



Lygus sampling comparison for faba bean in Saskatchewan.

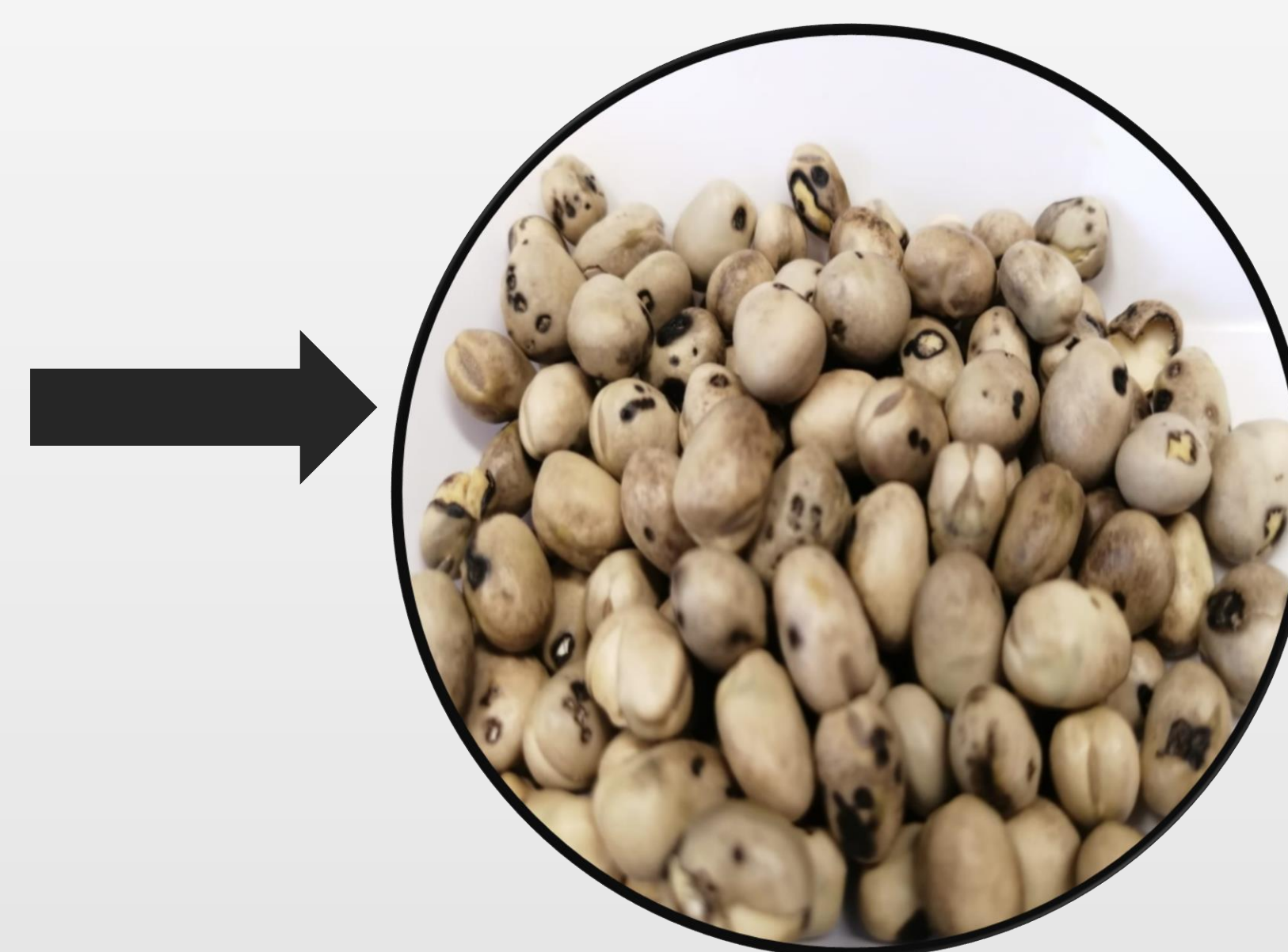
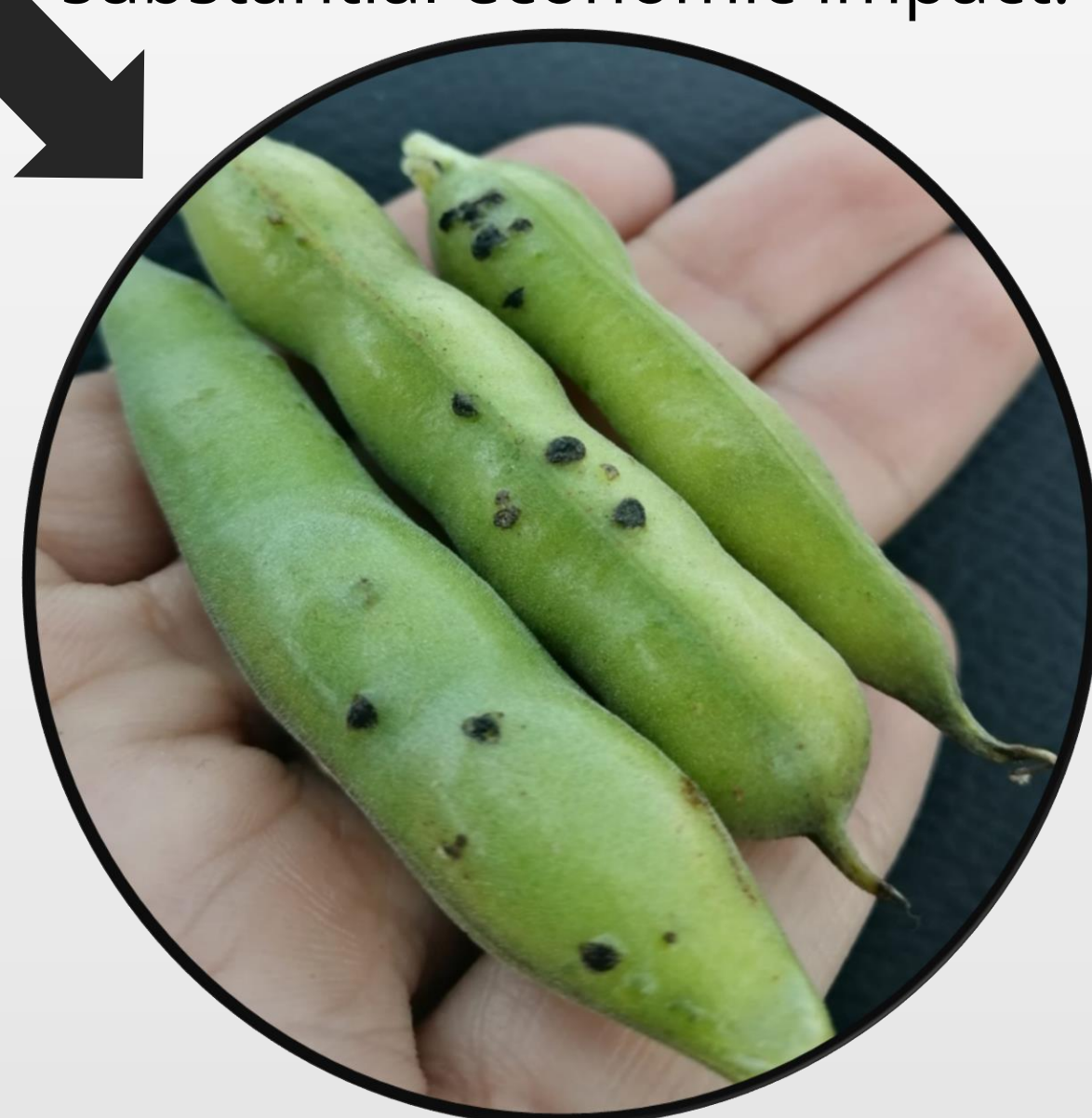
