



Pulse Replicated On-Farm Independent Trials

Fenugreek Seeding Rate Trial

Fenugreek is an uncommon and underutilized crop in Saskatchewan and evaluating seeding rates will provide region-specific data on its growth and yield potential, helping to identify optimal planting densities that improve productivity and resource use, while also serving as an educational resource for local producers interested in diversifying their cropping systems with this high-value legume.

Objective

To evaluate the effects of variable seeding rates on the growth, yield, and overall productivity of fenugreek to determine the optimal planting density for maximum efficiency.

Treatments

1. Low Rate (Target 12 plants/ft ²)
2. Standard Fixed Rate (Target 18 plants/ft ²)
3. High Rate (Target 24 plants/ft ²)

Treatments were replicated four times, for a total of twelve plots. Apart from seeding rates, all plots were managed the same agronomically including seeding date, seeding depth, fertility and pesticide application. Treatments were randomly arranged within blocks in the field.

Data Collection

- Fall or spring soil test
- Seed tests
- Field history and management practices
- Plant density
- General in-season observations
- Weather data
- Weighed yield

The following footnotes will be referred to for the individual site report for this protocol

¹SED is a measure of how much variability (same units as mean) you would expect in the difference between sample means if you repeated the experiment several times. The LSD is approximately two times the SED.

²A linear regression was used to assess the effects of varieties on the response variables. The data was also analyzed using the Mixed Model procedure in JMP, with replicate considered random and seeding rate considered a fixed effect. Treatment means were separated using the LSD test. All treatment effects and differences between means were considered significant at $p \leq 0.05$. However, p-values of 0.05–0.1 may also be acknowledged.

$P < 0.05$: There is a 95% probability (19 out of 20 times) that the observed difference is due to the treatment rather than random variation.

$P < 0.1$: There is a 90% probability (9 out of 10 times) that the difference is due to the treatment effect.

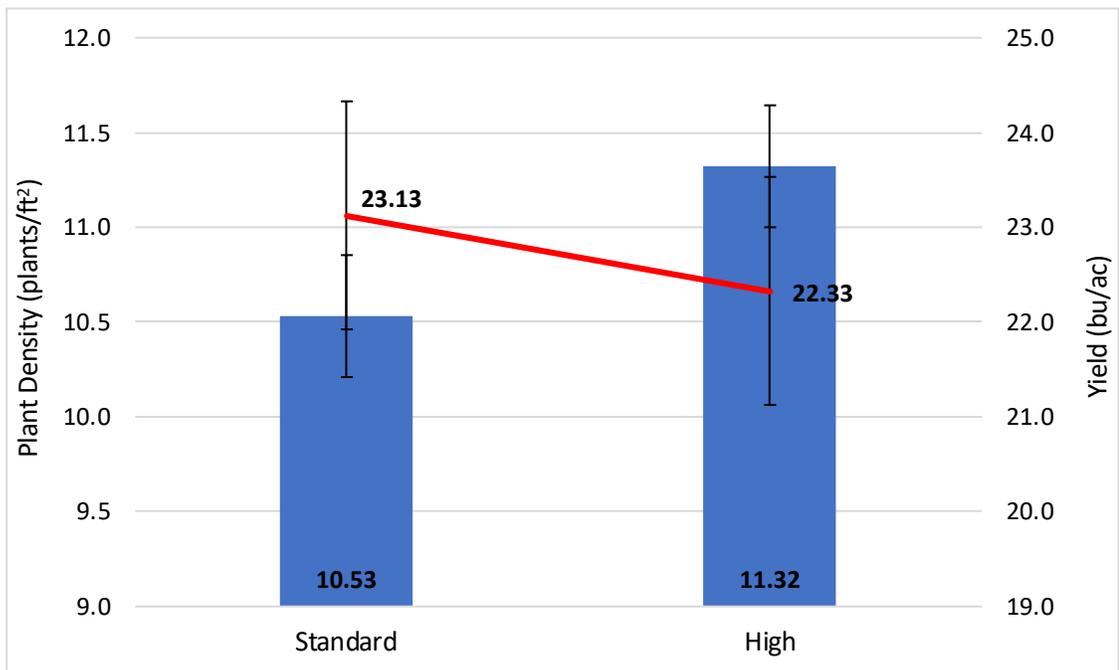
$P > 0.1$: There is a higher likelihood that the observed difference is due to random variability rather than the treatment.

