

# Seeding strategies to minimize root maggot infestations

Cabbage root maggots are chronic canola pests in western Canada, but especially for growers in central Alberta, where yield losses from root maggots can reach 50 percent in Polish-type canola. Researchers at the University of Alberta and Agriculture and Agri-Food Canada conducted several research studies to determine the agronomic factors that could help reduce the impact of root maggots on canola.

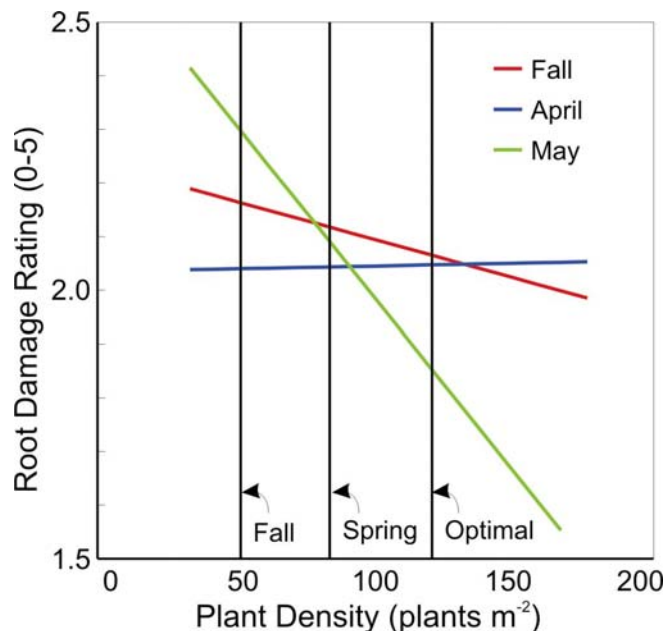
Field experiments covering 13 location-by-year combinations were conducted in central Alberta from 1998 to 2001, to determine the interactions of seeding rate, seed treatment, seeding date, timing of weed removal, and canola species on root maggot damage.

Seeding date alone had no significant effect on root maggot damage. Canola seeded in April, May and dormant seeding in the fall (seeding in the fall to germinate the following spring) suffered similar root maggot damage. The researchers explain that the extended emergence of root maggot adults spans the crop stages vulnerable to egg laying, regardless of seeding date

However, for canola seeded in May, the researchers found that root maggot damage declined with an increase in seeding rate from 7.5 to 10 to 12.5 kg/ha (7 to 9 to 11 lb/ac). The reason for this difference may be that root maggot females prefer to lay their eggs on plants with large stems. With higher seeding rates, stems are thinner, resulting in fewer egg deposited and less damage for May-seeded canola.

Conversely, seeding rate had no influence on damage for canola seeded in April, or fall. Canola seeded in April or fall-dormant seeded seemed to take advantage of favourable growing conditions early in the season and could better compensate for root maggot damage than May-seeded canola, so higher seeding rate was not as critical for managing root maggots.

In these studies, plant density was less than optimal (11.4 plants/square foot) for fall seeding (4.7 plants/square foot) and spring seeding (7.8 plants/square foot).



**Fig 1. The decline in root damage rating to canola taproots with higher plant densities for canola seeded in fall (October - November), April, and May at various sites in central Alberta, Canada, from 1998 to 2001.**

Source: Dossdall, L., Clayton, G., Harker, N., O'Donovan, J., and Stevenson, F. 2006. J. Econ. Entomol. 99(5): 1665 -1674.

Conversion: plants per square foot = plants per square metre divided by 10.56.

Susceptibility to infestation was greater for Polish-type canola (*Brassica rapa*) than Argentine types (*Brassica napus*). The damage ratings for *B. rapa* were about twice as high as for *B. napus*. Insecticidal seed treatment did not have any effect on the damage caused by root maggots.

The researchers concluded that the best strategy to combat root maggot damage is to grow an Argentine-type canola that is seeded at a rate that will establish a competitive stand. While time of seeding is less important, if a mid-May seeding date is used, a higher seeding rate that targets 120 plants per square metre (11.4 plants/square ft) will help reduce root maggot damage.

