snakeweed.

Studies at Fort Stanton indicated that rest from clipping during June or July and July reduced snakeweed population densities compared to other grazing and rest patterns. Near Roswell, snakeweed production was less on pastures historically grazed by sheep than on pastures grazed historically by cattle. In southern New Mexico, snakeweed densities and cover were higher on areas grazed by cattle than on protected areas. On the College Ranch and Jornada Experimental Range, snakeweed frequencies differed little between grazed and protected areas.

Recent studies at the Corona Range and Livestock Research Center showed that snakeweed densities were greater than 0.5 plants per square meter on ungrazed areas and less than that on areas grazed by rams.

If livestock graze snakeweed, then grazing tends to reduce densities and stature of the plants. If livestock do not graze snakeweed and instead graze grass plants, then snakeweed may increase in density because grass plants may not be able to compete with snakeweed for water and nutrients in the soil. Thus, livestock grazing apparently has different influences on snakeweed populations depending on stocking levels and other environmental factors.

USE OF GEOGRAPHIC INFORMATION SYSTEMS TO INTEGRATE VEGETATION, SOILS, AND TOPOGRAPHIC DATA FOR RANGE SURVEYS

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Geographic information systems offers a powerful tool for range managers to utilize information on range vegetation, soils, topography, and other factors in management and research applications. The present study was conducted in central New Mexico on grassland vegetation. Vegetational cover by species was sampled using a point contact method on 192 separate sampling locations in a grid pattern (located with a global positioning unit in UTM coordinates) across the 11,500 ha Corona Experimental Ranch. Cluster analysis identified 5 plant communities. These plant communities and locations were entered into the GIS system. Soils maps (SCS) and U.S.G.S. topographic maps were scanned, digitized and entered as separate layers. Vegetational patterns appeared to be a mosaic with *Bouteloua gracilis* community the dominant background type with inclusions of communities dominated by *Lycurus phleoides, Bouteloua curtipendula, Stipa neomexicana*, and a mixed community with *Bouteloua gracilis, Aristida purpurea*, and *Gutierrezia sarothrae*. The *Stipa neomexicana* community was strongly associated with the Deama Pastura soils while the *Bouteloua curtipendula* community was surprisingly distributed across several soil types. The *Bouteloua gracilis* and the mixed community was distributed across several soil types but more strongly associated with the Darvey Pastura and the Tapia-Dean loam. These distributions suggest that the mixed community is a disturbance condition allowing *Gutierrezia sarothrae* and *Aristida purpurea* to increase in abundance.