

# Factsheet: Agronomic and Economic Response of Lentil to Seed Rate and Fungicides



## Objective:

The purpose of this project was to show the effects of lentil seeding rates and the plant densities competition with weed, disease, yield, grain quality, and agronomic response to foliar fungicide applications. We also wanted to demonstrate the most profitable combinations of seeding rates and foliar fungicide applications.

## Mythology:

This trial was conducted at Swift Current, Scott, and Indian Head in 2021. The different treatments for this trial included three different seeding rates at 130, 190, and 250 seeds/m<sup>2</sup>, and three different fungicide management treatments. Those treatments were no fungicide applied, single application at early flower, and an application at early flower and 14 days later. The different fungicide products and rates were 395 ml/ha Dyax (250 g/l fluxapyroxad and 250 g/l pyraclostrobin) for the first application and 420 g/ha Lance WDG (70% boscalid) for the second application.

**Table 1. Proposed lentil seeding rate and fungicide treatments.**

#	Seeding Rate	T1 Fungicide (early bloom)	T2 Fungicide (≈14 days after T1)
1	130 seeds/m <sup>2</sup>	None applied	None applied
2	130 seeds/m <sup>2</sup>	395 ml Dyax/ha	None applied
3	130 seeds/m <sup>2</sup>	395 ml Dyax/ha	420 g Lance WDG/ha
4	190 seeds/m <sup>2</sup>	None applied	None applied
5	190 seeds/m <sup>2</sup>	395 ml Dyax/ha	None applied
6	190 seeds/m <sup>2</sup>	395 ml Dyax/ha	420 g Lance WDG/ha
7	250 seeds/m <sup>2</sup>	None applied	None applied
8	250 seeds/m <sup>2</sup>	395 ml Dyax/ha	None applied
9	250 seeds/m <sup>2</sup>	395 ml Dyax/ha	420 g Lance WDG/ha
T1 - 100 g fluxapyroxad/ha + 100 g pyraclostrobin/ha applied 3-7 days after 1 <sup>st</sup> flowers have appeared			
T2 - 294 g boscalid/ha applied approximately 14 days after the first fungicide application			

## Key Findings:

- This growing season experienced well above average temperatures at all locations, while also experiencing significantly less rain than average. The combination of these events was not conducive for disease.
- Emergence was good at all locations, and as expected the higher the seeding rates the denser the plant populations were. The higher seeding rates did lead to higher seedling mortality, which is common as the plants compete for space.
- Seeding rate was tested to compare weed competition. A visual weediness rate was observed for each test. This rating did show a slight decrease in weed pressure with an increased seeding rate, it was more noticeable from 130 seeds/m<sup>2</sup> to 190 seeds/m<sup>2</sup>, while 190 seeds/m<sup>2</sup> to 250 seeds/m<sup>2</sup> had less of an impact.
- Disease ratings were first observed at the start of flower, before the first fungicide treatment. Disease pressure was not impacted by seeding rate at any of the locations. Final ratings were taken 7 days after the second treatment

The full report is available at [www.warc.ca](http://www.warc.ca). This project was funded by the Saskatchewan Pulse Crop Development Board.

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and found to be no effect to fungicide treatments. Given the dry year, no response to this part of the trial was not unexpected.

- Yields taken at harvest did find that an increase in seeding rate from 130 to 190 seeds/m<sup>2</sup>, and a slight increase in yield from 190 to 250 seeds/m<sup>2</sup> at both Scott and Indian Head, however, at Swift Current there was a slight decrease in yield with an increased rate, possibly due to the dry conditions that led to the high population of plants to senescence quicker.

**Table 2. Individual lentil seeding rate by fungicide treatment means and orthogonal contrast results for seed yields at Indian Head, Scott, and Swift Current, Saskatchewan in 2021. Means within a column followed by the same letter do not significantly differ (Tukey-Kramer, P ≤ 0.05).**

Source/Treatment	Indian Head	Scott	Swift Current <sup>2</sup>
	----- Seed Yield (kg/ha) -----		
0X Fung – 130 seeds/m <sup>2</sup>	2098 c	1875 a	1489 a
0x Fung – 190 seeds/m <sup>2</sup>	2208 abc	2262 a	1533 a
0x Fung – 250 seeds/m <sup>2</sup>	2291 ab	2000 a	1435 a
SR: linear (0x fung)	<0.001	0.491	0.500
SR: quadratic (0x fung)	0.757	0.046	0.304
1x Fung – 130 seeds/m <sup>2</sup>	2149 abc	1869 a	1552 a
1x Fung – 190 seeds/m <sup>2</sup>	2240 abc	1959 a	1527 a
1x Fung – 250 seeds/m <sup>2</sup>	2300 ab	2135 a	1498 a
SR: linear (1x fung)	0.005	0.148	0.500
SR: quadratic (1x fung)	0.726	0.785	0.980
2x Fung – 130 seeds/m <sup>2</sup>	2135 bc	1985 a	1547 a
2x Fung – 190 seeds/m <sup>2</sup>	2266 ab	1816 a	1499 a
2x Fung – 250 seeds/m <sup>2</sup>	2303 a	2175 a	1403 a
SR: linear (2x fung)	0.002	0.298	0.081
SR: quadratic (2x fung)	0.280	0.100	0.725
S.E.M	53.1	169.9	104.5

<sup>2</sup> Final disease rating values were all zero at Swift Current 2021

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