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SESAME LEAFROLLER IN SESAME

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Sesame (*Sesamum indicum* L.,) has become an increasingly popular crop throughout Texas, Oklahoma, and Kansas in recent years. When sesame was first grown in the U.S., there was minimal concern for economically damaging insect pests. Unfortunately, this has changed in the last few years, with several insects causing significant problems. One of these is the sesame leafroller (SLR) (*Antigastra catalaunalis*) (Duponchel), which is also referred to as the sesame webworm and sesame capsule borer. This crambid snout moth has tropical origins, and has become widespread throughout most sesame growing regions of the world. In 2020, a SLR outbreak began in South Texas, spreading into the northern Texas Panhandle and Oklahoma.

Figure 1. Sesame leafroller moth

BIOLOGY AND DAMAGE:

Adult moths are a cream- to brownish-color with a wingspan slightly over a 1/2 inch (Fig. 1). The forewings have distinct zigzag lines, while the hind wings are a solid, pale yellow. They are active at night but may be found "resting" in sesame during the day and flying short distances when disturbed. Moths feed on plant nectar, live for about 1 week, and spend this time mating and depositing eggs singly on the underside of leaves. The eggs hatch in 2 to 3 days, and larvae immediately begin feeding. These tiny (1/32 inch), yellowish larvae with black spots will feed for 10 to 12 days, going through five instars (or molts) before reaching larval maturity. As larvae develop, they become green with black spots and have a dark brown to black head capsule (Figs. 2 and 3). The spots on younger larvae may not be as pronounced as on fully mature larvae. Mature larvae will reach 3/8 to 5/8 inches in length.

Figure 2. Young sesame leafroller larva

Larvae are the damaging stage as they feed on tender foliage, flowers, shoots, and capsules. As their name

Figure 3. Mature sesame leafroller larva

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suggests, they web up leaves and terminal portions of plants to provide a protected location where they will feed, which often destroys the apical meristem of the plant (Fig. 4). The damage is easy to detect and is full of little black balls of frass (a term for the larvae's excrement). When the webbing is pulled apart, one or two larvae may be found. Later in the season, they will feed between the stem and capsules where they damage stems and bore holes into the developing capsules—feeding on and destroying the seeds inside (Figs. 5 and 6).

Figure 4. Damage caused by sesame leafroller larval feeding

Figure 5. Holes chewed into capsules by sesame leafroller larvae

Figure 6. Sesame leafroller feeding damage within capsule

Figure 7. Sesame leafroller pupa

Once larval feeding is complete, leafrollers pupate inside webbed leaves, or may drop to the ground and pupate in the soil (Fig. 7). In approximately 1 week, adults will emerge and begin the cycle again. In other areas of the world with hot climates, up to 14 generations per year have been reported. The cold tolerance of SLR is unknown, or if and in what life stage(s) it may overwinter in colder parts of the state.

CULTURAL CONTROL:

The planting date is one of the best control options for SLR. Earlier planted sesame will likely experience less leafroller pressure than later planted fields because SLR numbers increase with each generation. The early planted sesame will be past the most vulnerable stages by the time SLR populations reach damaging numbers.

Weed control also plays an essential role. It is known that *Amaranthus* spp., including pigweeds, are good hosts for this pest and may also serve as a green bridge for leafroller populations to persist even when sesame is not available. Therefore, good weed control may aid in keeping webworm populations down.

CHEMICAL CONTROL:

At this time, there are no established treatment thresholds for SLR. Sesame is vulnerable to leafroller attack from emergence through cutout when 90 percent of plants have no open white flowers. Plants are most susceptible throughout the blooming stages. Because SLR feeds directly on flowers and capsules,

relatively low populations can cause significant yield loss. Insecticide application is the most effective management strategy once SLR reaches a damaging level.

Currently, there are few conventional insecticides labeled for use in sesame. Preliminary efficacy work indicates that Chlorantraniliprole (Prevathon) provides effective control at a rate of 8 ounces per acre. However, higher rates will provide longer residual control. In practice, 14.0 to 20.0 ounces per acre rates are used to get the longer residual control that is not provided by 8.0 ounces. Zeta-cypermethrin (Mustang Maxx) provides inconsistent knock-down and a shorter window of residual control. Further efficacy work will evaluate additional chemistries for potential control of sesame leafrollers.

Leafroller larvae are protected in webbed foliage, between stems and capsules, and/or inside of capsules. For this reason, contact insecticides may not be effective and will require enough carrier and adequate pressure to penetrate webbing and get the insecticides to where larvae are feeding.

Photos courtesy of Holly Davis and Pat Porter