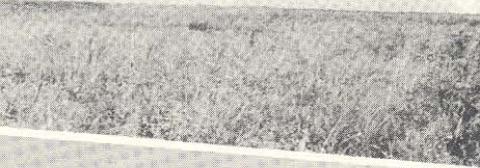
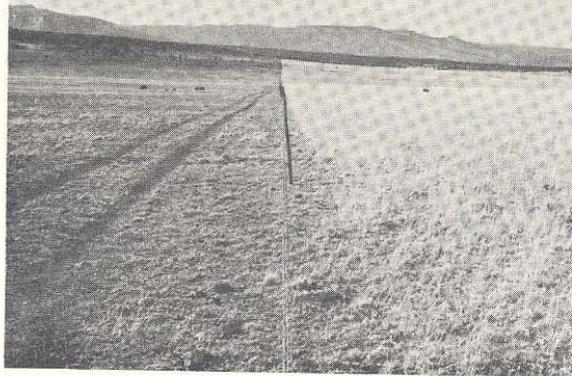


RANGE CONSERVATION - TECHNICAL NOTES

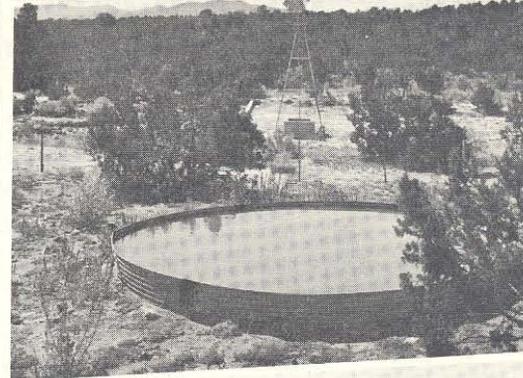
CHEMICAL PLANT CONTROL



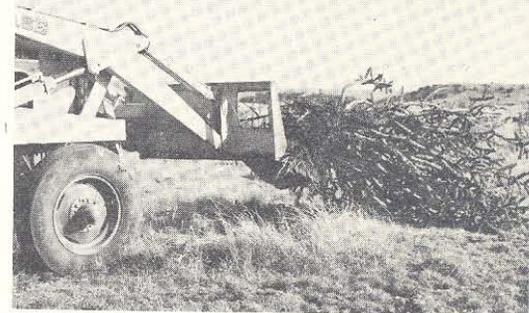
PROPER RANGE USE PAYS



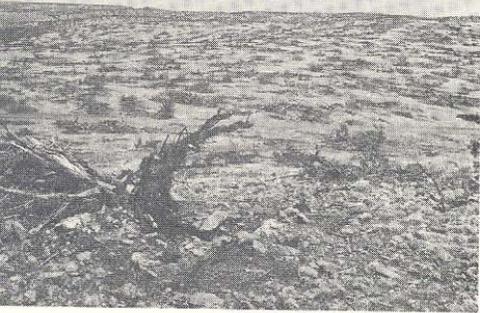
GOOD LIVESTOCK WATERING



CHOLLA CONTROL



CHAINING PINON JUNIPER



U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
NEW MEXICO

RANGE TECHNICAL NOTE No. 19

February 24, 1967

Subject: RANGE MANAGEMENT BEFORE AND AFTER BRUSH CONTROL (Part III)

The information in this Technical Note was developed at a range management workshop with Soil Conservation Service and University personnel contributing.

This information will serve as guidance, and must be adapted by the technician to specific local conditions.

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2.

GRAZING USE IN RELATION TO BRUSH CONTROL

There are many factors related to grazing when brush control is undertaken: grazing behavior as influenced by brush, kinds of livestock needed to utilize various forages, and considerations of woody plants as a normal part of the vegetation must be considered. Each of these points may be considered in outline form, as follows:

I. Grazing Behavior as Influenced by Brush

The presence of brush affects the grazing pattern of animals in several ways, including effects of the brush itself, and the effects of the presence of brush on associated herbaceous species.

A. Effects of Brush on Grazing of Associated Forage

A partial brush or tree cover often causes livestock to graze lightly in these areas during summer. This can be due to lack of sunshine resulting in forage of low palatability, or to the presence of insects such as heel flies and horse flies. Research has shown that vegetation grown in dense shade may have 24 percent less sugars and other carbohydrates than does vegetation grown in open sunlight. Insects infest wooded bottomlands, particularly, but also inhabit areas of heavy brush on uplands. Juniper covered areas are often heavily infested with insects. Therefore, brushy areas may be grazed more in winter during absence of insect pests. Moreover, in the case of deciduous brush, there is more sunlight and soil moisture for the understory in winter. This encourages growth of palatable cool season grasses and forbs. Mesquite areas often have a high percentage of brush mulch that attracts all classes of livestock during the winter months.