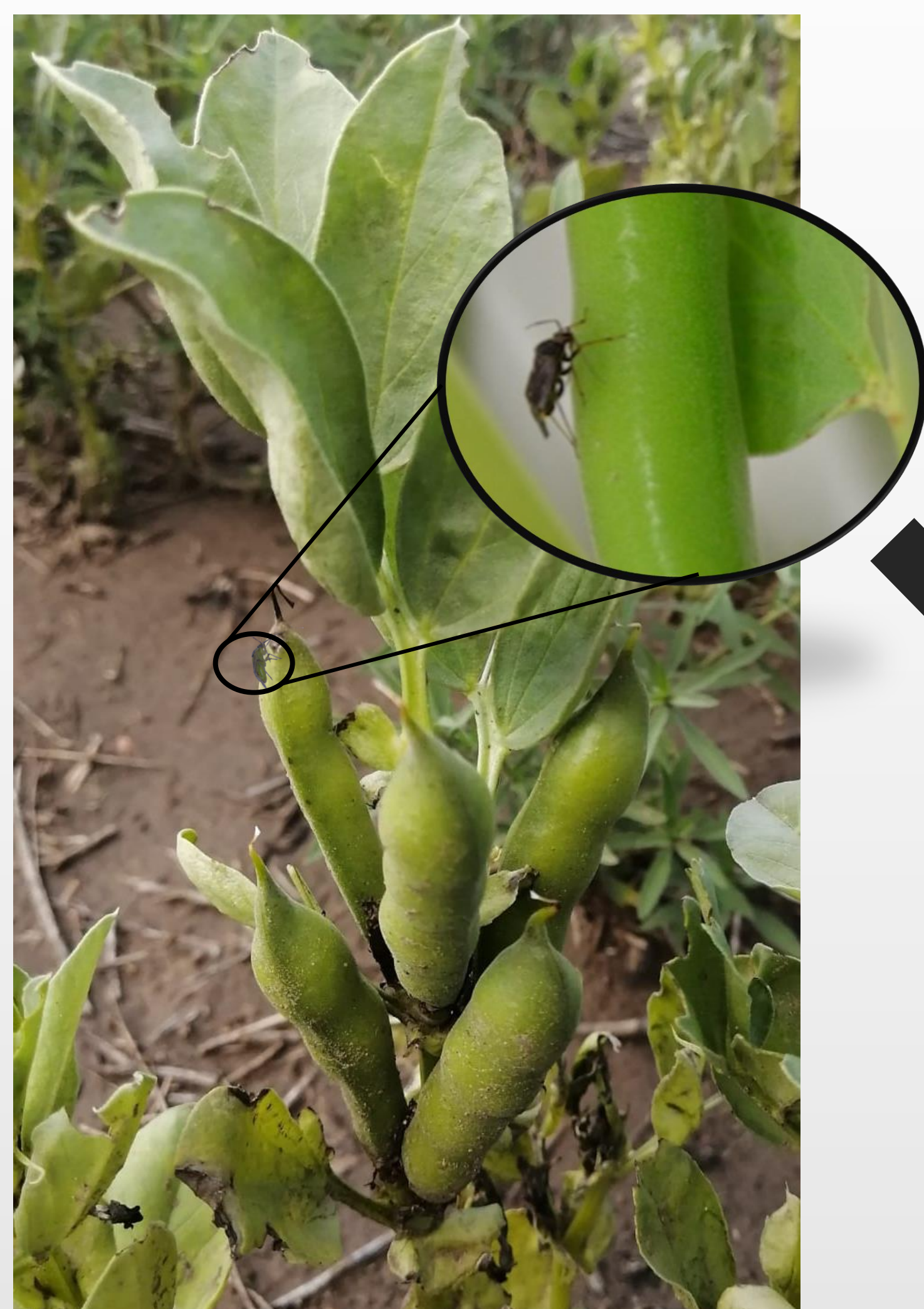


