Kansas State University Agricultural Experiment Station and Cooperative Extension Service

KANSAS CROP PESTS

K-STATE Research and Extension

Army Cutworm

Introduction

Army cutworms, *Euxoa auxiliaris* (Grote), are a sporadic pest of alfalfa, wheat, and canola on the North American High Plains (Figure 1). Unlike subterranean and tunneling cutworms that typically sever seedling plants at or below ground level, army cutworms graze on aboveground portions of plants (Figure 2).

Figure 1. Adult army cutworm

Figure 2. Larva

Seasonal Life History

Army cutworms produce a single generation per year. In Kansas, sexually immature army cutworm moths migrate westward to the Rocky Mountains, typically beginning in early May and continuing until the first days of summer. Moths feed and become sexually mature by summer's end and initiate their fall migration eastward to the High Plains beginning in mid-September.

Female moths (each capable of producing between 1,000 and 3,000 eggs) deposit eggs on the soil surface or beneath dirt clods, typically in areas next to suitable host plants. The eggs hatch shortly thereafter, and the larvae begin feeding. They are able to tolerate cold, feeding intermittently on warm winter days and staying below ground on cold ones. With the return of warmer late winter/early spring temperatures, larvae feed continuously. After completing their feeding cycle, they burrow into the soil to pupate. Upon emergence, the sexually immature moths initiate their westward migration.

Identification

Army cutworm moths vary in coloration and wing pattern (Figure 3). Male and female moths can be differentiated based on overall shading – females are predominately grey, and males tend to be brownish. Larvae also vary in color. Small larvae are light-colored with few distinguishable markings. As they grow, larvae become darker brown or grayish with varying degrees of mottling and several pale, dorsal stripes (Figure 4). The head capsule is darker brown with some mottling. Larvae typically curl up when disturbed. Pupation occurs in an earthen cell underground (Figure 5).

Figure 3. Moths

Figure 4. Larval development

Figure 5. Pupation

Plant Host Range

Army cutworms feed on a wide variety of plants including weeds, vegetables, fruit crops, oilseeds, and grains. Plant-use patterns depend on a where a female lays her eggs and what locally available alternatives larvae choose to eat. Despite being broad generalists, larvae may express strong feeding preferences among plant species and even among different wheat cultivars.

Economic Status

While economically significant army cutworm outbreaks are sure to appear somewhere within their geographic range in any given year, it is not possible to predict exactly where or when high populations will occur. Interactions between environmental factors and natural enemies (predators, parasites, and diseases) may regulate army cutworm establishment and survival. As much as a third of larvae may be parasitized, but rates are usually much lower. Larvae are also susceptible to insect diseases caused by soil-borne fungi, and this may partly explain their prevalence in arid regions where low soil moisture reduces fungal infectivity. The condition, vitality, and abundance of host plants can further influence army cutworm foraging activities.

The life cycle of the army cutworm is well suited to the exploitation of winter annual plants that germinate in the fall, remain green through winter, and grow rapidly in spring when larval food demand is greatest. Larvae take advantage of warm periods in winter to feed above ground, while avoiding cold weather by burrowing in the soil below the frost line. Feeding by early instar larvae is inconsequential, resulting in barely noticeable 'windowpane' damage to leaves – small, transparent rectangles of dead epidermis where larvae have stripped away the lower leaf surface. Feeding by later instars results in leaves with ragged, torn edges, as if they had been browsed by cattle (Figure 6).

In wheat, larvae restrict feeding to the tender blades, tending to avoid the stems and crown or meristematic tissues that make regrowth possible (Figure 7). After larvae have exhausted local food supplies, they may form an 'army' and move en-masse in search of other host plants. Fortunately, once larvae either pupate or move on, affected wheat plants generally recover, although yields may be reduced if defoliation was severe.

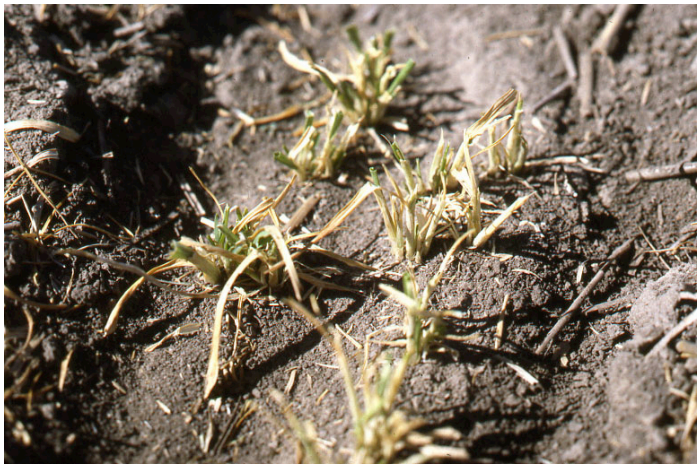

Figure 6. Wheat plants browsed by army cutworms

Figure 7. Damaged wheat resprouting

Management in Field Crops

Economic thresholds for army cutworm vary among crops and depend on factors such as plant density, vigor and growth stage, adequate soil moisture, and regrowth prospects. The best way to sample larvae is by sifting shovelfuls of soil through a coarse screen at a minimum of five sites in each field.

In wheat, as few as two 1-inch or longer larvae per square foot may affect stressed, low-density stands, especially if larvae graze plants down to the root crowns. In these situations, a pesticide application will often yield an economic return. Most fields can usually withstand as many as four to five larvae per square foot before requiring treatment, whereas wheat under good growing conditions has been observed to withstand densities as high as 8 to 9 larvae per square foot without a measurable yield impact or an economic return on an insecticide application. Wheat plants in more advanced growth stages can withstand a great deal more defoliation than those in earlier stages. Larvae are easier to kill while they are still small, and early control will provide better damage prevention, as 70 percent of larval consumption occurs in the final instar.

Provided that soil moisture is adequate and plants are not stressed, established stands of alfalfa can usually compensate for army cutworm feeding using stored nutrient reserves. Otherwise, army cutworms may delay first cuttings or reduce yields. Newly planted alfalfa is at greater risk because heavy feeding can kill many seedlings before stand establishment. Early detection of an army cutworm problem is critical, and control (if required) is best accomplished with a late afternoon/early evening or early morning insecticide application when most larvae are above ground.

Winter canola is palatable to army cutworm, and plants are susceptible to damage as they break dormancy. Treatment is recommended whenever larval densities reach four to five per square foot. Growers should consult

the most recent K-State wheat, alfalfa, and canola insect management guides for registered materials and application rates on these crops.

Urban Nuisance

When larvae finish feeding – usually in late April or early May – most larvae burrow into the soil and disappear, seemingly overnight. Each larva creates an earthen cell and spins a cocoon in which to pupate. Within two to three weeks, 'miller moths' emerge, often in vast numbers, with potential to create a significant urban nuisance. Their mere presence can be disconcerting. To avoid daylight, moths seek shelter in cracks and crevices, such as doors to commercial buildings, homes, garages, sheds, outbuildings, and vehicles. A flurry of moths darting out of hedges and bushes may startle people on a morning stroll. Additionally, dislodged wing scales create 'dust' that may cause skin and eye irritation in allergic people. Within homes, shed scales and spots of excrement may require significant cleaning effort. Turning off porch lights at night and replacing white lights with yellow can help reduce the number of moths attracted to a residence (Figure 8). There is no point trying to kill moth swarms outdoors as they make their way west. Others will replace them the next evening until the migration subsides.

Figure 8. Swarm of migrant moths

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