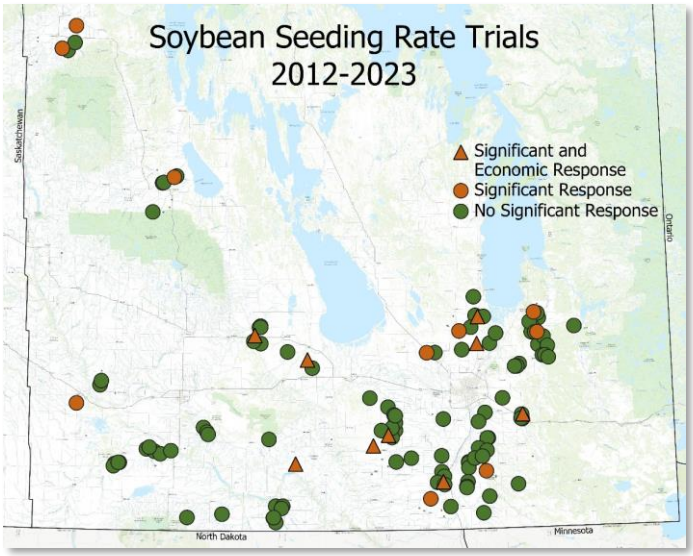
- Plant counts are recorded during V-stages and R-stages.
- Average early-season establishment has been 81% (range: 30-120%) and average late-season survivability has been 76% (range: 26-114%).
- Higher seeding rates were typically associated with lower percent establishment and more mortality throughout the growing season.
- Average survivability with planters has been 82% and 80% with seeders.

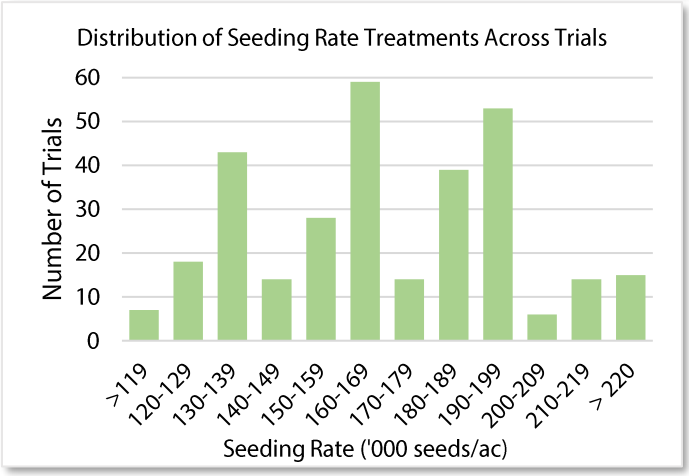
Yield Results:

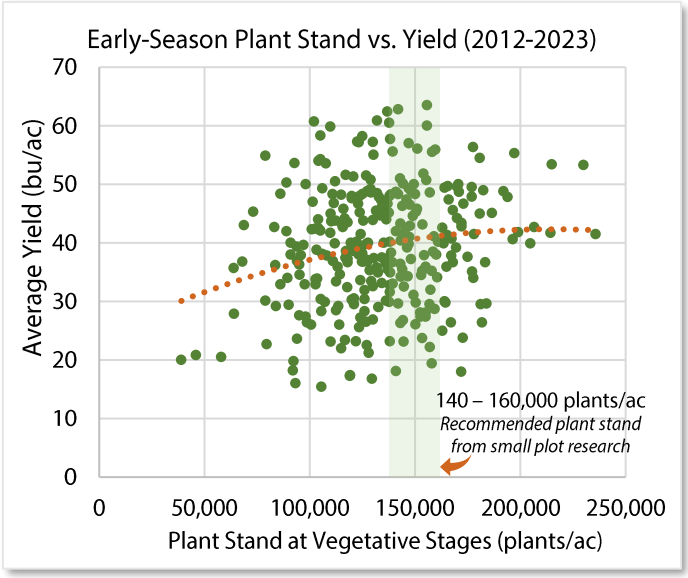
- 84% of the time, changing soybean seeding rate has not changed soybean yield.
- There have been 19 trials where a significant yield response occurred (16% of the time). Of those responses, 14 were economical, where the yield increase was large enough to pay for the increased seed cost (12% of the time).
- Environment has played the biggest role in determining soybean yield in these trials.
- The outcome of seeding rates and the resulting plant stands established in the field have been farm- and field-specific.