Teresa Aguiar-Cordero, Sean Prager
Department of Plant Science, College of Agriculture and Bioresources
University of Saskatchewan



Introduction

Several species in the hemipteran genus *Lygus* feed on faba bean (*Vicia faba*), which can result in hull perforations, discoloration of the seed coat, seed pitting, or localized tissue wilting and necrosis, producing a quality loss. (Kaur et al. 2018) This damage results in both reduced yield and downgrades. Faba for human consumption must be at, including damage due to seed Grade No. 1. Canadian export standards set the upper limit as <4% of seeds damaged, with perforation at 1%, and zero tolerance for rotted seeds (Government of Canada, 2022). Downgrades from No. 1 Grade can reduce the price of faba by as much as \$2.00/bushel, resulting in substantial economic impact.



Methods

To identify the incidence and severity of *Lygus* infestations in faba bean across Saskatchewan and to assess seasonal variability, since 2017 surveys have been performed throughout the province in collaboration with the Saskatchewan Pulse Growers, the Saskatchewan Ministry of Agriculture and the Prager Lab at the University of Saskatchewan.

Sampling was conducted at the early podding stage using 180-degree sweeps of a standard sweep net. Samples were taken in a "W" shaped transect pattern, starting just inside the headlands of the field and stopping every 25 m to collect until 10 samples were collected.

