

**Title:** Monitoring insecticide susceptibility of flea beetle populations across the Prairies

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**Abstract:**

Flea beetles (*Phyllotreta* spp., Coleoptera: Chrysomelidae) are major, economically damaging canola (*Brassica napus*) pests in Canada. Feeding damage to seedlings negatively affects plant establishment and growth. Insecticides are the primary means of management. To manage flea beetles, almost all canola is grown from insecticide treated seeds and, if needed, sprayed with foliar insecticides. We carried out three separate experiments to assess the susceptibility of crucifer (*Phyllotreta cruciferae*) and striped (*Phyllotreta striolata*) flea beetles to neonicotinoid seed treatments and foliar applied pyrethroid (deltamethrin) insecticides across the Prairies. Flea beetles were collected across Prairies in 2022-2024 and bioassays were conducted under controlled conditions. The results showed that there was significantly lower feeding damage and higher mortality when seeds were treated with neonicotinoid seed treatments compared to the controls. However, the level of damage and mortality varied among different flea beetle populations and years. Bioassay results also suggest that the seed treatments have a significant antifeedant effect on flea beetles. Finally, of the populations tested, no flea beetle resistance was found to foliar-applied pyrethroids.