

responded to the mechanical treatment on one site but not on the other. Soil differences and time of the treatment may have contributed to the different responses in 1993. Studies on a variety of manipulations within piñon-juniper woodlands to improve multiple uses are being continued at several locations.

BRUSH CONTROL USING GOATS

H. Kiesling, R. Beck, and R. McNeely

(Key Words: Goats, Creosotebush)

Pastures previously grazed by either 4 or 8 Spanish or Angora wether goats were rested until 6 Aug 85 when 6 Angora and 6 Spanish wether goats were moved into pasture one of an 8 pasture (5 acres each) rotation system. Goats were rotated weekly among pastures dominated by creosotebush until 11 March 86 when grazing was stopped due to loss of goats. Angora goats maintained weight and produced 3.2 pounds of mohair while Spanish goats gained 6.4 pounds during the period. Four Spanish and 4 Angora wether goats were rotated through the pastures from September 1987 to June 1988 when coyote predation terminated grazing again. In March, Angora goats sheared 4 pounds of mohair. In October, 9 mature Angora wether goats were placed on the study and rotated weekly through the pasture until termination of project. Goats maintained weight and produced 6.3 pounds of mohair. Creosotebush canopy cover was reduced 23 and 24% in two grazed pastures that were monitored in each rotation cycle (every 8 weeks) during the project. Total herbaceous cover was reduced by 94 and 96%. In a control pasture, creosotebush canopy cover was reduced 31% while herbaceous cover was reduced 77% during the same time period. Goat grazing had little or no influence on creosotebush dominance.

RANGE FERTILIZATION

G. B. Donart and E. E. Parker

(Key Words: Fertilizer, Forage Production)

Past research at the Fort Stanton Experimental Ranch indicated positive results from range fertilization. Responses for the new ranch at Corona, representing different soils and vegetation patterns are unknown. Replaced fertilizer response plots were established on shallow calcareous and deep sandy soils at the Corona Range and Livestock Research Center in 1991. In 1992, application rates of 0, 30, 60, and 90 lb/ac of actual N in the form of urea were evaluated. On shallow calcareous soils, the 60 lb/ac rate resulted in the greatest production increase (1773 vs 877 lb/ac). Broom snakeweed also increased nearly 500 lb/ac with this application rate. On deep sandy soils, little benefit to N fertilization was noted. Grass production was similar in all application rates. No response was observed in snakeweed

production. Preliminary results from application of 200 lb//ac actual N to old bean fields showed an increase of 596 lb/ac of grass production without any change in forb production. Sod bound swales also responded to 200 lb/ac rates of N fertilization, with increases in both forb and grass components. Total production from fertilized strips was 2563 lb/ac compared to 984 from control areas.

NEW MAPS OF THE COLLEGE RANCH

Reldon Beck, Barbara Nolen, and Robert McNeely

(Key Words: GIS, GPS, Surveying Physical Features)

Currently the College Ranch is being mapped using a Geographical Positioning System. This activity is in conjunction with the Biology Department (NMSU) and Long Term Ecological Research personnel. The last map made of the College Ranch was in 1938 using standard survey techniques. Since the 1938 map was drawn there has been boundary changes and pasture fences have been moved. By using satellites to locate specific points (section markers, corner posts, windmills, etc.) it is possible to generate a computer drawn map with excellent accuracy and precision (within 10 ft of actual point). After the base map with all the man-made physical features is completed, we are planning to include locations for past and present research sites. This map with the physical features and research locations will be the basis for a geographical information system (GIS). Rainfall, stocking records, plant production, soils and vegetation types will be entered into the GIS. From this information it will be possible to create maps of different combinations of physical and biological features. Maps of management plans and activities will also be available.

MESQUITE DYNAMICS IN SOUTHERN NEW MEXICO

Reldon Beck, Robert McNeely, and Susan Muir

(Key Words: Desert Shrubs, Black Grama, Shrub Dominance)

The purpose of this study was to document changes in mesquite (*Prosopis glandulosa*) size and density on black grama (*Bouteloua eriopoda*) grasslands that were lightly grazed. The study was conducted in 4 pastures (7500 acres) on the College Ranch 25 miles north of Las Cruces. In 1982, measurements were taken for the average height and 2 diameters (maximum and minimum) of all mesquite and other shrubs growing within 220 permanent oval shaped belt transects (240 x 40 ft; 9256 ft²) on the 4 pastures. These measurements were repeated in 1993. Individual shrub area was determined from the formula for an ellipse. Volume was calculated using the formula of an upper-half prolate spheroid. Across all 220 transects, average density increased from 58 plants to 142 plants/A. The number of mesquite on 27 of the transects either declined or remained constant between 1982 and 1993. Increases of 300-500 plants/A were