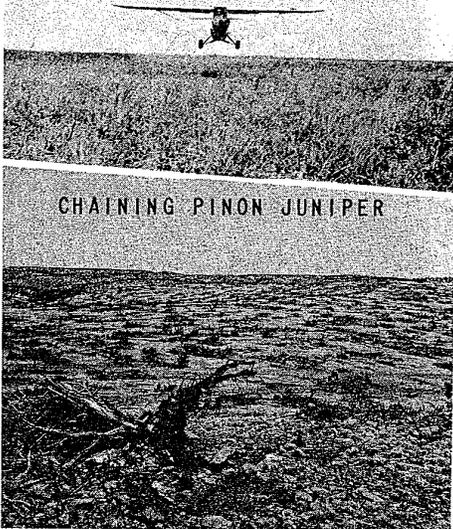
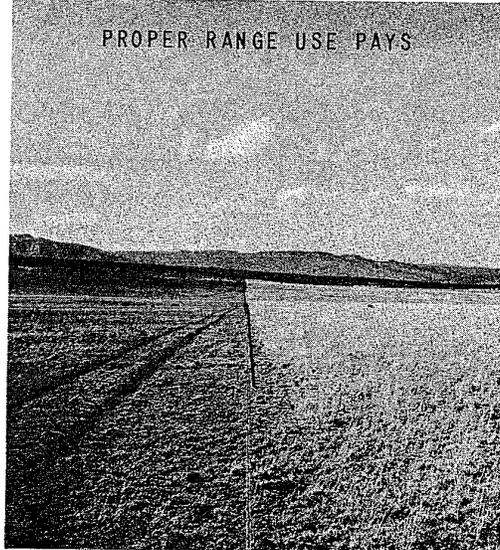


# RANGE CONSERVATION - TECHNICAL NOTES

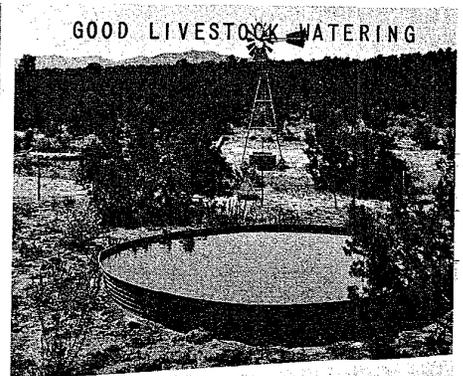
AER CHEMICAL PLANT CONTROL



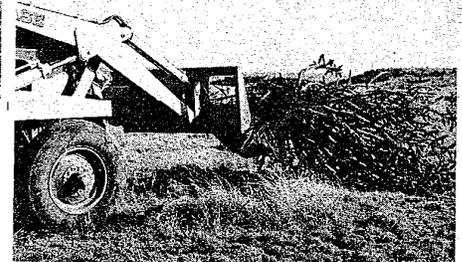
PROPER RANGE USE PAYS



GOOD LIVESTOCK WATERING



CHOLLA CONTROL



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

RANGE TECHNICAL NOTE NO. 37

May 15, 1969

Some District Conservationists have noted that there is often an increase in young cholla cactus plants following cabling. This has at times raised questions about certification of the practice and cabling as an effective treatment.

The attached article from the January-February, 1969 issue of "Progressive Agriculture in Arizona," describes such an increase in cholla. In this experiment the new plants were established by nodes during the first year of treatment, but they died during the second year. It should be noted the March treatment used in this research project is too late for most of New Mexico. An earlier treatment here usually results in a more complete kill with less node sprouting.

It would be desirable to observe some of the cholla cactus control jobs which we assist with to see if the same death loss of new plants occurs during the second year following cabling.

**Distribution:**

Area Conservationists  
District Conservationists  
Range Conservationist, Portland  
Dan Merkel, Santa Fe  
Leaford Windle & Bob Lohmiller, PMC, Los Lunas  
Don Robertson (8)  
Kenneth L. Williams  
Adjoining States - Colo., Ariz., Utah, Oklahoma, Texas

# Changes in Cactus Numbers After Cabling

by S. Clark Martin & Fred H. Tschirley\*

Cholla and other forms of cactus are problems on many southwestern ranges. Dense cactus stands probably reduce grass production. Certainly, cactus keeps cattle from using some of the grasses and makes it more difficult to handle cattle on the range.

Chemical control has been unsuccessful against cactus because the effective chemicals are too expensive. Burning has not been entirely satisfactory, because it sometimes causes large plants to drop joints and fruits that develop into new plants later, Figure 1. With those thoughts in mind, a study was started on the Santa Rita Experimental Range in 1961 to determine whether cabling would control cholla cactus.