Within dense stands of brush the herbaceous understory is shaded out, and browse within reach of livestock is very limited. These areas provide cover for wildlife, but little grazing. Deer grazing is mostly at edges of wooded or brush covered areas, and in savannas.

B. Effects on Browse Species

Goats are attracted to areas of certain browse species, particularly during periods of lush growth. Cattle are attracted to a lesser extent. Some broadleaf evergreen species, such as Chamisa and liveoak, attract all classes of livestock at times during mid-winter. These species are relatively rich in protein, phosphorus, and vitamin A during dormancy of other vegetation. Where the amount is limited, pronounced grazing use can be observed.

At times the poisonous effects of buds of shinnery, and possibly of other oak species, make it necessary to remove livestock from very brushy pastures in early spring where these species are the primary source of green forage.

II. Kinds of Animals and Degree of Forage Utilization as They Affect Range Recovery After Brush Encroachment

Areas having only scattered woody plants are not considered. The kind of brush is an important factor. Where the brush can be used as forage for goats, and where economics are favorable for the use of goats, the landowner can effectively use them for brush control if:

- A. The woody species are low-growing or have foliage within reach of the goats.
- B. The pastures available are such that large numbers of goats can be brought in for brief periods, followed by exclusion of all domestic livestock.
- C. Goats are removed after grazable sprouts are defoliated, and the grasses are given every opportunity to replace dying woody plants until another crop of fresh grazable sprouts is developed.
- D. The process is continued into the third year, after which goats can be used only as needed.

Where the use of goats is not practical for range restoration, there should be complete rest from grazing for two growing seasons following chemical or mechanical brush control, with or without range seeding. Such pastures can be fully used as winter pasture, but only during the months, of greatest dormancy. After two years, an evaluation by technician and rancher should be made to determine further management.

The primary objective in range restoration after serious brush encroachment is to establish competing vegetation. The range condition class at the time of initial treatment has great bearing. On a range in the fair condition class a competing cover can often be established in two growing seasons. However, ranges in the poor condition class may require range seeding or several years of intensive management to produce a competitive cover of native perennial grasses.

III. Woody Plants as a Normal Part of the Forage Cover

Density of the woody plants has a bearing on management of grazing. If the grazable species are only one or two percent of the total annual yield of a pasture, even cattle or sheep grazing is likely to eliminate them. Grazable woody species can be maintained with cattle or sheep if they provide about five percent of the available forage. On goat or deer range, ten percent of the total annual forage from woody species is desirable. This should probably be the minimum where sheep and cattle are grazed with goats and deer. On exclusively goat and deer ranges, 20 percent of the total annual forage yield from woody species might be desirable.

4.

To reduce brushy species by grazing, 80 to 90 percent of each year's growth must be used during the growing season. When brush species constitute more than 34 percent of the total annual yield, this can be attained only by intensive grazing management, using goats. Any areas of brush beyond the reach of the goats must be brought down within their reach.

The degree of use on the grass species should never exceed 50 percent by weight of their growth during spring, summer, and fall. There are cases where a great many palatable grass seedlings appear after brush control. They are aided by use lighter than 50 percent.

IV. Effect of Brush for Shade and Weather Protection

The need for livestock shade has often been debated. Some research on fed steers indicated as much as 40 percent increase in gain where shade was provided. Most observations of range cattle indicate some benefits from shade, but varying with breeds of cattle. Research in California indicated that 20 square feet of shade per animal was sufficient. A tree with ten feet of crown spread would provide approximately 80 square feet of shade. With stocking a cow to five acres on a summer pasture, one tree on ten acres would give sufficient shade. The number of trees needed for shade appears negligible in effect on forage production.

Shade can be used to a limited degree as an aid to grazing distribution. To be most effective, shade trees should be on ridges or have good air circulation, and be relatively free of insects. In some cases groups of trees might be preferable to scattered trees to accommodate natural groupings of livestock. Where protection from cold winds is more important than shade, dense strips or "mottes" of trees or brush may be preferable. Such strips may also serve as protective cover and passageways for game animals.

V. Effects of Degree, Pattern, and Methods of Brush Control on Grazing Use of an Area

Where land is to be maintained in use as native range, the degree of brush control should be aimed at reducing the amount to that found in the climax. It should be done over an entire separately-fenced unit at one time. This ordinarily will leave sufficient browse for wildlife and livestock, and some protection. If not, some strips or small blocks can be left for wildlife or livestock protection.