Agronomic Tip: Wheat Midge and Growing Degree Days

July 2008

What is wheat midge?

Wheat midge is a small orange insect about half the size of a mosquito. They have six long legs, a pair of oval transparent wings that are fringed with fine hairs and two large black eyes. Wheat midge should not be confused with the Lauxaniid fly, which is yellowish brown and larger.

What is their life cycle?

Over-wintering pupae begin emerging from the soil as adults in late June to early July. Females begin laying eggs after mating, with the majority of eggs laid on the third day after emergence. Eggs hatch in four to seven days and the larvae begin to feed on the developing kernel, causing it to shrivel, crack and become deformed. The larvae mature in two to three weeks. Rain or dew on the plant heads cause the larvae to drop to the soil surface where they burrow into the soil and over-winter in cocoons.

Wheat and barley plants are most susceptible during the heading stage. Field scouting should occur in the evening when temperatures are above 15° C and winds are light. This is when the females are most active.

How can you avoid wheat midge damage?

Research conducted in North Dakota shows that sowing your crop at the right time could help you avoid problems with wheat midge. A correlation between growing degree days (GDD) and the crop stage when wheat midge typically emerge from the soil has shown interesting results. Findings demonstrated that hard red spring wheat (HRSW) sown prior to 200 GDD heads before the wheat midge emerge. HRSW sown between 200 GDD to 600 GDD heads at the same time as wheat midge emergence, causing it to be more susceptible to damage. HRSW sown after 600 GDD heads after the peak wheat midge emergence, but also runs the risk of frost damage in the fall.

The economic threshold for HRSW is one midge for every four or five heads. For durum wheat it is one or more midge for every seven or eight heads. Economic impacts include reduced yield potential, grain quality and germination/vigour of the seedlings. To avoid damage to your crop, attempt to sow in the optimal window, prior to 200 GDD.

For the most recent midge emergence map visit
http://www.cwb.ca/public/en/farmers/weather/midge/popups/forecast.jsp

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Source: "Integrated Pest Management of the Wheat Midge in North Dakota", Janet Knodel (Extension Entomologist) and Mangala Ganehiarachchi (Graduate Research Assistant). www.ag.ndsu.edu