Extension Entomology
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CEREAL LEAF BEETLE

Introduction

The cereal leaf beetle, *Oulema melanopus* (Linn.) has continued to slowly spread to new counties in Utah since its first discovery in Morgan County in June of 1984. Although it has not produced economic damage in all countries evidence of its presence has been found in Box Elder, Cache, Rich, Weber, Morgan, Summit, Davis, Salt Lake, Utah, Juab, Sanpete, Wasatch and Uintah Counties. All other counties in the state have been surveyed without any positive identification of either damage or the leaf beetles. However, it will no doubt continue to spread.

The cereal leaf beetle is not difficult to control, and a serious outbreak can be stopped if discovered early and proper control measures are taken. Wheat and oats are the most susceptible to leaf beetle damage which may reach 30-50%. Barley is the least preferred small grain host and will probably be spared from attack in most areas.

Life History and Biology

The adult beetle overwinters in weeds and grasses found in wooded areas or along fence rows. They often crawl into crack and crevices, under bark, or the hollow stems of plants for protection. Early in the spring, when temperatures reach about 50°F, the adults come out of hibernation and begin to feed. Adults have been observed in Utah in early April, but normally full activity doesn't occur until May. The adults are able fliers and fly to suitable grasses and winter or spring grains when available. These adults are heavy feeders, causing a characteristic feeding damage by eating completely through the leaves, leaving elongate, rectangular holes.

Usually within ten days after emergence and feeding, the mature adults mate and begin to lay eggs. The female can lay up to 300 eggs usually singly or in rows the upper surface of the leaf. They are laid on their sides and stuck firmly to the leaves with a gelatinous material.

The eggs are cylindrical, round, 1 mm in length, and light yellow in color with a clear spot at one end. Just before hatching, the clear spot enlarges, the yellow color turns dark, and the head and appendages become visible within the egg. Eggs hatch in 4-23 days depending on the temperatures. In Utah, we expect the first eggs to hatch about the first week in May. Peak egg hatch should be during the last week of May, and peals larval populations will

appear about mid-June.

Shortly after the larvae emerge from the egg, they begin to feed on the upper surface of the leaves, removing the chlorophyll of the leaf down to the cuticle and between veins. This produces the characteristic skeletonized feeding damage on the leaf. Over an entire field, the crop takes on a "frosted" appearance. The larvae cover themselves with amixture of mucous and feces so that they resemble a small slug feeding on the leaves. This covering is believed to protect the larvae against desiccation and some natural enemies. It is easily removed and cast off by the larvae when disturbed. Farmers and other workers in an infested field soon have shoes, pants, shirts, and nets covered with the wet, slimy material.

Larvae feed and develop for 12-20 days. Once mature, the larvae drop to the ground, burrow into the soil, and pupate.

In two to three weeks, the second generation adults emerge, generally move out of the grain fields into corn or other more palatable crops or weeds, and feed for a short time. Feeding is characterized by eating entirely through the leaf surface, causing stripping as opposed to the skeletonizing caused by the larvae. The brightly colored summer adults feed for about two weeks then go into a resting state, seek some type of shelter, and become quiescent until the following spring. These adults are very active flyers and can disperse over a wide area before they go into summer estivation. There is only one generation per year that takes four to six weeks from adult to adult. There is some evidence that the adults in Utah remain active for a longer period in the grain fields, and many are still present when the grain is harvested.

Studies indicate beetles survive temperatures from 110 to -12°F. Beetles become active in the spring when temperatures reach 50-55°F. They seek out fall or spring-planted wheat, oats and barley and begin laying eggs. Generally, they are not a problem on fall-planted small grains unless spring-planted grains are not available.

Low populations of beetles can often be found by checking obstructions downwind that low-flying insects will encounter. Fence rows, windbreaks, hillsides, or even buildings may act as an obstruction to stop the beetle's flight.

Host Plants

The cereal leaf beetle feeds on a wide range of host plants, both in the larvae and adult stages. It commonly feeds on barley, oats, wheat, spiltz, wild oats, grass, timothy canary grass, reed canary grass, annual ryegrass, perrenial ryegrass, foxtail, and fescues. Adults may feed on corn, sorghum, and sudangrass. Plants that are least preferred by the beetles but can still serve as a host plant include bluegrass, millets, fescues, red broms, red top, and downy broms. The beetles prefer younger plants and younger growth on plants. They are rarely found on broad-leafed plants.

Parasite Introduction

A very successful parasite introduction program has been carried out in the East. One egg and three larval parasites have become established and, in most cases, no chemical control is required in those areas. Attempts have been made to bring the parasites to Utah. One larval parasite from an insectary in Morgan County seems to be at least partially successful

in Utah. A second insectary has been established in the Farmington area with two releases of parasites in 1992. It is hoped that a parasite population sufficient for wide distribution will develop at this site. Plans are underway for two addition insectaries under the direction of the USDA-APHIS to be established during the summer of 1993.

Resistance

Scientists have found that some resistance in wheat is due to pubescence or hairiness of the leaves. They have found that leaf hair length is more important than density in deterring egg laying. One problem with this type of plant resistance is that environmental differences can cause pubescence to vary from one leaf to another, from one plant to another, and from one year to the next. Resistant varieties will have to be tested under Utah conditions.

Precautionary Statement

All pesticides have both benefits and risks. Benefits can be maximized and risks minimized by reading and following the label. Pay close attention to the directions for use and the precautionary statements. The information on pesticide labels contains both instructions and limitations. Pesticide labels are legal documents, and it is a violation of federal and state laws to use a pesticide inconsistent with its labeling. The pesticide applicator is legally responsible for its proper use. Always read and follow the label.

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