



2023 Northeast California Grasshopper Damage Report

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Introduction: The UC ANR Intermountain Research and Extension Center conducted a survey in fall 2023 with the help of Northeast CA UC ANR advisors and County Agriculture Commissioner staff, to document the extent of the 2023 grasshopper infestation in Northeast CA. The survey was promoted in Siskiyou, Modoc, Lassen, Plumas, Sierra Counties, UCCE publications, public newspapers, and word of mouth. The survey was open to the public from August 11th, 2023 to October 15, 2023. The goal of the survey was to learn more about where outbreaks occur, the associated damage grasshoppers cause to crops and property, and what assistance affected property owners would benefit from in the future.

UC Cooperative Extension and County Agriculture Commissioner staff received an unusually high number of complaints about grasshoppers damaging crops, home gardens, and ornamentals this summer. It has become quite evident to longtime extension and County Agriculture Commissioner staff that grasshopper outbreaks across the region are increasing in size, scope, and distribution frequency. Both organizations lack the funding and resources to monitor and manage grasshoppers in the region. Multiple entomologists have suggested outbreaks will likely occur in 2024 especially if weather conditions are favorable. The Oregon Department of Agriculture has plans to fund scouting and treatment assistance for private landowners in Eastern Oregon, and many California residents have asked what California is doing to address the problem. Experts seem to agree that monitoring of nesting sites near agriculture areas throughout the region is a critical first step in better understanding new patterns in overwintering and spread. Monitoring can also provide an early warning to landowners that an outbreak has a high probability of occurring. Many nesting sites are located on private, state, and federal lands surrounding cropland where affected producers lack access for monitoring and early season management, thus the push for state and federal agencies to become involved. The USDA has a federal Grasshopper and Mormon Cricket throughout most of the Western U.S., but the monitoring and treatment program that is not currently active in California.

Many landowners have expressed frustration that California lacks a grasshopper scouting, treatment, and compensation program. Our hope is this survey will help document the extent, severity, and pitfalls of the grasshopper problem and encourage the Federal government, State Government and private agencies to devote additional resources to the issue.

2023 Grasshopper Damage Survey Results

We had 46 survey respondents after deleting duplicates and surveys completed by Oregon residents. Question one asked survey respondents to provide their contact information along with the location of their damaged property. As with all surveys this represents only a subset of affected individuals. A map of the location of reported damaged properties is shown in Figure 1.

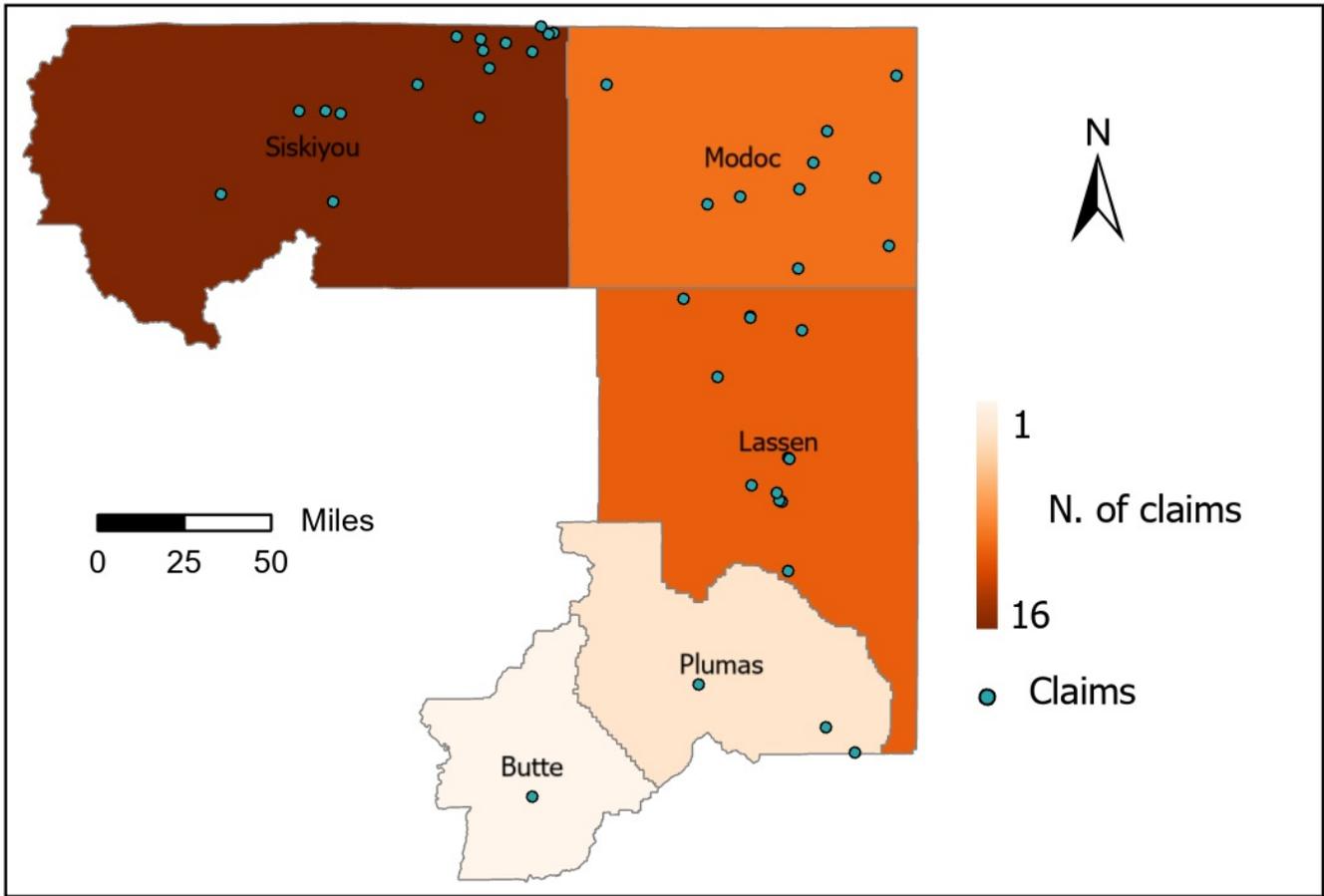


Figure 1. Location and # of respondents per county completing the 2023 NE CA grasshopper survey.

