Soybean Row Spacing Trials

Evaluating different soybean row widths on-farm

Long-term Results (2019 – 2023)

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Trial Information:

- 21 trials from 2019 – 2023.
- Seeding rates are the same for both row widths.
- 10 trials have tested narrow (7.5"-10") vs. intermediate (15"-20") rows and 11 trials have tested intermediate (15") vs. wide (30") rows.
- Different row widths are achieved by doubling up on a strip, offset in between the previously seeded rows.

Supporting Data:

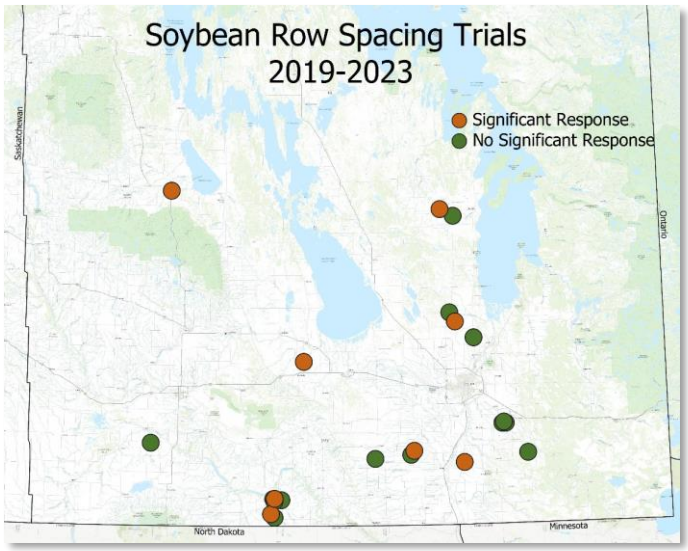
- Plant counts are recorded during V-stages and R-stages
- Average early-season survivability has been 83% for 7.5" rows, 81% for 15" rows and 77% for 30" rows.
- Wide row widths were typically associated with lower percent survivability and more mortality throughout the growing season (4% on average) due to increased competition within the row.
- Canopy closure is assessed at R1, R3 and R5 growth stages using the Canopeo app to assess % ground cover.
- Narrower row widths cover more ground and close earlier in the season than wide rows, improving crop competitive ability against weeds.

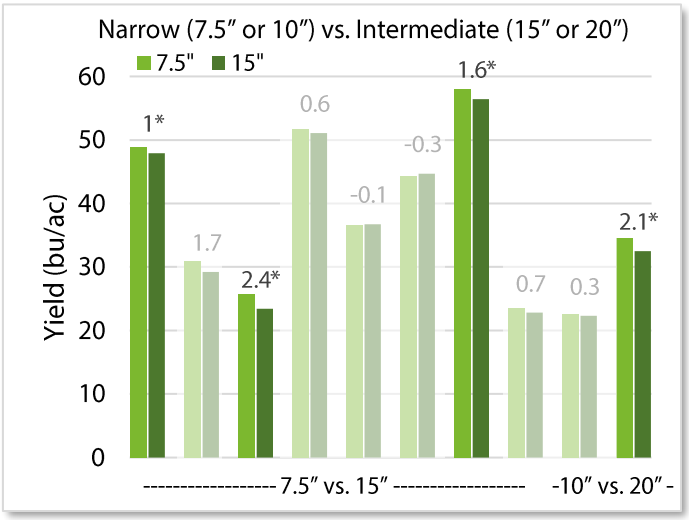
Yield Results:

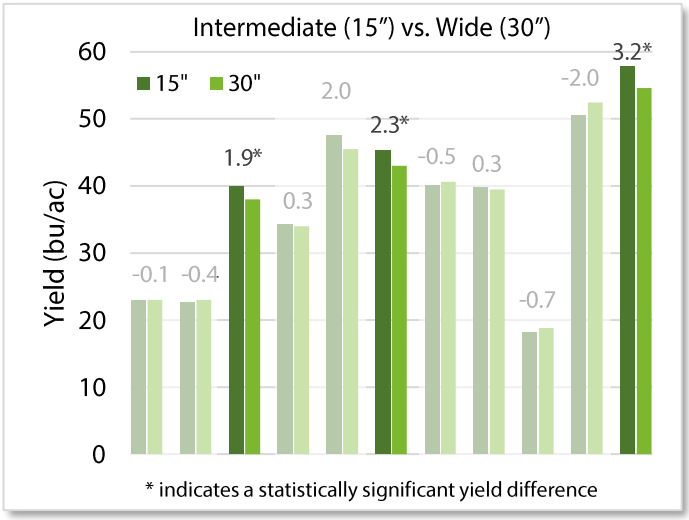
- Narrow rows (7.5-10") improved yield over intermediate rows (15-20") 40% of the time, increasing yield by 1.8 bu/ac on average.
- Intermediate rows (15") improved yield over wide rows (30") 27% of the time, increasing yield by 2.5 bu/ac on average.
- Overall, narrowing row widths increased soybean yield 33% of the time, on average improving yield by 2.1 bu/ac.
- The economics of changing row widths are difficult to quantify since how differences in row width are achieved is very farm and equipment specific.