2025 Combined Results

In 2025, one producer in Dodsland conducted two seeding rate trials. He used the same farming practices for both trials. Across treatments, increasing seeding density from 20 to 27 seeds/ft² did not significantly change final grain yield, which remained similar between the standard (23.13 bu/ac) and high-rate (22.33 bu/ac) treatments. Plant density was significantly higher under the high-seeding-rate treatment ($p = 0.049$), indicating that more plants were established initially. However, seedling survival dropped notably at the higher rate (41.64% vs. 51.64%; $p = 0.001$), suggesting that crowding or stress reduced the proportion of seeds that produced viable plants. Overall, higher seeding rates increased plant numbers but lowered survival and did not result in a yield advantage.

Trt #	Description	Target Plant Population (plants/ft ²)	Actual Seeding Rate (lb/ac)
1	Standard	20	27
2	High	27	36

	Seeding Density (seeds/ft ²)	Plant Density (plants/ft ²)	Seedlings Survival (%)	Yield (bu/ac)
Standard	20 a	10.5 b	51.64 a	23.13 a
High	27 a	11.3 a	41.64 b	22.33 a
SED ¹		0.322	1.68	1.21
p-value ²		0.049	0.001	0.533





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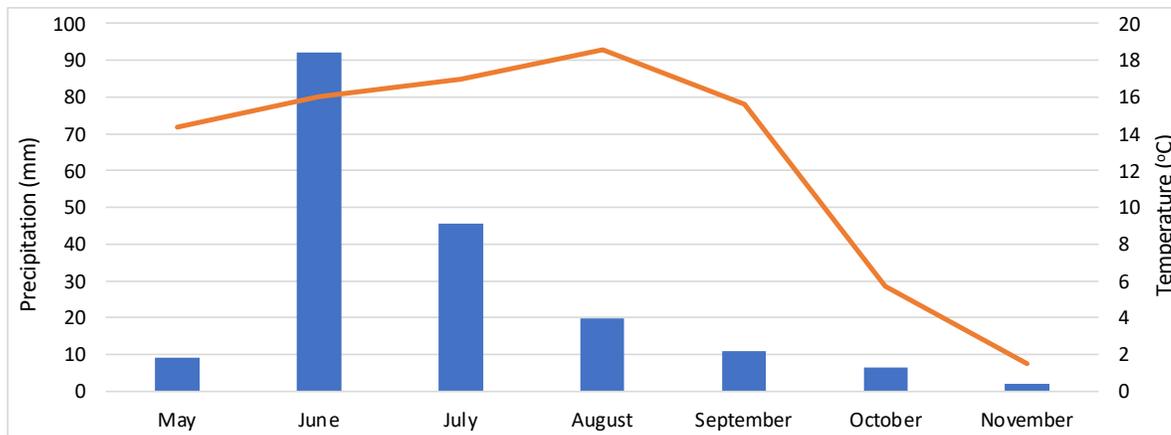
Fenugreek Seeding Rate (Dodsland 1)

Trt #	Description	Target Plant Population (plants/ft ²)	Actual Seeding Rate (lb/ac)
1	Standard	20	27
2	High	27	36

General Trial Information

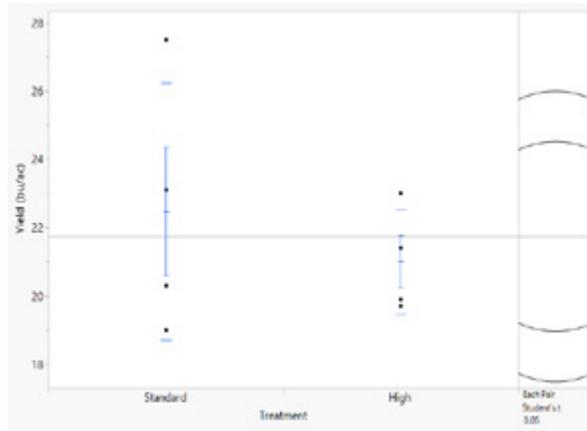
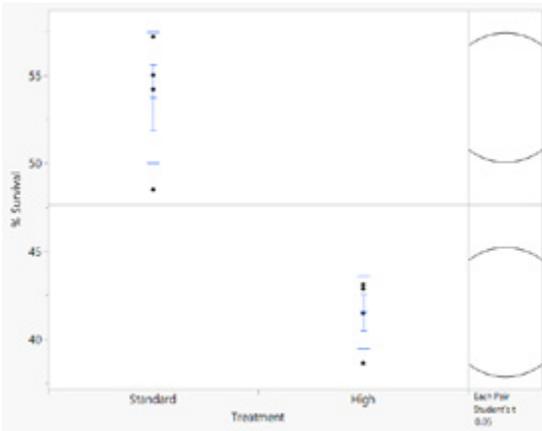
Variety	CDC Canafen
Thousand Kernel Weight (TKW)	12.12 g
Germ	88%
Seed Treatment	Vibrance [®] Maxx (metalaxyl, fludioxonil + sedaxane)
Inoculant	Nitragin [®] Gold Clover
Previous Crop	Wheat
Residual Nitrate-N	
- 0-6"	11.8
- 6-18"	3.6
Seeding Date	May 3, 2025
Seeding Equipment	JD P680
Seeding Depth	1"
Seeding Speed	4.3 mph
Row Spacing	12"
Total Applied Fertilizer (lb/ac P-K-S)	26 – 24 – 0 – 0
Crop Protection	May 2: Voraxor [®] (saflufenacil + trifludimoxazin) + glyphosate June 11: Daval [®] Q Plus (imazamox + quizalofop) September 8: Reglone [®] (diquat)