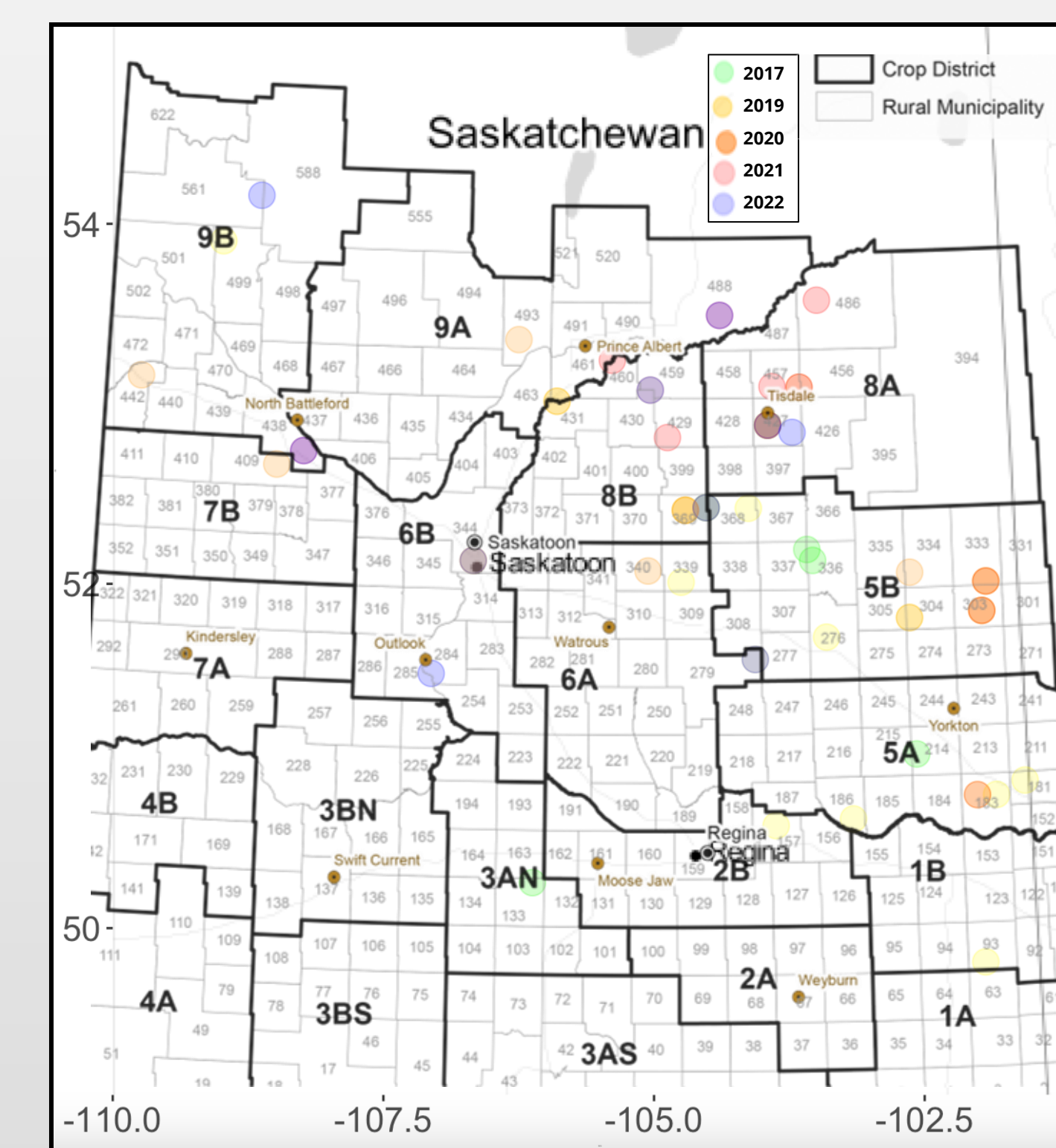


Figure 1. Spatial coverage of sampling locations. Colors indicate sampling year and intensity indicates *Lygus* density (number collected).

