The cereal leaf beetle (CLB) is an imported insect pest from Europe. It first was detected in Michigan in 1962. Cereal leaf beetle spread into all states east of the Great Plains and into Idaho, Montana, Utah, Wyoming and Washington.

Cereal leaf beetle first was detected in Williams and McKenzie counties of North Dakota in June 2000. Since then, CLB was identified in Burke, Renville and Ward counties in 2013 in the northcentral part of the state, and in Cavalier County in 2015 in the northeastern area.

Cereal leaf beetle can be a serious pest of wheat and barley. However, CLB has not been a major economic insect pest of cereal grains in North Dakota.

**Description**

**Adult** — The adult beetle is ¼ inch long with a brightly colored orange-red thorax, yellow legs and metallic blue head and wing covers (Figure 1).

**Eggs** — Newly laid eggs are bright yellow, darkening to orange brown and finally to black before they hatch (Figure 2).

**Larva** — The larva has a light yellow body with brown head and legs (Figure 3). They have three pairs of legs close to the head end. The body is protected by a layer of black, slimy fecal material, which makes them look like a slug (Figure 4). When working or walking in an infested field, the slimy covering will rub off on your clothing.

**Life Cycle**

Cereal leaf beetle has one generation per year. Beetles overwinter in shelterbelts and wooded areas in the leaf litter and debris. In the spring, CLB becomes active when temperatures warm to 50 F and feeds on winter or spring grains for about 10 days during May through June. Then female beetles lay eggs, singly or in groups of two or three, on the upper leaf surface near the base of the leaf. Egg hatch may take from four to 23 days, depending on temperature. Larvae develop in 10 to 14 days during June into July. When mature, larvae dig into the ground to pupate (resting stage). An adult will emerge from the puparium in 10 to 14 days.

The summer beetles feed for about two weeks on grasses, later-seeded cereal grains and corn before estivating (dormant stage) for the remainder of the summer. In the fall, CLB moves to shelterbelts or wooded areas for overwintering.

**Damage**

The first sign of CLB activity in the spring is adult feeding damage on the plant foliage. Adult prefer newer plant tissue. CLB injury is characterized by elongated, slender slits in the upper leaf surface (Figure 5).

Adults and larvae damage grain crops by feeding on the leaves. The larvae are the most damaging stage. They feed on the leaf surface between veins, removing all the green material down to the lower cuticle, resulting in an elongated windowpane in the leaf (Figure 6). Later, the
Cereal leaf beetle feeding damage can reduce yield and grain quality. The boot stage is a critical point in plant development, and larval feeding can have a general impact on plant vigor. **Before the boot stage**, the threshold is three or more eggs and/or larvae per plant, including all the tillers present before flag leaf emergence. Insecticide spray applications should be delayed until 25 percent of the eggs have hatched and larvae have emerged because insecticide treatments are targeted at killing the larvae.

When the flag leaf emerges, feeding generally is restricted to the flag leaf. Damage to this leaf can reduce grain yield and quality significantly. At the **boot stage**, the threshold is one or more larva(e) per flag leaf.

### Pest Management

#### Natural Control

Lady beetles prey on CLB larvae. Several imported parasitic insects attack CLB, but these parasites have not been determined to be present in North Dakota.

The parasites imported from overseas and established in some areas of the U.S. include *Anaphes flavipes*, a wasp that parasitizes CLB eggs; *Tatrastichus julis*, *Diaparrsis carinifer* and *Lemophagus curtus*, wasps that parasitize larvae; and *Hyalomyodes triangulifer*, a tachinid fly that parasitizes adults. CLB has been reduced to a minor insect pest of small-grain crops in areas where the parasites have been established successfully.

#### Host Plant Resistance

Leaf pubescence has been identified as a source of resistance to CLB in wheat, which resulted in a lower number of eggs laid and reduced leaf-feeding injury by larvae. However, one problem with leaf pubescence is that it is variable, depending on the environment. No CLB-resistant wheat cultivars are available for North Dakota.

#### Insecticides

Consult the NDSU Extension Service publication “North Dakota Field Crop Insect Management Guide” (E1143) at [http://tinyurl.com/NDCropInsectGuide](http://tinyurl.com/NDCropInsectGuide) for an updated list of insecticides registered for control of cereal leaf beetle in barley, oats and wheat.

When using a pesticide, always read, understand and follow the label directions. The pesticide label is a legal document.