



Faba bean seed damage by lygus bug and chocolate spot

CATEGORY [disease and insects](#) | **January 21, 2019**

Lygus bug and chocolate spot disease can damage faba bean seed. Research found both organisms are widespread in central and southern Alberta. Seed damage occurs independently of each other, and is primarily caused by lygus bug.

Seed damage caused by lygus bug (*Lygus spp.*) or chocolate spot (*Botrytis spp.*) can result in downgrading of faba bean seed quality and lost revenue because of hull perforations, seed pitting and brown blemishes on faba bean seed. Researchers and agronomists wondered if lygus damage to seed pods could also allow the *Botrytis* pathogen to infect the seed and cause further damage.

Entomologists and plant pathologists at Agriculture and Agri-Food Canada, University of Lethbridge, and Alberta Agriculture and Forestry surveyed the distribution of chocolate spot and lygus bug in central and southern Alberta. They also investigated interactions between chocolate spot, lygus bug and faba bean seed damage.

Lygus bug and chocolate spot wide spread

In 2015, 40 commercial fields were surveyed for chocolate spot disease and 43 for lygus bug abundance. In 2016, 22 commercial fields were surveyed for both organisms.

In both survey years, chocolate spot occurred in all 56 fields. Disease pressure was significantly higher in 2016 than in 2015. Chocolate spot was significantly higher in the lower canopy compared to the upper canopy. Disease severity was significantly higher on seeds with high tannin content compared to seeds with low tannin content.

Lygus bug prevalence was significantly higher in 2015. Lygus counts were higher in low tannin cultivars compared to high tannin cultivars.

Seed damage from necrotic spots was significantly higher in 2015 than 2016. Seed necrosis was significantly correlated with lygus abundance at the mid-pod stage.



Hull perforated faba bean seed

Disease-insect interactions were negative

As disease severity increased, the number of lygus bugs decreased. This negative association may be due to lygus bug preferring healthy plant tissue to feed upon while the presence of diseased tissue may deter feeding. Alternatively, it may reflect microclimate or food quality differences affecting distribution of the pathogen and insects in different ways. Chocolate spot was generally more severe in the lower canopy and lygus bug populations were higher in the upper canopy. Lygus bugs may move to the top of the canopy to feed on younger pods as the crop begins to mature.

Seed infection increased with the increase in chocolate spot but *Botrytis* spp. were isolated more frequently from non-perforated hulls than hull-perforated seeds (an indication of lygus bug feeding).

This suggested that seed damage due to lygus bug feeding did not increase seed infection by *Botrytis spp.*

From the current study, the researchers could not determine which occurs first: Lygus feeding induces defense responses that exclude or suppress *Botrytis* colonization or *Botrytis* infects pods and seeds first which deters feeding by lygus bugs.

In conclusion, chocolate spot and lygus bugs are widely distributed throughout central and southern Alberta, and pose a threat to faba bean production. Lygus feeding is the main cause of necrotic spots on the seeds. However, *Botrytis spp.* can also downgrade the seed quality under optimum weather conditions.

This suggests management practices for each may be required depending on field conditions. Forecasting chocolate spot and Lygus population levels, and developing economic thresholds will be required to establish robust and sustainable management practices.

This project was funded by the Alberta Crop Industry Development Fund Ltd. (ACIDF)

Kaur, S., Reid, P., Harker, K.N., Meers, S., Thomas, J.E., Chatterton, S., and Carcamo, H. 2018. Effect of Lygus spp and Botrytis spp on faba bean (*Vicia faba L.*) seed quality – are there insect-pathogen interactions? Can. J. Plant Sci.

<https://doi.org/10.1139/CJPS-2018-0074>