Recommendations from this Research:

- Soybeans may be grown successfully at any row spacing, however, there is greater yield potential with narrower row widths.
- Though yield responses may not occur every year on every farm, the competitive advantage of a crop canopy that closes earlier in the season is important to mitigating the development of herbicide-resistant weeds.







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View on-farm soybean row spacing individual trial site reports here

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2023 Results

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Trial Information:

- 2 trials in 2023:
  - SRS01 near Crystal City compared 7.5" and 15" rows seeded at 166,000 seeds/ac using a 30ft disc drill.
  - SRS02 near MacGregor compared 15" and 30" rows seeded at 140,000 seeds/ac using a 60 ft planter.

Supporting Data:

- Plant counts were recorded during V- and the same areas revisited at R-stages. Notably, in 30" rows, plant stands were reduced by 9% over the course of the growing season, likely due to intra-specific competition with more plants crowded together in the wide rows.
- Canopy closure was evaluated at R1, R3 and R5 growth stages using the *Canopeo* app to assess % ground cover. There were no differences in canopy closure between 7.5" and 15" spacings, but 15" rows had 25% more row closure at R1, and 17% more closure at R3 than 30" rows.
- In 2023, disease pressure was additionally evaluated. There were no differences at SRS01, but at SRS02, the percent of plants infected with northern stem canker was 25% greater in 30" rows than 15" (30% vs. 5% incidence, respectively).
- A nitrogen deficiency was observed at SRS02, where the 15" rows were briefly more deficient in N than the 30" rows, despite similar amounts of nodulation between treatments. Nodulation was sufficient and crop coloured evened out as the season progressed.

Yield Results:

- There was no difference in yield between 7.5" and 15" row spacings at SRS01. At SRS02, there was a 3.2 bu/ac yield advantage for soybeans planted on 15" rows vs. 30" rows.
- Economics of these trials are difficult to quantify since it is very farm- and equipment-specific in how differences in row width are achieved.

2023SRS01

	V-Stages		R- Stages		Canopy Closure (%)				
Row Spacing	Early-Season Plant Stand	% of seeding rate established	Late-Season Plant Stand	% of seeding rate survived	R1	R3	R5	Weed Density	Yield (bu/ac)
7.5"	156,000	94%	168,000	101%	75	71	87	6.9	23.5
15"	135,000	81%	135,000	81%	77	74	85	5.8	22.8
p-value	*0.240*		*0.075*		*0.251*	*0.244*	*0.106*	*0.657*	*0.492*

2023SRS02

	V-Stages		R-Stages		Canopy Closure (%)			
Row Spacing	Early-Season Plant Stand	% of seeding rate established	Late-Season Plant Stand	% of seeding rate survived	R1	R3	R5	Yield (bu/ac)
15"	137,000	98%	136,000 A	97%	95 a	99 a	93	**57.8 A**
30"	136,000	97%	123,000 B	88%	70 b	82 b	91	**54.6 B**
p-value	*0.728*		*0.015*		*0.0002*	*0.034*	*0.278*	***0.012***

Values within columns followed by different letters are significantly different at $p < 0.05$.

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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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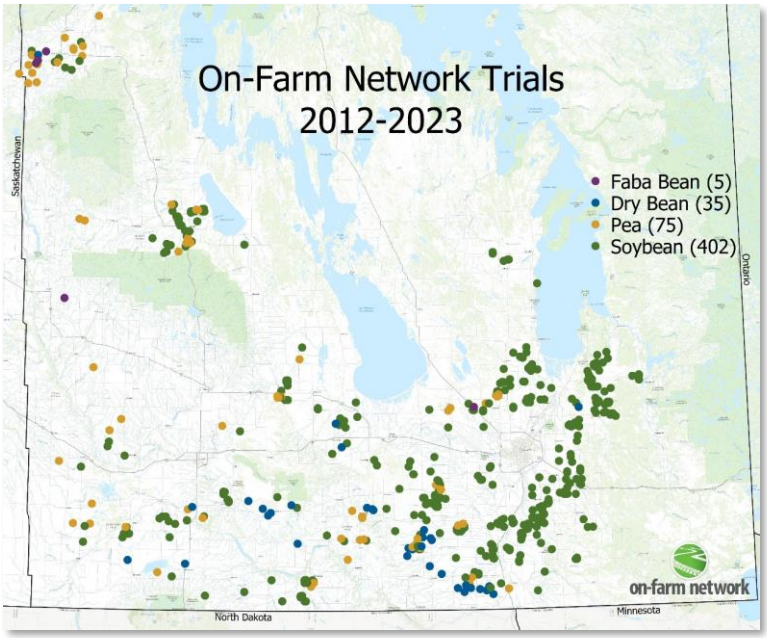

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