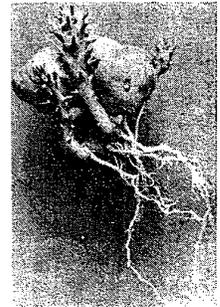
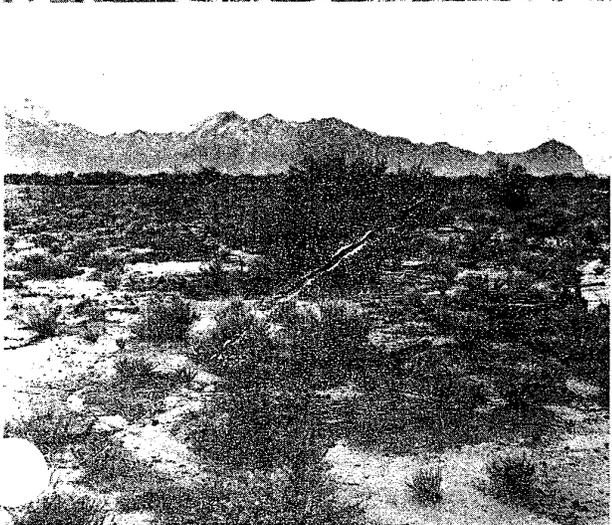
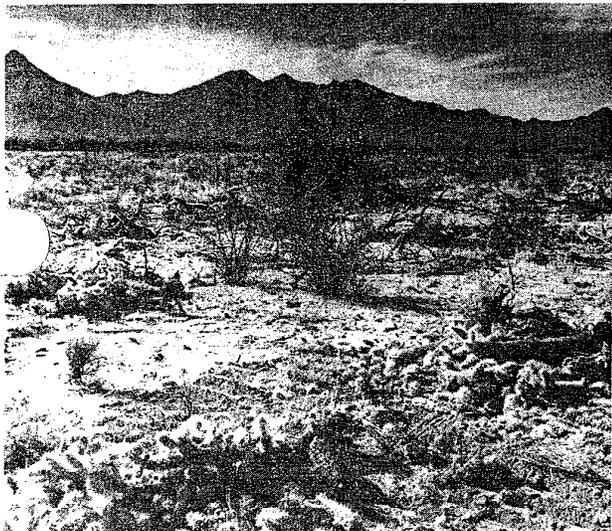


Figure 1.—New jumping cholla plants originate from sprouts the first year after cabling on areoles of joints or fruits that fall on bare soil. By the third year most of these sprouting joints died. Cholla rarely started from seed.

Annual rainfall at the study area is about 12.5 inches. Velvet mesquite (*Prosopis juliflora* var. *velutina*)\*\* dominates the vegetation around the study area, and a dense stand of burroweed (*Haplopappus tenuisectus* Green, Blake) has become established within about the

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\*\*Taxonomy of Kearney and Peebles used throughout, except for *Haplopappus tenuisectus*.

\*\*\*Tschirley, Fred H. and R. F. Wagle. 1964. Growth rate and population dynamics of jumping cholla (*Opuntia fulgida* Engelm.). *J. Ariz. Acad. Sci.* 3(2): 67-71.

Figure 2. Cabling a mature cholla stand that had begun to decline naturally increased the number of cholla per acre temporarily but resulted in lower numbers than on untreated plots after the third year. Top photo shows the stand in January, 1961, before cabling; middle, March, 1961, immediately after cabling; and bottom, January, 1966.

