

Cereal Aphid Manager: A dynamic action threshold smartphone application for scouting cereal aphids

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Cereal aphid populations can increase rapidly and exceed economic thresholds resulting in yield loss in wheat and other cereal crops. Aphid natural enemies however, have the capacity to keep aphid populations from reaching economic thresholds. Two main species of aphid are typically present in cereal crops on the Canadian Prairies, English grain aphids, *Sitobion avenae* Haliday and Bird-Cherry Oat aphids, *Rhopalosiphum padi* (L.) (Hemiptera: Aphididae). Common natural enemies are in the families Anthocoriidae, Aphidiidae, Aphelinidae, Coccinellidae, Chrysopidae, and Nabidae. A computer model that incorporates the life history of predators and aphids was constructed to predict population growth of aphids and predation by natural enemies as identified in field surveys. The model uses a dynamic action threshold (DAT) and will recommend an insecticidal treatment if the economic threshold will be exceeded, or no treatment with continued monitoring, if existing predators are expected to suppress aphid population growth below the threshold. The DAT is incorporated into the Cereal Aphid Manager smartphone application built for the iOS and Android platforms and a beta-test validation exercise was conducted under field conditions in summer 2017. This smartphone application will be made available for use to cereal growers, scouts and crop advisors as an integrated pest management (IPM) tool that supports effective scouting and informed decision making approach with the potential to eliminate unnecessary use of pesticides to control aphids in cereal production. The results of application performance during the 2017 field validation will be presented.