

Effect of fungicide and N applications on lodging and disease in flax

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Introduction

Lodging in crops may limit productivity and disrupt harvest. Conditions that usually promote plant growth, such as abundant soil nutrition and moisture, may increase the risk of lodging. Flax (*Linum usitatissimum* L.) has been reported more affected by lodging when susceptible cultivars were grown under conditions of high precipitation or subjected to high plant density regimes (Gubbels and Kenaschuk 1989) that may have weakened plant stems. Lodging in flax has also been observed in association with disease, particularly pasmo, caused by *Septoria linicola* (Speg.) Garassini (Rashid 2001).

Objectives

The objective of this study was to study the occurrence in flax of lodging in association with disease, as affected by fungicide and nitrogen (N) fertilizer applications.

Material and Methods

The experimental design was a split plot, with fungicide application as main plots and N rates as sub-plots. The fungicide Headline was applied 7 days after flower initiation. N rates were 0, 33, 66, 100 and 133% of recommended, applied as urea fertilizer (46-0-0) mid banded at seeding. Plot size was 4m x 15m. Cultivar used was Bethune, with seeding rate of 80 kg ha⁻¹.

Results and Discussion

There was a significant ($P > 0.05$) interaction between Fungicide and N fertilization, with no effect of increasing N rates on lodging when fungicide was applied, and increase of lodging, as N rate increased, when no fungicide was applied (Fig 1).

Disease severity was much higher (75% stem area affected) when flax was not sprayed with fungicide, compared to when fungicide was applied (32% stem area affected) (Fig.1). However, the effect of N application on disease was similar regardless whether flax was sprayed with fungicide or not, with increasing disease severity as N rates increased.

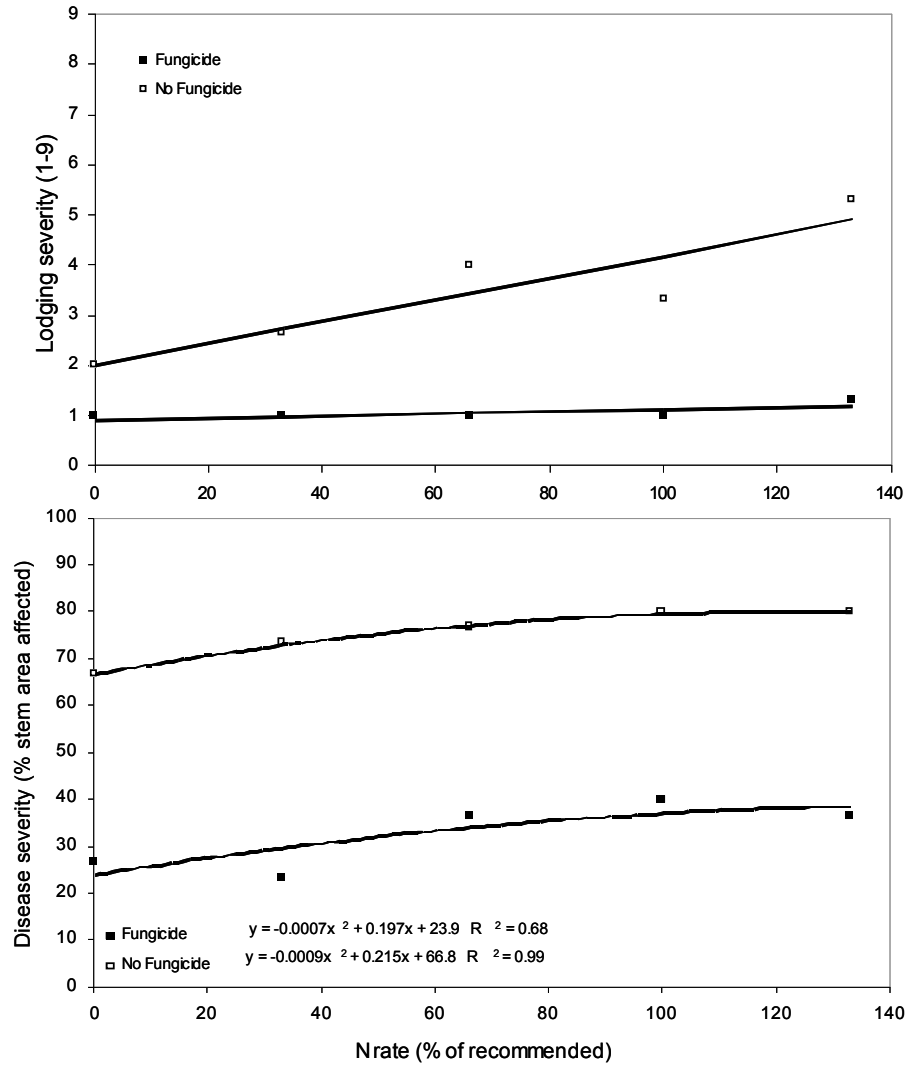


Fig 1. The effect of N fertilizer and fungicide applications on lodging and disease severity in flax at Melfort SK in 2010.

Conclusions

Lodging and disease (pasma) were more prevalent in plots that were not sprayed with fungicide (Fig 2). Increasing N rate did not affect lodging when fungicide was applied, but lodging significantly increased as N rate increased, when fungicide was not applied. Increasing N rate increased disease severity regardless whether flax was sprayed with fungicide or not. These results strongly suggest that disease, in combination with high N fertility, is a contributing factor in the occurrence of lodging in flax.



Fig 2. Lodging in flax at Melfort SK in 2010. **A.** Fungicide applied and 133% of recommended N rate. **B.** No fungicide applied and 133% of recommended N rate.

References

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