

Locoweed Control: Aerial Application or Ground Broadcast

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The perennial **locoweeds**—crazy-weeds (*Oxytropis* spp.; Figure 1) and loco or milkvetches (*Astragalus* spp.; Figure 2)—are members of the legume (Fabaceae) family. This large group of legumes is taxonomically very difficult to identify, even by the experienced botanist. Some are poisonous and targeted by livestock producers for herbicide control, especially within the mountains, plains, and prairie regions of New Mexico. Locoweed toxicity is complicated because some produce locois in horses, cattle, sheep, and elk, but others are useful forage plants. To learn more about locoweed toxicity and identification, see NMSU Extension Circular 557, *A Guide to the Common Locoweeds and Milkvetches of New Mexico* (http://aces.nmsu.edu/pubs/_circulars/CR-557.pdf).



Figure 1. White locoweed (*Oxytropis sericea* Nuttall). Note: Similarity of flowers and leaves to *Astragalus*. Photo courtesy of Chris Allison. (Used with permission).



Figure 2. Dried and green rattlegweed (*Astragalus allochrous* A. Gray) showing characteristic purple flowers, inflated pods, and leaves. Note: Purple flowers appear blue when dried. Photo courtesy of Chris Allison. (Used with permission).

AERIAL AND GROUND BROADCAST APPLICATIONS

Broadcast (either aerial or ground) applications are effective methods for applying a selective foliar-active herbicide that provides control of locoweed but does not retard the growth of desired grass species. Foliar application places the spray mixture on the leaf surface, where the herbicide enters and moves to the root system to kill the plant.

Aerial application is well suited to uneven, rough terrain. It is often the only practical method for controlling locoweed populations that occur over broad areas. Ground spraying is accomplished using a boom sprayer mounted to the back of a trailer or truck, and is used on terrain that can easily be driven over. Ground spraying is best applied where locoweed is localized within areas generally less than 10 acres in size.

GENERAL CONSIDERATIONS

Know the **name and life cycle** of the specific locoweed species being considered for control. Some locoweed species are

prone to insect damage and are often very short-lived; thus, spraying is usually not recommended. For example, woolly or purple locoweed (*Astragalus mollissimus*), while highly toxic to livestock, often succumbs to damage by the four-lined locoweed weevil, and therefore generally has a lifespan less than four years. Thus, spraying this species must be considered a short-term benefit. Other locoweed species, such as white locoweed (*Oxytropis sericea*), may live seven years or longer, which makes spraying more economically beneficial. Accurately predicting how long locoweed is likely to persist on a given area is not realistic or possible. Because of the risk of locoweed dying from natural causes in a given area, the greatest economic benefits usually result from spraying younger plants (less than four years old).

Weather conditions at the time of spraying are extremely important for successful plant control. Coverage is best with low wind speeds and cool temperatures. Optimal wind velocity is 3 to 8 mph and air temperature should be above 50°F but below 90°F. Do not spray if a rain storm is expected within six hours of application.

The **plant condition and growth stage** at the time of application are critical for success. Spraying when locoweed is

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in the vegetative or early bloom stage in spring (April–May) is optimal. Do not spray locoweed that has been stressed or damaged by weather, e.g., from drought, disease, insects, or other causes that might have resulted in plant damage.

The **primary benefit** from locoweed control is to reduce livestock poisoning problems. Usually there is a positive grass response by the end of the growing season following locoweed control. Pasture management after spraying often determines the degree of grassland improvement resulting from locoweed control.

SPECIFIC GUIDELINES

The **proper time to foliar spray** varies from year to year because of specific weather conditions. Average to above-average winter moisture produces abundant foliage, which is desirable before spraying in spring. In droughty years, locoweed will produce sparse foliage and usually does not flower. If locoweed is not healthy and growing vigor is poor, spraying is not recommended.

At the time of spraying, the **soil temperature** at a 6-inch depth should be between 50°F and 75°F. In most years, the application season and this soil temperature range occur roughly between April 15 to May 30, plus or minus 15 days.

The **phenological stage** of locoweed is critical for determining the proper spray period. For best results, locoweed should be in the vegetative or early bloom stage. Foliage should be uniformly green with few blemishes.

HERBICIDES AND RATES OF APPLICATION

Locoweed control using aircraft has been a common practice in New Mexico, and several commercial aerial applicators are quite knowledgeable about this practice. When considering aerial application, consult several reputable dealers and obtain cost estimates for spraying.

Several different herbicides may be used to obtain satisfactory locoweed control. The specific mixture may be determined by herbicide availability, herbicide cost, and land manager preference. When spraying by aircraft, liquid herbicide sprays should be applied at 2 to 4 gallons total solution per

acre. When broadcast spraying with ground equipment, the recommended total spray solution is 15 to 20 gallons per acre.

Mixes with picloram alone or in combination with other herbicides have consistently provided the best locoweed control in New Mexico. Mixing one part picloram with four parts 2,4-D is the most common product used for commercial locoweed control. The picloram/2,4-D mix should be applied at a rate of 0.625 lb active ingredient (a.i.) per acre, which is equivalent to 2 quarts of product per acre (Table 1). For best results, use an oil-in-water emulsion utilizing 1 pint diesel fuel oil with an emulsifier such as Triton X-100. A surfactant and suitable drift control agent should be added to the herbicide mixture at rates specified on the herbicide label.

Metsulfuron provides excellent locoweed control when applied at a rate of 0.375 oz a.i. per acre or higher. Metsulfuron is formulated as a 60% active dry flowable material that is mixed in water and sprayed as a liquid. Metsulfuron is very active on broadleaf weeds and does not harm grasses.

For more information about controlling locoweed and other brush and weed species, contact your county Extension agent (<http://aces.nmsu.edu/county>).

Table 1. Recommended Spray Mixtures for Aerial or Ground Broadcast Application on Locoweed

Trade name	Herbicide chemical name	Rate of product/acre	Rate of active ingredient (a.i.)/acre
Grazon P+D	Picloram + 2,4-D (1:4 mixture)	2 quarts	0.625 lb
Tordon 22K	Picloram	1 1/2 pints	0.375 lb
Escort, Ally	Metsulfuron	5/8 to 4/5 oz	3/8 to 1/2 oz
Row 1 provide best control under most New Mexico conditions.			

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