

**SEASONAL EFFECTS OF BURNING BROOM SNAKEWEED  
[*GUTIERREZIA SAROTHRAE* (PURSH) BRITT. AND RUSBY] AND ASSOCIATED  
GRASSES IN NEW MEXICO**

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In March of 1990 a study was initiated to evaluate use and effectiveness of prescribed burning as a tool in the management of broom snakeweed [*Gutierrezia sarothrae* (Pursh) Britt. and Rusby] infested rangelands. The research is being conducted on the NMSU Range and Livestock Research Center near Corona, New Mexico in Lincoln and Torrance counties. The area lies within the Shortgrass Prairie ecotype and is dominated by blue grama (*Bouteloua gracilis*), wolftail (*Lycurus phleoides*), and broom snakeweed. The objective of this study is to determine seasonal effects of burning for control of broom snakeweed and enhancing production of associated grass species.

Comparisons were made between spring, summer, and fall burning periods during 1990 and 1991. A herbicide application of .42 kg/ha of picloram (4-amino-3,5,6-trichloro-2-pyridinecarboxylic acid) was applied in March of each year for comparative purposes. Height and diameter measurements were made on broom snakeweed before each burning period to determine if plant size influenced susceptibility of damage by fire. Herbaceous vegetation response to fire is being evaluated by yield and cover estimated from within 0.2 m<sup>2</sup> (1 by 2 ft.) frames and from individual growth measurements on blue grama, wolftail, squirreltail (*Sitanion hystrix*), and sand dropseed (*Sporobolus cryptandrus*).

Study plots 20.0m by 26.5m replicated 3 times at 2 locations were found to readily burn during spring and summer burning periods when grasses were dormant, but would not burn during the fall period because plants were green and succulent. Therefore the fall burning period was excluded from subsequent evaluations. During spring burning with snakeweed in early bud break (28% moisture), only 8% suffered complete canopy destruction, 33% showed regrowth, and mortality averaged 70% by one-month post-burn. During summer burning with snakeweed in full growth (stem elongation) volatility was high as 66% suffered complete canopy destruction, 1% showed regrowth, and mortality averaged 88%. Mortality of broom snakeweed after the summer burn was similar to mortality from the herbicide application. Herbaceous biomass production the first growing season after summer burning tended to be lower than from spring or herbicide treatments. This effect, however, may be overcome by the second growing season. The season of burn and thus phenological phase of broom snakeweed showed to be most important for determining plant mortality.