Results

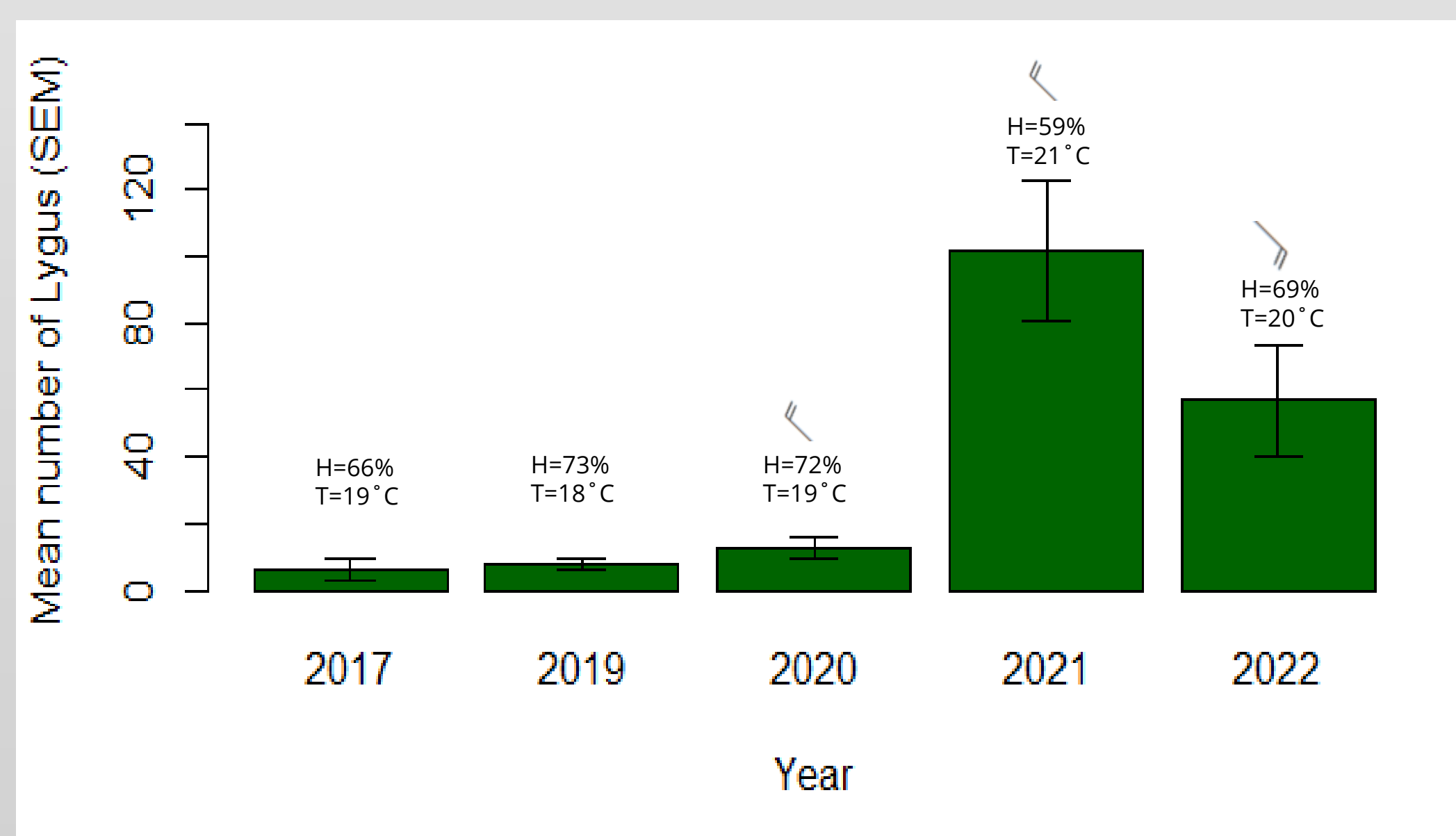


Figure 2. Average of *Lygus* in faba bean per year and associated weather conditions. The year 2021 had substantially more *Lygus* than other years. It also had a higher mean temperature, less humidity, and a SSE wind direction. The year 2022 also had higher *Lygus* counts and higher mean temperature than low *Lygus* years.

