

Grasshoppers

There are well over 100 species of grasshoppers that occur in Colorado and the western states. Specific grasshopper species that have been documented to date that feed on hemp in Colorado include **differential grasshopper** (*Melanoplus differentialis*), **twostriped grasshopper** (*Melanoplus bivittatus*), and **Lakin grasshopper** (*Melanoplus lakinus*). Undoubtedly, future sampling will identify many additional species that will feed on this crop in western North America.

Grasshoppers can damage hemp by chewing on leaves and gnawing on stems. Hemp is likely most susceptible to grasshopper injury when plants are small, during stand establishment, when leaf chewing injuries may retard growth and even kill some plants in extreme situations. However, hemp has good ability to tolerate leaf loss and low-moderate levels of grasshopper defoliation on established plants likely have no ultimate effect on yield. Also, most damage can be expected to be concentrated close to field margins, where most grasshopper egg laying and egg hatch occurs.

More significant damage occurs when grasshopper feeding destroys the growing point of the plant, which distorts plant growth and affects branching. Also, grasshoppers may gnaw on stems, which can result in stem breakage.

All grasshoppers associated with hemp have a life cycle that takes one year to complete and survive winter in the egg stage. Eggs are laid shallowly in soil, in the form of pods, each containing a couple of dozen eggs, during late summer.



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.



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

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 may allow eggs, and later hatching nymphs, to survive and develop more extensively throughout the field.



Grasshoppers may gnaw on stems, producing weakened areas that can cause branches to break.

The presence of weeds in hemp plantings that support various grasshoppers will also have effects on grasshopper incidence in hemp crops. Some grasshoppers that may occur within a

hemp field prefer certain weedy plants and others do not feed on hemp at all. For example, the **Russianthistle grasshopper** (*Aeoloplides turnbulli*) is a species that specializes in plants in the family Amaranthaceae, including Gardner saltbush and many common weeds such as Russianthistle, kochia, and lambsquarters.

Orthoptera: Acrididae



Lakin grasshopper, mating pair.



Russianthistle grasshopper, a species that feeds on certain weeds, such as kochia and lambsquarters, and is not known to feed on hemp.



Adult (top) and nymph (bottom) of twostriped grasshopper.

Additional Resources

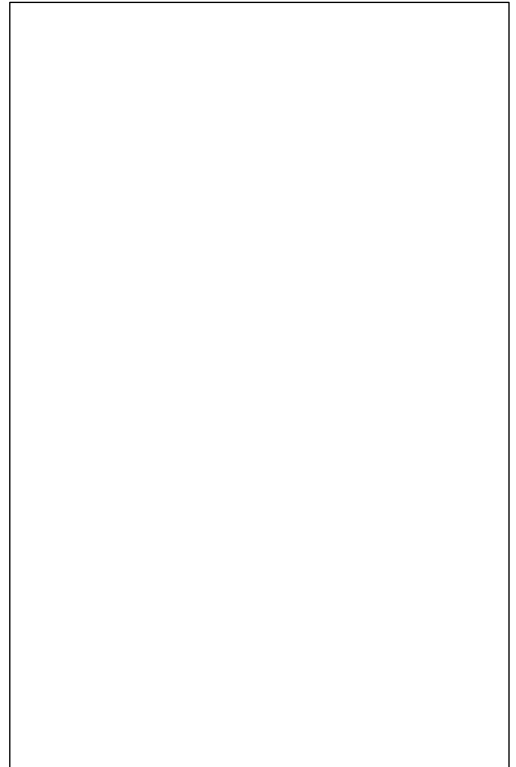
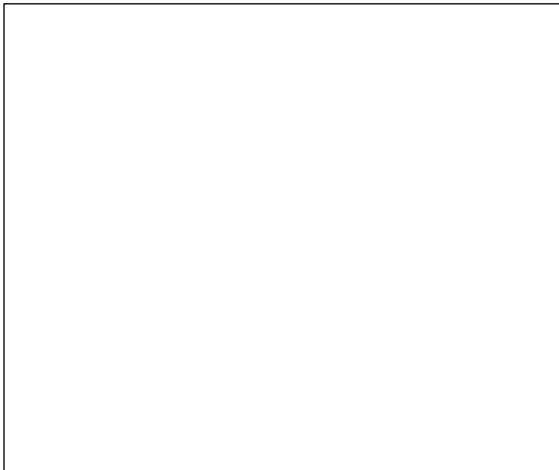
There are several state and regional publications that provide information on identification and biology of grasshoppers. Links to many of these sites are available through the USDA-ARS

website **Grasshoppers: Their Identification, Biology, and Management**

https://www.sidney.ars.usda.gov/grasshopper/ID_Tools/index.htm



Lakin grasshopper, adult





Twostriped grasshopper