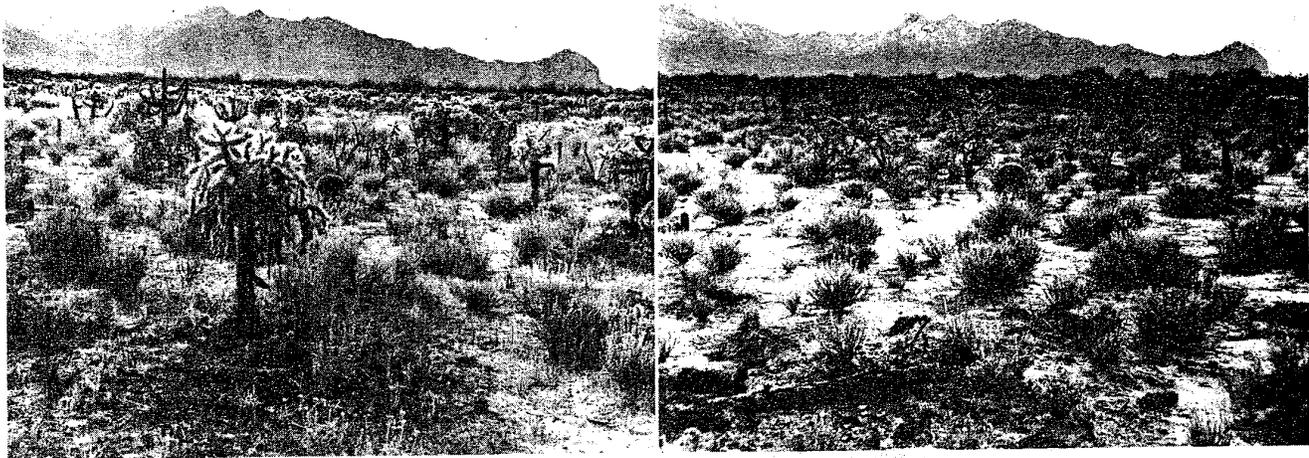


Figure 3. Natural decline in senescent stand of cholla cactus from January, 1961, in photo at left, to January, 1966, at right.

past 10 years. Rothrock grama (*Bouteloua rothrockii*), tall three awns (*Aristida hamulosa* and *A. ternipes*), Arizona cottontop (*Trichachne californica*), and bush muhly (*Muhlenbergia*) are the main perennial grasses. Needle grama (*Bouteloua aristidoides*), a warm-season annual grass, produces most of the herbage in summers with favorable rainfall. Jumping cholla (*Opuntia fulgida*), other chollas (mainly *O. versicolor*), and prickly pear (*O. engelmannii*) make up most of the cactus stand.

The study area was cleared of mesquite in 1935, and then became heavily infested with jumping cholla and other cactus species. The study area was divided into eight 2½ acre plots. Numbers of jumping cholla, other chollas and pricklypear cactus were counted in January, 1961, before cabling, and annually thereafter through 1965. The final count was made in January, 1968. Jumping cholla was the most abundant cactus species and pricklypear the least.

The cactus on four plots was knocked down in March, 1961, by fastening one end of a ¾ inch cable to a tree and the other end to a D-7 crawler-type tractor. The tractor was driven around the perimeter of each plot to form a loop of cable that knocked down all of the cactus as it closed.

Cabling knocked down the cholla immediately giving the range a more open, brush-free appearance, Figure 2. The apparent benefits of cabling prevailed to the end of the study. Some regrowth of mesquite and other

shrubs was evident, but the cactus did not recover.

Cactus numbers also declined between 1961 and 1968 on areas that were not cabled, Figure 3. The decline in cactus numbers from 1961 to 1968 was about 84 per cent for the untreated check plots and 96 per cent for the cabled plots. In 1968, at the end of the study, the cabled areas supported only 20 cactus plants per acre compared to 107 for the check areas, Table 1.

The number of rooted plants per acre increased greatly — though temporarily — on cabled plots within one year after treatment, Figure 4. Jumping cholla increased from 300 to over 6,000 plants during the first year. The increase in pricklypear was only moderate. Many of the plants established during the first year after cabling died during the second year. By January, 1964, three years after cabling, cactus numbers on the cabled and check plots were about the same.

Many of the factors that influence changes in cholla stands have been evaluated by Tschirley and Wagler.\*\*\* We do not know what the factors are that control the survival of cactus that established itself vegetatively on rangelands. We suspect, however, that the same factors that cause natural declines in mature to senescent cactus stands may also prevent establishment of new plants. In young, vigorous cactus stands having no evidence of decline, a high percentage of the vegetatively established plants

may survive, and the benefits of cabling may be only temporary. On the other hand, if a stand of cactus is already declining, natural factors, be they insects or pathogens, are active and rapid reestablishment is not to be expected. Cabling in declining cactus stands just to kill cactus may not be justifiable because much of the cactus will die anyway. But, cabling to open up the range and make it easier to find and handle cattle might be worthwhile. Cabling does not always convert old cactus stands into dense cactus thickets.

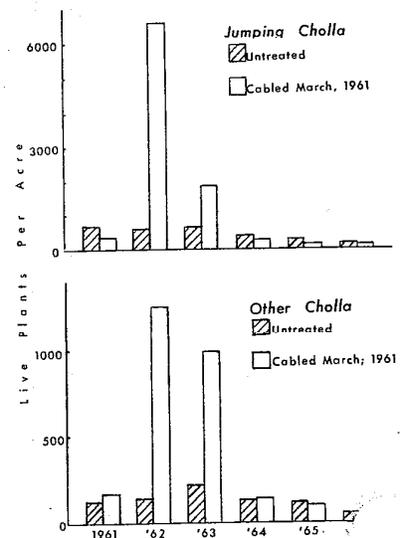


Figure 4. Changes in numbers of jumping cholla and other cholla on untreated and cabled areas.