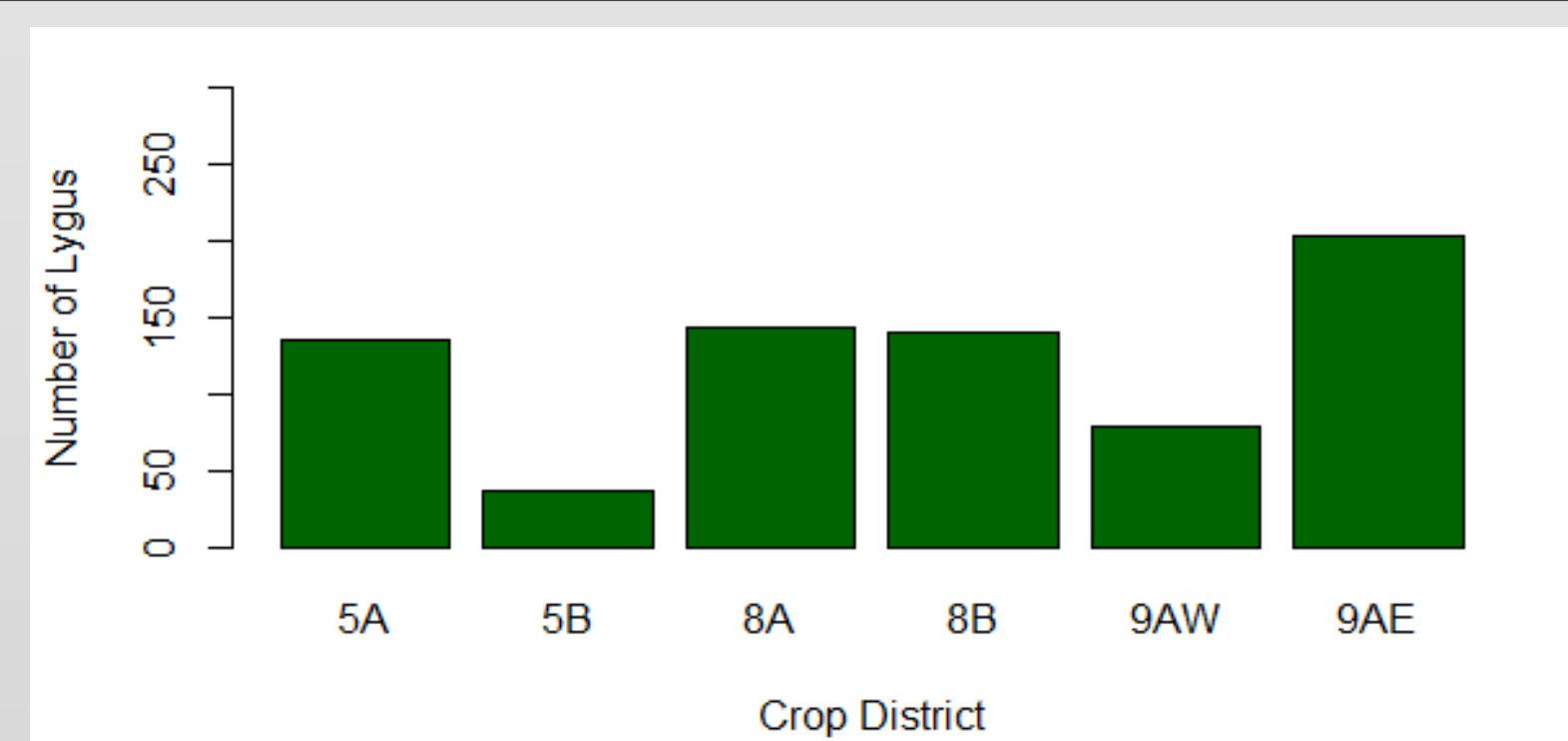


Figure 3. Total *Lygus* per district in 2021. The most affected district was 9AE followed by 8A, 8B, and 5A. All are districts located in the NE of the province.

