



# ALFALFA BLOTCH LEAFMINER

## A New Insect Pest to Monitor in 2018

In 2017, serious damage from the larvae of alfalfa blotch leafminer (*Agromyza frontella*), a fly species, turned up in a cluster of forage alfalfa fields in Lewis and Clark County. One of the affected producers estimates that his field sustained 15 percent yield loss over the 2017 growing season, spread out over three cuttings. In addition to leaf drop (which reduces alfalfa forage quality), severe infestation by alfalfa blotch leafminer causes protein loss (above). This is a new insect pest for Montana.

Alfalfa blotch leafminer is a European pest that was accidentally introduced to the northeastern U.S. in the late 1960s. Since then, it has spread westward across the northern U.S., and through the maritime and prairie provinces of Canada. This insect has been present in Wisconsin and Minnesota since the mid-1980s, North Dakota since at least 1999, and Alberta since 2005; it is now common in those areas. In 2011, researchers noted a few characteristic blotch mines in alfalfa fields near Sidney, Montana, within a few miles of the border with North Dakota, but no economic damage was seen.

The larvae – the damaging stage – are small, yellow maggots that feed inside alfalfa leaves, creating mines that are c-shaped or question-mark-shaped. We can probably expect at least three generations per year at our latitude, with first-generation adults

likely emerging mid-May through June in Montana, and first-generation larvae beginning to hatch in early June.

Adults feed briefly on foliage, making small pinholes in the upper leaves (illustration, page 15). Adult damage is non-economical, but because it is easy to spot, it does provide an important target for early spring scouting before the larval mines appear. The adults themselves are difficult to see. They are small (about 1/12-inch), dull-black, hump-backed flies with white knobs (halteres) behind the wings. Adult and larval wounds can increase the susceptibility of alfalfa to diseases.

### Control

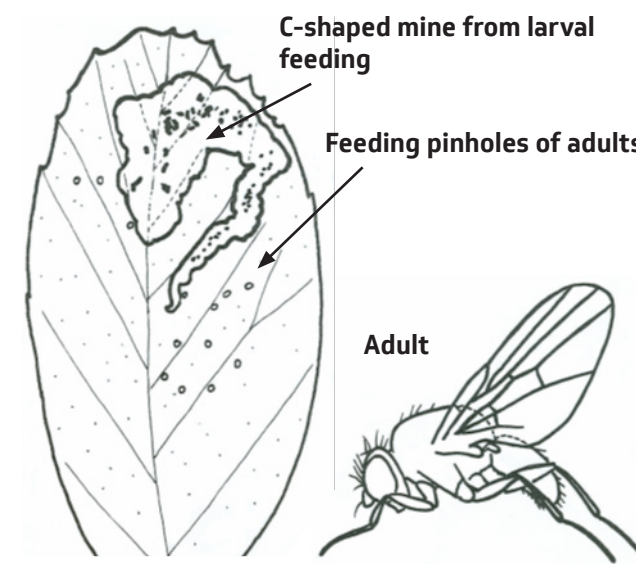
After the initial outbreaks in Alberta, populations stabilized within about two years at much lower levels, and are not now considered an economic issue in either forage or seed production. Fortunately, the same boom-then-bust pattern seems to materialize wherever the alfalfa blotch leafminer becomes established. Population stabilization is likely due to the activity of tiny parasitoid wasps (which provide biocontrol for insect pests), both introduced and native species, that develop inside the fly larvae. The most successful parasitoid is *Dacnusa dryas*, an intentionally-introduced European species.

Based on these observations, beneficial parasitoids are expected to control alfalfa blotch leafminers within a few years of an initial outbreak. During an infestation, an early first cutting may reduce damage and also shrink pest numbers throughout the remaining growing season. Unfortunately, there has been poor success controlling the larvae with insecticides because they are protected within their leaf mines. Targeting the first generation of adults in mid-May to June with contact sprays is of uncertain value, and may also knock down beneficial parasitoid numbers. For more information on the alfalfa blotch leafminer life cycle, and on potential chemical control of the adult stage, see this 2017 online Extension fact sheet: [https://wiki.bugwood.org/HPIPM:Alfalfa\\_Blotch\\_Leafminer](https://wiki.bugwood.org/HPIPM:Alfalfa_Blotch_Leafminer). ■

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Adult feeding pinholes (left); two larval mines (right).

### Braconid Wasps Protect Crops

*Dacnusa dryas*, an important parasitoid of the alfalfa blotch leafminer (see main article), is only one species among many in the Braconidae, an enormous insect family with over 1000 genera and perhaps as many as 50,000 species worldwide. Braconids are small wasps, often between 1/4- and 1/2-inch long, including their long antennae (Image 3).

Almost all braconids are parasitic, developing either on or within the bodies of other host insects. This makes braconids valuable to agriculture, forestry, and urban landscapes, by either killing pest insects outright or making them sluggish and functionally sterile by stealing energy away from egg development.



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Most braconids infest only the immature stages of their hosts, including the larvae of weevils (and other beetles), flies, butterflies, moths, and sawflies. Some braconids infest

both the adult and juvenile stages of insects such as aphids and true bugs. *Microctonus aethioides* specializes exclusively on adult weevils, including the alfalfa weevil, a key pest of forage alfalfa. Bracon cephi and *B. lissogaster* are important enemies of wheat stem sawfly larvae. Several *Peristenus* species effectively kill Lygus bugs, sap-feeding pests on a wide range of crops. *Aphidius* species specialize on aphids, including important pest species like pea aphid and green peach aphid.

While the larvae of braconids are carnivorous, the adults are almost always nectar feeders. Braconid females need to feed on nectar extensively before they can lay eggs, so preserving flowering weeds in field edges and roadside areas, without applying pesticide, can help them survive and reproduce. Crops like canola, and forages such as alfalfa, clovers, and sainfoin are also nectar-rich sources for beneficial parasitoids. ■