

## Grasshoppers

There are well over 120 species of grasshoppers that occur in Colorado and the western states. Most all of these species are uncommon or limit feeding to non-crop plants. To date, five species are confirmed to feed on hemp in Colorado:

**differential grasshopper** (*Melanoplus differentialis*), **twostriped grasshopper** (*Melanoplus bivittatus*), **redlegged grasshopper** (*Melanoplus femurrubrum*), migratory **grasshopper** (*Melanoplus sanguinipes*) and **Lakin grasshopper** (*Melanoplus lakinus*). In addition there are credible published records of **clearwinged grasshopper** (*Camnula pellucida*) feeding on hemp. These six species are all generalist feeders and together include all the main grasshopper pests of crops that occur in Colorado.

Grasshoppers damage hemp by chewing on leaves and by gnawing on stems.

Hemp has good ability to tolerate leaf loss and low-moderate levels of grasshopper defoliation on established plants has very little, likely no, ultimate effect on yield. Grasshopper feeding sometimes may destroy the growing point of the plant, resulting in distorted growth and increased branching. This may be more important to fiber varieties than with CBD cultivars where increased branching may result in greater flower bud production. Hemp is most susceptible to leaf loss by grasshoppers when plants are very small, during stand establishment, when leaf chewing injuries may significantly retard growth and even kill some plants in extreme situations.

More serious damage results when grasshoppers gnaw on stems. This habit occurs most commonly with the two largest species of grasshoppers that occur in hemp, twostriped



**Leaf chewing is the most common kind of injury produced by grasshoppers. Small plants may be seriously injured by this damage, but well established plants usually will tolerate and outgrow injuries with no ultimate effect on yield.**



**Grasshopper gnawing on stems and petioles cause stems to break, causing more crop injury than does leaf chewing limited to leaves..**



**Greatest injury is produced by grasshoppers that roost in the crop, gnawing on stems. Twostriped grasshopper and differential grasshopper cause injuries of this type.**

that support various grasshoppers will also have effects on grasshopper incidence in hemp crops. Some grasshoppers that may occur around a hemp field specialize in certain weedy plants and do not feed on hemp at all. For example, the **Russianthistle grasshopper** (*Aeoloplides turnbulli*) is a species that will feed on Russianthistle, kochia, and lambsquarters, avoiding adjacent hemp. A very large grasshopper sometimes found in hemp fields, but does not feed on hemp, is the **lined bird grasshopper** (*Schistocera lineata*).

Orthoptera: Acrididae

grasshopper and differential grasshopper. Both of these roost high in the canopy of plants at night and can extensively chew on the main stems and branches. Damaged areas may break and girdling wounds on stems can cause wilting of areas above the injury site. Late season grasshopper injuries may girdle stems so severely that developing flower buds are killed or their size reduced.

All grasshoppers associated with hemp have a life cycle that takes one year to complete. Eggs, which are laid in late summer, are the stage that survive winter. Eggs are laid shallowly in soil, in the form of pods, each containing a couple of dozen eggs. This is the life stage that survives between growing seasons and grasshopper eggs begin to hatch in mid-late spring.

In fields that are tilled, most egg pods will be exposed and destroyed; in such settings grasshopper infestations will originate from eggs laid along field edges. Fields that are not tilled, which can occur when plastic mulches are used that remain in place more than a year, have may allow eggs laid in late summer in soil to survive, resulting in grasshoppers being present more extensively throughout a field the following season.

The presence of weeds in hemp plantings



Grasshoppers that feed on hemp include (top to bottom) two-striped grasshopper, redlegged grasshopper, Lakin grasshopper and migratory grasshopper.



(Top, middle) Nymphs and (lower) adults of the differential grasshopper.

#### Additional Resources

There are several state and regional publications that provide information on identification and biology of grasshoppers. Links to many of these sites are available through the USDA-ARS website **Grasshoppers: Their Identification, Biology, and Management**

[https://www.sidney.ars.usda.gov/grasshopper/ID\\_Tools/index.htm](https://www.sidney.ars.usda.gov/grasshopper/ID_Tools/index.htm)