

establishment. In general, herbicide rates and combination that provided good silky crazyweed control also gave satisfactory broom snakeweed control, however, fringe sagewort and Bigelow sagebrush control results were inconsistent.

TREATING YOUNG JUNIPERS WITH VELPAR

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The purpose of this experiment was to demonstrate the effectiveness of Velpar® (hexazinone) for control of young one-seed juniper so as to inform landowners of this option for managing an invading tree problem. The evaluation was conducted on New Mexico State University's Corona Range and Livestock Research Center, approximately 15 miles east of Corona. The pasture had been cleared of trees mechanically in the mid 1980's. Since then, new junipers have propagated and have grown to over 8 ft with the majority about 2-5 ft. in height. Tree densities in experimental plots ranged from 80 to 180 per acre. The area incorporates north, south, and level aspects with gentle relief and minimal erosion.

Two 20 acre demonstration plots were established, each containing 7 one-acre subplots to be intensively sampled. For each of the subplots the number of trees treated, time spent in the plot, and amount of herbicide used was recorded. Trees were counted by size class with <1ft, 1-3ft, 3-6ft, and >6ft divisions. For the remaining 13 acres, the amount of herbicide used was recorded.

Velpar® was applied at a rate of 3 ml per 3 feet of tree height. For ease in application, the herbicide was mixed 1:1 with water and a blue dye was added. Backpack sprayers (2.5 gal.) were used and the applicators were calibrated so that with quick squeeze of the handle they could deliver ~6 milliliters in volume (i.e. 3 ml of Velpar). Thus, trees 0-3 ft. in height received one spray, trees 3-6 ft. received two sprays, and trees over 6 ft. received 3 sprays. The herbicide was sprayed on the soil surface, at the drip line, with the first spray always to the north side of the tree. Keeping the dyed sprays to one side of the tree allows for quick identification and prevents double treating a tree. If multiple sprays were required, they were done at opposite sides of the tree.

We used 2-4 applicators to treat the test plots, as people working in a line can cover acreage more efficiently. Having multiple applicators is recommended to anyone planning a large-scale treatment in one period of time.

Velpar® treatments were applied in June and October 2002. Timing of rainfall influenced how quickly the young juniper reacted to the herbicide, but both treatments resulted in very high mortality. We used an average of 0.16 gallons of Velpar® per acre. At the average density of 140 trees per acre, costs were \$15.20 per acre. The cost range varied from a low (80 trees) of about \$10.75 per acre, to a high (180 trees) of about \$19.40 per acre. These costs were calculated with a \$10 per hour applicator cost and \$55 per gallon herbicide cost. With 140 trees per acre, one applicator, on foot, can expect to treat about an acre every 40 minutes.

Past mechanical tree clearing efforts have resulted in increased forage production, plant diversity, and soil and water conservation on treated lands. However, in many cases, young junipers are reinvading these lands rapidly. Gains from previous clearing will eventually be lost as tree density and size increases. Treating these small reinvading junipers can preserve the benefits of past work and accomplish this at a much more reasonable cost than clearing mature juniper trees.