Recommendations from this Research:

- Evaluate living plant stands in every field, every year and relate those plant counts back to your seeding rate. Are there areas where you can improve survivability on your farm? (Survivability (%) = plant count / seeding rate)
- Seeding rates of 150 to 190,000 seeds/ac have maintained soybean yield in these trials.







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View on-farm soybean seeding rate individual trial site reports here

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2023 Results

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Trial Information:

- 13 soybean seeding rate trials in 2023
- Seeding rates tested ranged from 100,000 to 297,000 seeds/ac and differed by 18-60,000 seeds/ac.

Supporting Data:

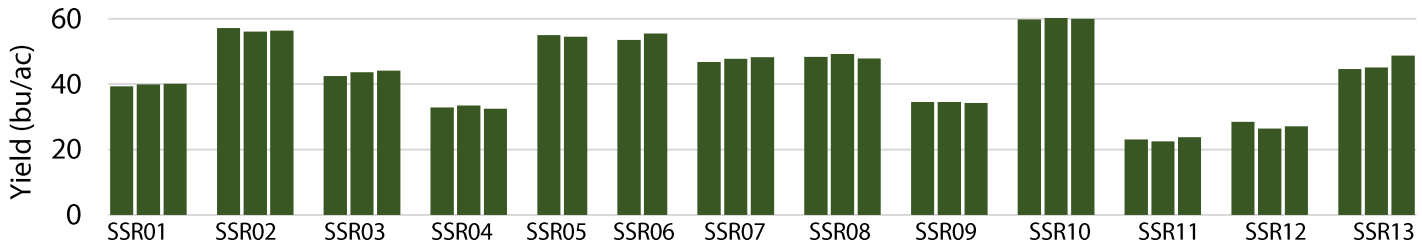
- Plant counts were recorded during V- and R-stages.
- Average early-season establishment was 81% (range: 53-104%) and average late-season survivability was 84% (range: 51-122%).

Yield and Economic Results:

- There were no yield differences among the various soybean seeding rates tested on-farm in 2023.
- Most frequently, seeding rates tested differed by 30,000 and 60,000 seeds/ac, resulting in a loss in profit of $14.55/ac and $29.10, respectively, when compared to the lowest seeding rate tested.

Trial ID	Equipment	Seeding Date	Row Spacing
SSR01	42 ft Disc Drill	May 11	15
SSR02	40 ft Planter	May 16	20
SSR03	60 ft Planter	May 15	15
SSR04	40 ft Planter	May 16	22
SSR05/06	35 ft Press Drill	May 20	7.5
SSR07	42 ft Disc Drill	May 20	7.5
SSR08	44 ft Planter	May 20	22
SSR09	40 ft Planter	May 21	20
SSR10	44 ft Planter	May 22	22
SSR11	60 ft Air Drill	May 22	12
SSR12	60 ft Hoe Drill	June 4	10
SSR13	70 ft SeedHawk	May 16	10

Trial ID	Germ. (%)	Seeding Rates Tested	Plant Stands at V Stages	Plant Stands at R Stages	Yield Difference?	*p-value*
SSR01	96	120 vs. 150 vs. 180	94 vs. 112 vs. 122	108 vs. 129 vs. 145	No	*0.522*
SSR02	98	124 vs. 156 vs. 184	123 vs. 151 vs. 178	121 vs. 148 vs. 175	No	*0.368*
SSR03	96	100 vs. 130 vs. 160	104 vs. 110 vs. 117	122 vs.131 vs. 151	No	*0.315*
SSR04	96	120 vs. 148 vs. 175	98 vs. 129 vs. 145	101 vs. 125 vs. 140	No	*0.622*
SSR05	87	165 vs. 220	130 vs. 181	125 vs. 171	No	*0.143*
SSR06	98	165 vs. 220	108 vs. 158	104 vs. 160	No	*0.058*
SSR07	87	133 vs. 163 vs. 193	112 vs. 133 vs. 139	112 vs. 135 vs. 135	No	*0.203*
SSR08	96	120 vs. 150 vs. 180	86 vs. 106 vs. 123	104 vs. 131 vs. 149	No	*0.369*
SSR09	89	127 vs. 145 vs. 170	95 vs. 114 vs. 147	93 vs. 114 vs. 145	No	*0.815*
SSR10	96	120 vs. 150 vs. 180	110 vs. 138 vs. 156	114 vs. 142 vs. 157	No	*0.668*
SSR11	93	133 vs. 163 vs. 193	145 vs.127 vs. 173	113 vs. 125 vs. 164	No	*0.392*
SSR12	94	223 vs. 260 vs. 297	139 vs. 156 vs. 159	124 vs. 148 vs. 153	No	*0.517*
SSR13	80	130 vs. 160 vs. 190	134 vs. 138 vs. 171	132 vs. 137 vs. 170	No	*0.098*