Question 2. What crops and approximate acreage was damaged by grasshoppers in 2023?

The 46 respondents reported a total 40,759 acres of private property damaged by grasshoppers. Of the crops reported by respondents, 57% listed irrigated grass pasture, 51% listed grass, wheat, barley, or triticale hay, 20% listed irrigated alfalfa, 30% listed rangeland, 10% listed wheat or barley grain fields, 7% listed home yard and garden, and 2% listed vegetable or specialty crops. Historically grasshopper damage has been linked to rangeland and grass forage crops. These two crop categories made up most reported damage, but it's worth noting 20% of respondents listed alfalfa damage suggesting grasshopper damage is not limited to grass crops.

Question 3. What crop parts were damaged by grasshoppers?

98% of respondents indicated grasshoppers fed on vegetative parts of the crops including leaves, stems, and stalks. Interestingly, 4% of respondents listed loss of immature grain seeds due grasshoppers chewing crop stems causing seedheads to fall on the ground. There were a few reports of grasshopper feeding on dry hay bales and grasshoppers contaminating alfalfa and grass hay during hay curing and baling.

Question 4. What do you estimate is the percent crop loss and dollar loss for your farm as it relates to grasshoppers?

Across respondents answering the question, the percent crop loss ranged from 10% to 100% with the average being 40% loss. The dollar loss ranged from \$1,800 to \$195,000 with the average dollar loss being \$46,682. Several respondents indicated loss greater than 50% in pocket locations near known hotspots.

Question 5. Did you treat your crops or property to control grasshoppers in 2023? If yes, what did you use and was it effective?

22% of respondents indicated they treated their property for grasshoppers. Treatments included several labeled insecticides applied by ground and aerial treatment. Only 12% of the 22% that treated indicated the treatment was effective with most stating the treatment did not work or it provided a week of control, but swarming grasshoppers invaded the site and continued to damage the crop. 2% of the respondents reported loss on organic farms.

Question 6. What type of government assistance would be most useful in reducing grasshopper impacts in the future? Multiple choice: Early seasoning scouting, insecticide treatment of young grasshoppers, compensation for crop loss, technical assistance with management options, other.

Of the respondents, 46% checked early season scouting, 54% checked technical assistance with management options, 73% checked insecticide treatment of young grasshoppers, and 73% checked compensation assistance.

Question 7: If you are enrolled in crop insurance, did crop insurance provide adequate coverage to compensate for grasshopper damage? If no, please describe uncovered damage or ways crop insurance could better serve you.

55% of responses indicated they did not have crop insurance or they only had drought insurance. 17% of the respondents enrolled in crop insurance and 12% of total respondents indicated their crop insurance program will help offset losses. Most respondents stated their insurance does not cover losses from grasshoppers, they did not think that their loss would exceed 50%, or their loss did not exceed the crop loss threshold set by insurance. These results indicate that most survey respondents had significant financial loss from grasshoppers.

Additional Comments:

The most common comments related to the grasshopper problem is that it is getting worse, and they need assistance. Several respondents mentioned they'd like to see treatment of young grasshoppers on government lands. Some would like to see government programs provide access to spray equipment or commercial treatment of grasshoppers like noxious weed programs. Some would like to see a more coordinated treatment approach for grasshoppers instead of a patchwork of individual landowners. Two respondents mentioned grasshoppers were not a problem before water curtailment and drought, and land needs to be farmed again and wetlands restored to fix the problem.

Summary: Results from this survey suggest damage from grasshopper outbreaks occur throughout the region and current management is not effective. It's important to note the survey only captured a subset of the total landowners as the team was aware of numerous other damaged properties throughout the counties that were not reported. Regardless, 40,759 acres with an average crop loss of 40% is very substantial when compared to other pest problems in the region. The \$46,682 average dollar loss per respondent is alarming since less than 12% of landowners indicated they had insurance to offset losses. It is also alarming that many landowners spent thousands of dollars on treatment with less than 15% of them achieving control.

Grasshoppers are mobile pests especially during the adult stage when they are big and have the highest possibility of consuming large amounts of plant material. This phenomenon makes it very difficult to monitor adult grasshopper populations across time and devise a control strategy as grasshopper swarms are moving across the landscape daily. Producers need alternative management strategies for grasshoppers given the poor control of adult grasshoppers with labeled insecticides. Possible solutions include treating young grasshoppers with limited mobility around nesting sites with insecticides or using chemical or nonchemical methods to disrupt grasshopper reproduction success. Both control solutions require monitoring of grasshopper populations which is currently not occurring in the region and likely not to begin due to the patchwork of land ownership and property access in the region.

Grasshoppers in other Western States are controlled through a coordinated monitoring and management program implemented by the USDA at a region wide scale. Unfortunately, this USDA program is not active in California. Monitoring efforts and management actions need to be completed on a regional scale to be effective at preventing crop loss. Results from this survey clearly indicate that the 2023 economical crop loss to producers was significant and insecticide treatment of adult grasshoppers by individual landowners is not effective.