AGRONOMY

Evaluation of Seeding Rate and Fungicide Use in Field Peas

Single and sometimes multiple foliar fungicide applications are needed to maximize pea yields at the recommended target plant density.

WITH RENEWED INTEREST in growing field peas in our province, farmers need refined, local agronomic recommendations. A multi-input trial conducted in Saskatchewan found that a higher seeding rate (120 seeds/m^2), granular inoculant and two foliar fungicide applications increased yields and economic return compared to a low seeding rate (60 seeds/m^2), liquid inoculant and no fungicide. This study, however, did not assess intermediary seeding rates or a single fungicide application. To further investigate the interaction between these inputs, a range of seeding rates (60, 80, 100, 120 and 140 seeds/m^2), in combination with no fungicide, one (Headline EC at 10% flower) or two applications of fungicide (Headline EC at 10% flower + Priaxor 12–13 days later) were evaluated.

Though the target plant density for peas is well established (75–85 plants/m^2), there is evidence that higher plant populations are required to maximize yields when weed or root rot pressure is high. Foliar fungicide is usually applied to control Manitoba's most prevalent foliar disease, Mycospharella blight; however, it is unclear if multiple applications are required for effective disease control. A thicker crop canopy caused by higher plant stands may increase disease pressure, so it is appropriate to investigate the effect of these inputs on pea yield.

Small plot trials were conducted at Minto (2015 and 2016) and Hamiota (2016). The variety CDC Meadow was direct-seeded into wheat stubble on 8–9 inch rows from May 9–12. Fungicide seed treatment and liquid inoculant were applied on-seed and granular inoculant was applied in-furrow.

As expected, both seeding rate and foliar fungicide had a significant effect on pea yield in each site-year. Yields ranged from exceptionally high (95 bu/ac) to low (17 bu/ac). Yields were maximized at plant densities of 74, 78 and 96 plants/m^2 at Minto (2016), Hamiota and Minto (2015), respectively (Figure 1). In addition, seeding above the recommended density may result in higher yields but the additional seed cost may not pay every year (e.g. Minto 2016).

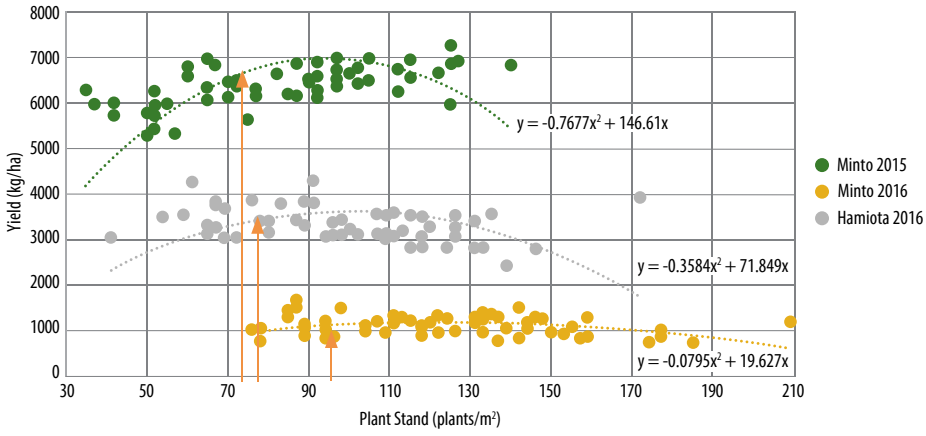
Although there was a response to foliar fungicide in each site-year, the results were not consistent (Table 1). In 2015, one and two fungicide applications yielded 4.2 and 5.6 bu/ac more than the no-fungicide treatment. At Minto in 2016, both single and double application increased yields by 1.5 and 5.2 bu/ac compared to the control. At Hamiota (2016), only the double applications increased yield (7.0 bu/ac) compared to the control. Yield increases due to fungicide were reflected by a reduction in Mycosphaerella blight disease ratings taken 7–20 days after the second fungicide application (data not shown). Manitoba Pulse & Soybean Growers On-Farm Network trials initiated in 2017 will continue to validate single and double foliar fungicide applications in field peas.

Table 1. Field pea yield at Minto (2015 and 2016) and Hamiota (2016) for no fungicide, one application and two applications of fungicide.

Foliar Fungicide Treatment	Minto		Hamiota
	2015	2016	2016
	bu/ac		
No Fungicide	91.4 b	14.7 c	46.8 b
One Application	95.6 a	16.2 b	48.9 b
Two Applications	97.1 a	19.9 a	53.8 a
Average Yield	**95.3**	**17.1**	**50.2**

Different letters within site-years indicate statistically significant differences among treatments.

Figure 1. Field pea plant stand and yield at Minto (2015 and 2016) and Hamiota (2016). Arrows indicate plant density that achieved 95% of maximum yield at each site-year.



PRINCIPAL INVESTIGATOR Manitoba Pulse & Soybean Growers

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