

Although much of Saskatchewan has been drier than average the past several years, many pea and lentil growers continue to struggle with root disease and are interested in alternative pulse crop options such as faba bean. This project was initiated to benefit farmers by demonstrating the basic agronomic practices and technologies to achieve higher faba bean yields, reduce disease, and improve our understanding of its broader adaptation across a range of Saskatchewan environments.

Field trials with faba bean were conducted at Indian Head, Yorkton, Melfort, and Prince Albert from 2021-2023 for a total of 16 site-years. The treatments were a factorial combination of two seeding dates (early vs. delayed), two seeding rates (45 vs. 65 seeds/m²), and two fungicide treatments (untreated vs. treated). Early seeding was targeted for April 25-May 7 while delayed seeding was targeted for May 20-30. The fungicide was either Priaxor® or Dyax® applied approximately 7-10 days after the initiation of flowering.

Our results were largely in agreement with the current recommendations. Faba beans should be seeded as early as possible and target seeding rates of approximately 45 seeds/m² are likely to be sufficient in most cases if seedling mortality is not excessive. Faba beans can be seeded relatively deep and require substantial moisture to germinate so should not be seeded too shallow. However, seeding too deep into wet heavy clay soil can have the unwanted effects of delaying emergence and increasing mortality. Seeding in the third week of May can still produce a viable crop; however, yield losses are possible and will become severe as seeding is delayed into late May or June.

The overall, 16 site average seeding date effect on seed yield was with early seeded faba beans yielding 17%

higher than to delayed seeding, or 3060 kg/ha versus 2621 kg/ha (Table 1). The seeding rate effect on yield was smaller with a mean yield of 2793 kg/ha at 45 seeds/m² and 2887 kg/ha at 65 seeds/m². The overall fungicide effect, although significant, was also smaller with only a 75 kg/ha gain when averaged across all 16 site-years.

Table 1. Overall main effect means of seeding date, seeding rate, and fungicide treatment for selected faba bean response variables. The values presented are overall 16 site averages and, importantly, the individual site results often varied. Main effect means within a column followed by the same letter do not significantly differ.

Main Effect	Plant Density	Initial Disease	Final Disease	Days to Maturity ^z	Seed Yield	Seed Weight
<u>Seeding Date</u>	- plants/m ² -	---- 0-9 ----	---- 0-9 ----	---- days ----	--- kg/ha ---	g/1000 seeds
Early	50.8 B	0.60 A	0.52 A	101.3 A	3060 A	394.5 A
Delayed	53.4 A	0.29 B	0.60 A	97.4 B	2621 B	388.2 B
Pr > F (p-value)	<0.001	<0.001	0.238	<0.001	<0.001	0.009
<u>Seeding Rate</u>						
45 seeds/m ²	44.7 B	0.44 A	0.54 A	99.4 A	2793 B	394.6 A
65 seeds/m ²	59.5 A	0.45 A	0.58 A	99.2 B	2887 A	388.1 B
Pr > F (p-value)	<0.001	0.865	0.234	0.015	<0.001	<0.001
<u>Fungicide</u>						
Control	—	—	0.61 A	99.5 A	2803 B	390.6 A
Treated	—	—	0.51 B	99.2 B	2878 A	392.1 A
Pr > F (p-value)	—	—	0.009	0.003	0.002	0.293

^z Days to maturity was not reported at Yorkton-2022

Regarding disease management, our results did not support the widespread, preventative application of foliar fungicides. In most cases, the yield increase with the fungicide was likely too small to cover the combined costs of the product and its application. Any impacts of fungicide applications on disease symptoms were also low. This is not, by any means, to say that fungicides will never be required or advantageous. The project was conducted during a period of relatively low disease pressure, and it was unclear whether the product we used at most sites had much activity on the dominant disease, Chocolate spot (*Botrytis*). In this regard, we recommend basing decisions regarding whether or when to apply a fungicide in faba beans on the actual disease pressure encountered and choosing products that are specifically registered for *Botrytis* to maximize the likelihood of the applications being warranted and profitable.

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