



Research continues into possible economic significance of new Canola Flower Midge

CATEGORY [insects](#) | June 4, 2020

A new species of gall midge, *Contarinia brassicola* Sinclair (canola flower midge), was identified on the Canadian Prairies in 2017. To date, economic injury to canola has been low, and research has found early seeded canola had higher feeding damage, but still produced optimum yield.

A previously undescribed gall midge was discovered inducing flower galls on canola in Saskatchewan and Alberta. The galls were first discovered in 2012 and attributed to infestation by the swede midge, *Contarinia nasturtii* (Kieffer), a species that was identified from both Saskatchewan and Manitoba in 2007.

During subsequent investigations, researchers determined that species was not *C. nasturtii*, but in fact, an undescribed species in the genus *Contarinia* Rondani. Subsequently, the species is described as *Contarinia brassicola* Sinclair, the canola flower midge.

Two generations per year

Canola flower midge larvae develop in the flowers of canola, which causes swelling and prevents opening, pod formation, and seed set. Mature larvae exit the galls, fall to the soil, and form cocoons. Depending on conditions, larvae will either pupate and emerge as adults in the same calendar year, or overwinter to emerge the following year. At least two generations of the canola flower midge occur each year. Adults emerge from overwintering cocoons in the spring and lay eggs on developing canola flower buds.

To determine the distribution of canola flower midge in Saskatchewan and Alberta, a survey for damage symptoms and larvae was conducted in late July of 2014 to 2016. Canola flower midge was widely distributed across Saskatchewan and Alberta, and damage and larvae have also been observed in the Swan River Valley in Manitoba.

At present, canola flower midge appears to be the main *Contarinia* species found on canola across the Prairies, as swede midge has not been found on pheromone traps since surveys were started in 2006. The current evidence suggests canola flower midge is a native species, rather than an invasive alien.

Early seeding maximized yield

A three-year field study from 2014 through 2016 at four locations in northeastern Saskatchewan determined the effects of seeding date and seed treatment on feeding injury by *Contarinia Rondani* midges to canola, and subsequent seed yield.

At the time of initial collection, the identification of the canola flower midge species was not known, but the recovery of few midge adults from the swede midge pheromone traps but many midge flies found in emergence traps indicates that swede midge were not present. As a result, the researchers believe that the results of this trial are reflective of predominantly canola flower midge populations.

Two of the canola hybrids grown in the study were Roundup Ready, and two were Liberty Link. All hybrids were treated with fungicide seed treatments with penthiopyrad and mefenoxam. The insecticidal seed treatments included no insecticide (fungicide alone), thiamethoxam, cyantraniliprole, and thiamethoxam plus cyantraniliprole. Early (3rd week of May) and late (1st week of June) seeding dates were compared.

Emergence cage monitoring indicated the presence of two generations of midges at the four locations observed. Intensity of midge injury to canola was low, but damaged plants were common.

Field location and seeding date influenced probability of midge injury and canola growth stage. The wettest of the four locations had the greatest number of midges but low levels of probability of damage in two of three years.

Early-seeded plots had higher injury probability than late-seeded plots, with the highest probability of injury occurring one to two weeks after flowering commenced. However, seed yield was higher in early-seeded than in late-seeded plots in two of three years, despite the greater level of damage seen in early-seeded plots.

Seed treatment marginally affected midge injury ratings. The insecticide components in a seed treatment protect canola from insect pests for a limited time. For example, flea beetle control varies between 14 to 35 days after emergence, depending on the insecticides, rates, and weather conditions. Because there is a 4 to 6 week period between seeding and appearance of the first overwintering generation of midges, the researchers were not surprised to find little impact of insecticide seed treatment on midges.

The researchers raise the possibility that canola flower midge may not be as damaging on the Prairies as swede midge is in eastern North America. The canola flower midge emerges later and has one less generation per year. There are also two species of parasitoids that prey on the canola flower midge with total parasitism ranging from 0 to 62% in the three-year trial.

However, economic injury to canola from swede midge took over 10 years to develop from the time the pest was first detected in Ontario, so the exact impact of canola flower midge on the Prairies remains to be seen. In the meantime, Prairie farmers should continue to seed canola early to maximize seed yields, while incorporating other agronomic practices such as longer crop rotation to minimize the spread of insect pests such as *Contarinia* midges.

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