Precipitation and Temperature from local weather station (May 13 – November 14)



Results

	Plant Density (plants/ft ²)	Seedlings Survival (%)	Yield (bu/ac)
Standard	11 a	53.75 a	22.5 a
High	11 a	41.54 b	21.00 a
SED ¹	0.138	0.922	1.97
p-value ²	0.095	0.0009	0.508



Economics

Treatment Description	Seeding Rate (lb/ac)	Seed Cost (\$/ac) ^y	Yield (bu/ac)	Target Price (\$/bu) ^z	Revenue (\$/ac)	Net (\$/ac)	Profit/Loss (\$/ac)
Standard	27	13.50	22.5	18.00	405.00	391.50	0.00
High	36	18.00	21.0	18.00	378.00	360.00	-31.50

^y2025 Fenugreek, 2025 Crop Planning Guide, Government of Saskatchewan (seed rate 30lb/ac; seed \$15.00/ac)

^z2025 Fenugreek, 2025 Crop Planning Guide, Government of Saskatchewan (target price \$0.30/lb)

Summary

The higher seeding density increased the number of seeds planted but did not improve final plant density or yield. Seedling survival dropped significantly at the high seeding rate, suggesting increased early competition. Overall, the standard seeding rate performed better by maintaining higher survival with no yield disadvantage.



✳ To review footnote references please refer to overall trial summary on page 166.



This trial was conducted with
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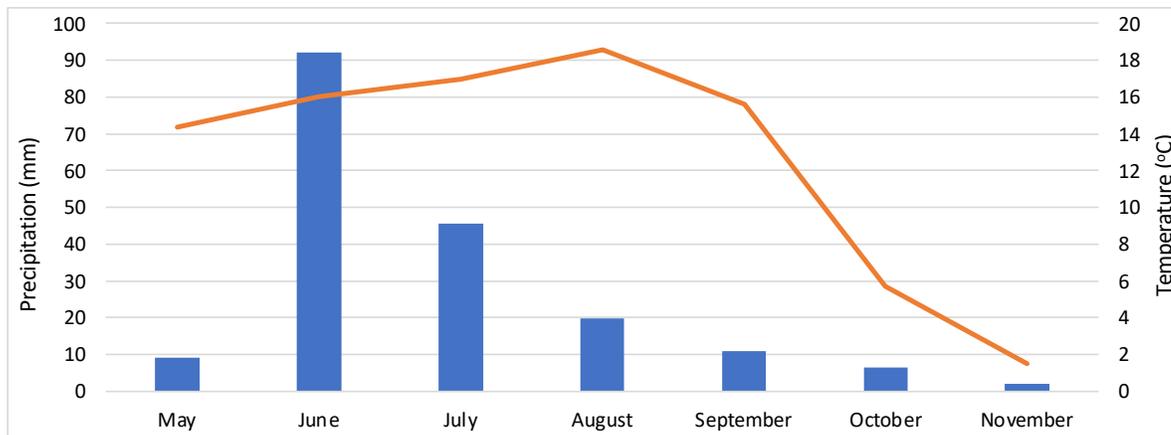
Fenugreek Seeding Rate (Dodsland 2)

Trt #	Description	Target Plant Population (plants/ft ²)	Actual Seeding Rate (lb/ac)
1	Standard	20	27
2	High	27	36