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In today's era of high input costs, low margins and the ever-increasing need to improve sustainability of the farm operation, validating agronomic management decisions made on-farm are ever-more important. Agronomic recommendations are usually generated by small-plot research, which can efficiently and effectively compare numerous treatments in the same location, at the same time. But what happens when those treatments are used at a field scale? Do they behave the same? Are they just as effective? Are they economical? On-farm trials can help answer these questions.

On-farm research is done by the farmer, for the farmer. Well-conducted on-farm trials investigate questions and outcomes on a case-by-case basis while evaluating the overall effects of management decisions through combining data across trial locations and years.

Facilitating trials to generate meaningful results is a balance between our efforts and farmer efforts. For farmers, there is time involved in conducting the trials on-farm, particularly at seeding and harvest, two of the busiest times of the growing season. But this investment of time generates valuable information on the agronomics and economics of different management practices and products. Results from on-farm trials can be used to shift management practices or validate current practices on individual farms, but they can also be pooled together across space and time to gain an overall, big-picture understanding of the impact of a treatment or decision.

This would not be possible without you, our farmer collaborators. Thank you for your dedication to these trials!

Thank-you to our On-Farm Network collaborators:

- Farmer-members
- Tone Ag Consulting
- New Era Ag Research
- Green Aero Tech
- Assiniboine Community College
- BASF
- UPL

Explore MPSG's On-Farm Network Trial Database

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Interested in Participating in 2024?

Trial Topics:

- Seeding rates
- Row spacings
- Inoculant strategies
- Seed treatments
- Fungicides
- N rates in dry beans
- Biological products
- Tillage and residue management

Have a different trial idea? Let us know!

Contact Chris Forsythe, On-Farm Network Agronomist
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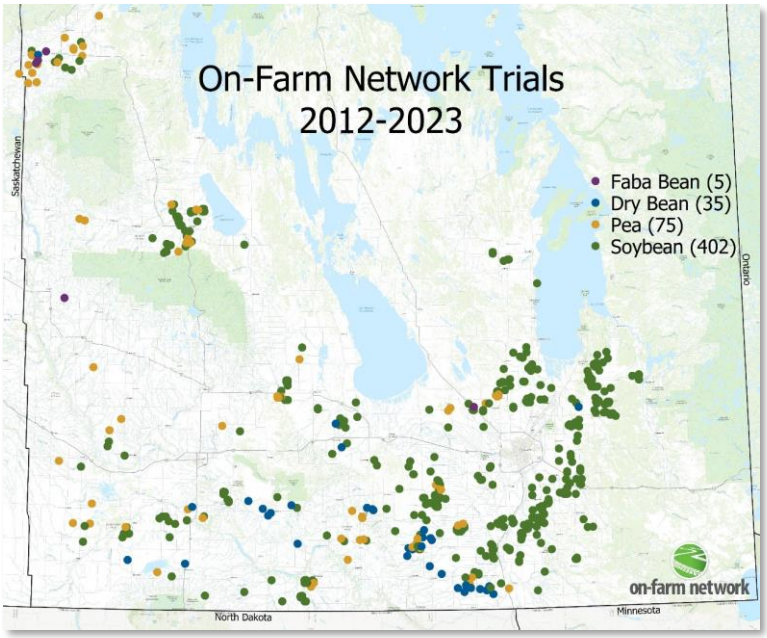

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