

## 2020 Grasshopper populations in Colorado

Assefa Gebre-Amlak and Frank Peairs

Colorado State University Extension

The 2020 grasshopper hazard map based on the 2019 survey of adult grasshopper activity conducted by USDA-APHIS-PPQ, shows that there will be low grasshopper populations in Colorado in general with the exception of some localized spots of moderate to high populations of grasshoppers between Kit Carson and Yuma, southern Weld and Adams and southeastern counties of Colorado

([https://www.aphis.usda.gov/plant\\_health/plant\\_pest\\_info/grasshopper/downloads/hazard.pdf](https://www.aphis.usda.gov/plant_health/plant_pest_info/grasshopper/downloads/hazard.pdf)).

Weather conditions will determine how much of the damage potential will be realized in those areas with moderate populations of grasshoppers too. For example, cool wet conditions after egg hatch can result in enough mortality in immature grasshoppers to prevent outbreak. In addition, if adequate moisture is available, forage regrowth will offset much of the grasshopper damage. Most grasshopper outbreaks occur when drought conditions are prevalent.

Grasshoppers hatch, primarily during late May and June. Early scouting is important because treatments are most effective when grasshoppers are small. The goal of scouting is to get an estimate of grasshoppers per square yard, as well as their stage of development.

**Economic threshold for grasshoppers on rangeland:** The simple economic threshold for grasshoppers in rangeland is 15-20 grasshopper nymphs per square yard. This number is equivalent eight to ten adult grasshoppers per square yard. However, the economic importance of an infestation is affected by such factors as range condition, cattle prices, and treatment costs. CARMA is a computer program that allows the landowners to include these factors in their treatment decisions. CARMA is available at the same website as the hazard map mentioned earlier.

Treatment options for grasshopper management are based on the Reduced Agent and Area Treatment (RAAT) strategy, which results in untreated swaths and swaths treated with reduced chemical rates. Using lower rates and leaving untreated areas reduces treatment costs by as much as 50% and preserves biological control. Grasshoppers move constantly, insuring that they will enter a treated swath and that levels of control will be similar to complete coverage applications. Large infestations can be treated aerially with malathion, carbaryl or diflubenzuron (Dimilin). Smaller infestations can be controlled with RAAT treatments applied aerially or with all-terrain vehicles appropriately equipped to apply carbaryl or diflubenzuron. These insecticides do not have grazing restrictions when used in the rangeland.

All-terrain vehicles also can be used for spot treatments of egg-laying sites such as pastures, ditches, and untilled field margins. Grasshopper nymphs tend to remain concentrated in their hatching areas for some time after they emerge, where the application of an approved insecticide

can provide effective and economical control of localized infestations. There are baits of different products that are available for grasshopper management.

Dimilin (diflubenzuron) treatment for grasshoppers should be applied in 2nd to 3rd instar stage because growth regulator will not control adults. This product has no grazing restrictions.

Strategies for managing grasshoppers in crops as well as rangelands and recommendations for specific conditions can be found in the High Plains Integrated Pest Management (IPM) Guide, (<https://wiki.bugwood.org/HPIPM>).