General Trial Information

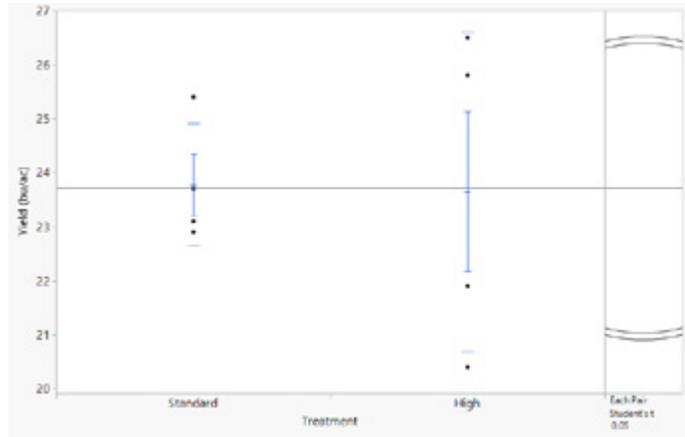
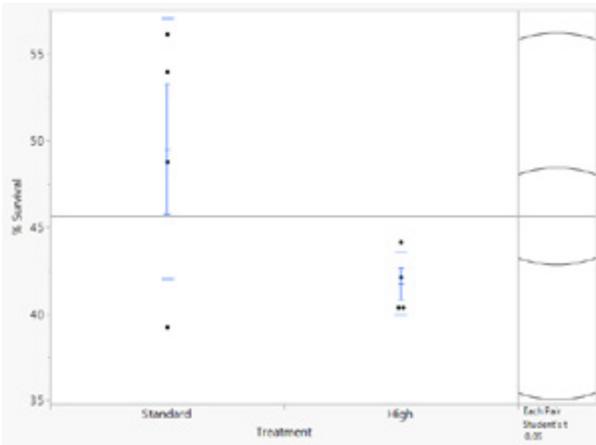
Variety	CDC Canafen
Thousand Kernel Weight (TKW)	12.12 g
Germ	88%
Seed Treatment	Vibrance [®] Maxx (metalaxyl, fludioxonil + sedaxane)
Inoculant	Nitragin [®] Gold Clover
Previous Crop	Wheat
Residual Nitrate-N	
- 0-6"	11.8
- 6-24"	3.6
Seeding Date	May 2, 2025
Seeding Equipment	JD P680
Seeding Depth	1"
Seeding Speed	4.3 mph
Row Spacing	12"
Total Applied Fertilizer (lb/ac P-K-S)	26 – 24 – 0 – 0
Crop Protection	May 2: Voraxor [®] (saflufenacil + trifludimoxazin) + glyphosate June 11: Daval [®] Q Plus (imazamox + quizalofop) September 8: Reglone [®] (diquat)

Precipitation and Temperature from local weather station (May 13 – November 14)



Results

	Plant Density (plants/ft ²)	Seedlings Survival (%)	Yield (bu/ac)
Standard	10 a	49.53 a	23.8 a
High	11 a	41.74 a	23.7 a
SED ¹	0.629	3.23	1.40
p-value ²	0.141	0.095	0.935



Economics

Treatment Description	Seeding Rate (lb/ac)	Seed Cost (\$/ac) ^y	Yield (bu/ac)	Target Price (\$/bu) ^z	Revenue (\$/ac)	Net (\$/ac)	Profit/Loss (\$/ac)
Standard	27	13.50	23.8	18.00	428.40	414.90	0.00
High	36	18.00	23.7	18.00	426.60	408.60	-6.30

^y2025 Fenugreek, 2025 Crop Planning Guide, Government of Saskatchewan (seed rate 30lb/ac; seed \$15.00/ac)

^z2025 Fenugreek, 2025 Crop Planning Guide, Government of Saskatchewan (target price \$0.30/lb)

Summary

Across the two seeding density treatments, plant establishment and yield were relatively similar, with no statistically significant differences observed. Standard seeding (20 seeds/ft²) yielded slightly higher seedling survival (49.53%) than the high-density treatment (41.74%), though the difference was not significant ($p = 0.095$). Final plant densities were comparable between treatments (10 vs. 11 plants/ft²; $p = 0.141$), and grain yield remained essentially unchanged (23.78 vs. 23.65 bu/ac; $p = 0.935$). Overall, increasing the seeding rate from 20 to 27 seeds/ft² did not meaningfully affect plant density, seedling survival, or yield.

✳ To review footnote references please refer to overall trial summary on page 166.



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