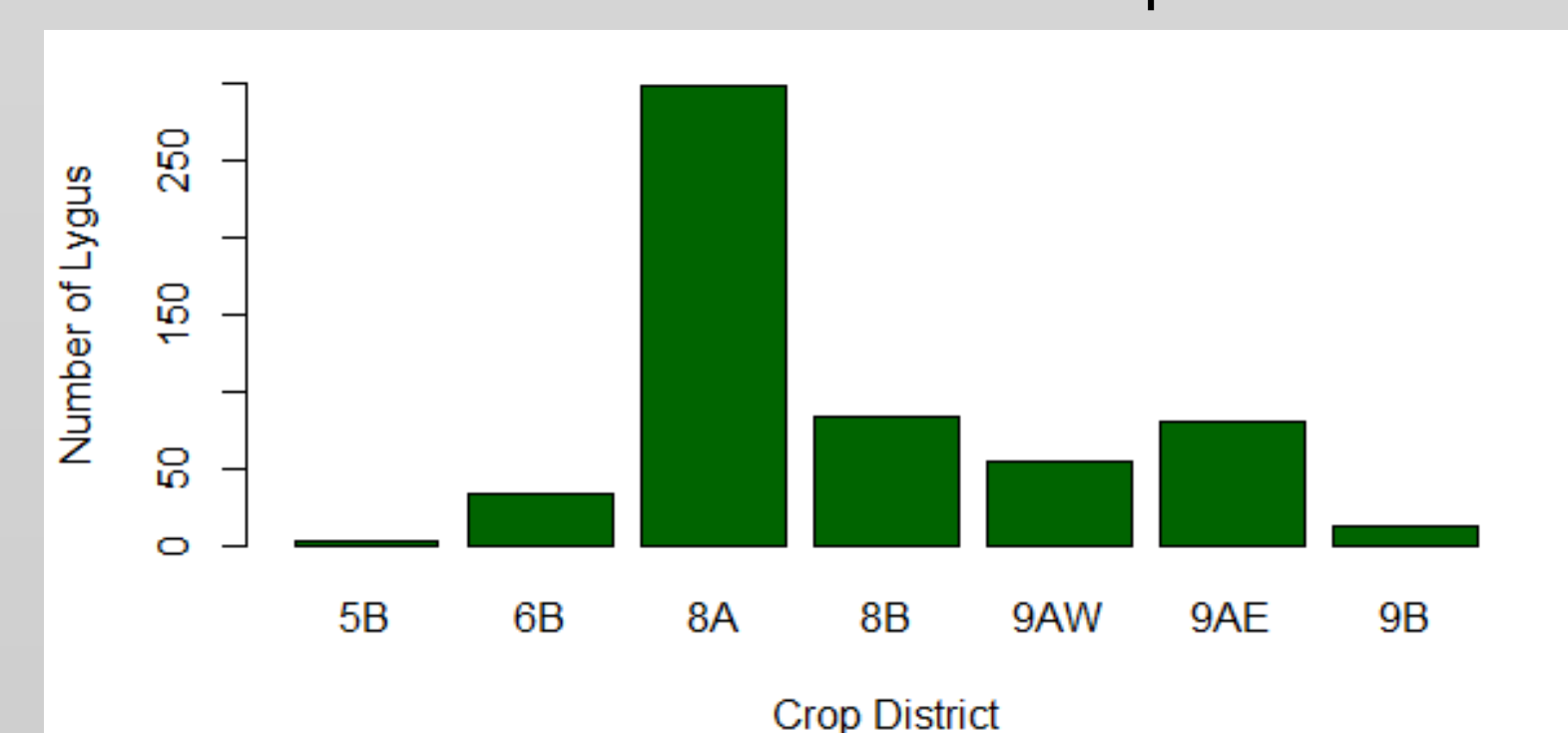


Figure 4. Total *Lygus* per district in 2022. District 8A was the most affected district and is again located in the NE of the province.

Future directions

- Establish correlations between insect number and scarring damage for various *Lygus* species.
- Determine the amount of *Lygus* feeding (time) required to cause seed damage in faba bean
- Determine whether *Lygus* populations in earlier maturing crops, when sampled just to harvest, swathing, or dry down, are correlated to numbers in faba.
- Evaluate *Lygus* preferences between faba and potential trap crops or alternative hosts.

Conclusions

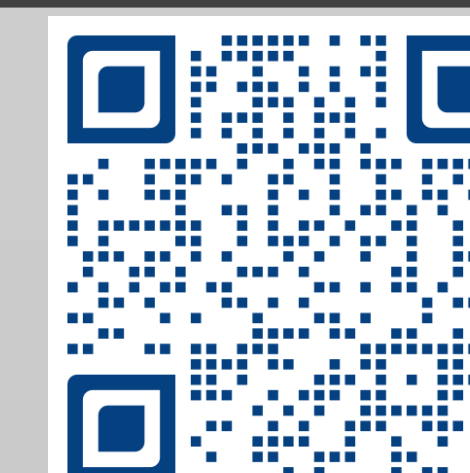
- High temperatures, less humidity, and wind direction may be associated with the presence of *Lygus* in faba.
- Continuing to survey across Saskatchewan is necessary to identify the incidence and severity of *Lygus* infestations in Faba bean and study a possible correlation with the weather conditions.

Acknowledgments

We would like to thank Saskatchewan Pulse Growers, Saskatchewan Ministry of Agriculture, Western Grains Research Foundation, and Agriculture Development Found for their support, and the Prager Lab members who helped process the samples.



Contact and Poster flyer



References

- Canada, E. (2022, April 21). Saskatchewan - weather conditions and forecast by locations. Environment Canada. Retrieved from https://weather.gc.ca/forecast/canada/index_e.html?id=SK
- Government of Canada, C. G. C. (2022, July 29). Fababeans: Determination of dockage. Government of Canada, Canadian Grain Commission. Retrieved from <https://www.grainscanada.gc.ca/en/grain-quality/official-grain-grading-guide/21-fababeans/determination-dockage.html>
- Kaur, S., Reid, P., Harker, K. N., Meers, S., Thomas, J., Chatterton, S., & Cárcamo, H. (2019). Effect of *lygus* spp. and botrytis spp. on faba bean (*Vicia faba* L.) seed quality – are there insect-pathogen interactions? Canadian Journal of Plant Science, 99(1), 56–66. <https://doi.org/10.1139/cjps-2018-0074>