

Juniper (cedar) occurs throughout New Mexico, occupying 23 million acres (Figure 1). Five species are common: one-seed juniper (*Juniperus monosperma*), Utah juniper (*J. osteosperma*), Rocky Mountain juniper (*J. scopulorum*), alligator juniper (*J. deppeana*), and redberry juniper (*J. pinchotii*).

Juniper grows in association with piñon pine (*Pinus edulis*, *P. monophylla*, and *P. cembroides*), but also grows in pure stands. Juniper is dominant at lower elevations, and at higher elevations is found in mixed stands with piñon. Many wildlife species rely heavily on juniper berries.

Juniper control efforts will not produce long-lasting results without a commitment to sound grazing management. Juniper control will not compensate for mismanagement. Under improper management, juniper or other undesirable vegetation will return to dominate the site.

When selecting a juniper control method, consider the presence of other undesirable plants. Removal of one species can result in the rapid increase of another. As a result, soil moisture does not become available for desirable species. Follow-up treatments on other undesirable species may be necessary after juniper control.

INDIVIDUAL PLANT TREATMENTS

Individual plant treatments usually do not result in significant increases in forage production. Rather, individual plant treatments are used as a follow-up measure after other broad-scale juniper control efforts, or as a preventative treatment. Individual plant treatments are recommended for areas such as fencerows, around watering facilities, or in areas of sparsely distributed plants with fewer than 150 juniper plants per acre.

Soil-applied treatments

The soil-applied herbicide hexazinone (Velpar L) is very effective for controlling juniper at any time of the year. Apply undiluted hexazinone to the soil surface just outside the canopy drip line at the rate of 3 ml (cc) per 3 feet of canopy height. If the plant is greater



Figure 1. Juniper (cedar) occurs throughout New Mexico, occupying 23 million acres.

than 3 feet tall (thus requiring more than a single 3 ml dose), space the applications evenly around the plant. On slopes, apply most of the herbicide on the uphill side.

Hexazinone may be applied with water at a ratio of 1:1. Apply enough mixture to give a hexazinone rate of 3 ml per 3 feet of canopy height.

Hexazinone may also be applied by using Pronone Power Pellets. Apply one pellet per 2 feet of canopy height. Place the pellets outside the drip line.

Picloram (Tordon 22K) may also be used as a soil-applied herbicide. Apply 4 ml (cc) per 3 feet of canopy height. Use picloram with the same precautions as with hexazinone. Picloram may be applied with water in a 1:1 ratio. Apply enough mixture to give a picloram rate of 4 ml per 3 feet of canopy height.

Precipitation is required to move the herbicides into the soil profile for root uptake. Final results may not be realized for 2 to 3 years from application date. Grasses and weeds may be killed where each spot of herbicide is applied, and their recovery may take 2 to 3 years. Do

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Table 1. Recommended Spray Mixture for Foliar Spraying Individual Juniper Plants

| Ingredient | Concentration in spray solution | Tank size | | |
|-------------------------------------|---------------------------------|-----------|--------|--------|
| | | 3 gal | 14 gal | 25 gal |
| Picloram | 1% | 4 oz | 18 oz | 32 oz |
| Surfactant or dishwashing detergent | 0.25% | 1 oz | 5 oz | 8 oz |
| Dye | According to label | | | |

Always follow label directions. Do not spray if foliage is wet. Do not spray immediately upwind of desirable trees, shrubs, or crops.

not apply hexazinone or picloram to snow-covered or frozen ground.

One-seed and Rocky Mountain juniper are the most difficult species to kill. Utah juniper is the least difficult to control and alligator juniper is intermediate.

Foliar sprays

Foliar sprays on individual junipers work only on trees less than 3 feet tall. Spray in late spring through summer while the trees are actively growing. Thoroughly wet the entire plant to the point of runoff.

A pump-up garden sprayer, backpack sprayer, cattle sprayer, truck-mounted sprayer, or sprayer mounted on a four-wheel all-terrain vehicle (ATV) works well. Garden sprayers are best suited for spraying a few plants, while backpack sprayers are more efficient for larger acreage or higher plant densities. ATV sprayers are most efficient on very large acreages or as the distance between plants increases. It is best to have a sprayer with an adjustable nozzle capable of delivering a coarse spray with large droplets.

Herbicide mixtures

Seventy-five to one hundred percent root kill of small junipers may be achieved by foliar spraying with the herbicide picloram (Tordon 22K). Prepare the spray as a 1% concentration of picloram in water (Table 1).

To ensure thorough coverage of the foliage, add either a commercial surfactant or liquid dishwashing detergent to the spray mix. It may also be helpful to add a commercial agricultural dye to the mix to mark plants that have been recently sprayed.

Top removal method

Nonsprouting seedling juniper species may be killed by removing the plant top at or near the ground line with a chain saw, pruner, ax, or other means. Juniper species that resprout may be controlled if they are grubbed below the basal knob located at or slightly beneath the soil surface.

CONCLUSIONS

The cost of controlling juniper with individual plant treatments will vary according to the size and density of the infestation. It is best to treat young junipers that are less than 6 feet tall because they are easiest to control. Areas previously cabled, chained, or bulldozed or areas where juniper is invading are good prospects for treatment. Individual plant treatments can be used to control undesirable trees while selectively leaving desirable plants. Periodic follow-up treatments will be necessary to maintain low juniper populations.

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