

Brush Invasion Is Problem On Arizona Ranges

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Southern Arizona ranges have been grazed by cattle since about 1700. At that time Father Kino brought in 700 head to the San Xavier Mission a few miles south of Tucson.

The increase from this herd, as well as from subsequent introductions, provides the backbone for Arizona's cattle industry of today. Grazing—as well as other factors, many of them associated with man's use of an area—affects vegetation. In view of this, and since native vegetation furnishes most of the feed required by Arizona's livestock, it is of interest and value to know something of the changes in the vegetation that have taken place during the period of historic record.

Brush Replaces Grass

A search of the literature, both historical and the result of recent research, indicates that many areas formerly supporting essentially pure stands of grass, today grow little except brush or, at best, an overstory of brush over grass. There seems to have been no conversion from brush to grass. On the other hand, areas that produced little vegetation of any sort as much as 65 years ago, today are growing a good stand of grass. This is clearly

shown in repeat pictures of areas previously photographed in 1892.

Although grazing pressures were heavy 65 years ago, many ranges have been grazed continuously during this entire period. In spite of this, however, the grass stands have improved. This shows without question that our native grasses are adapted to long-continued grazing pressures when ranges are properly managed. On the other hand, studies have shown just as conclusively that maintenance of a good grass stand through exclusion of all livestock will not keep brush from invading grassland areas. Although grazing animals are a factor in aiding the spread of mesquite and other woody species, a number of factors may all play a part in such a change.

Five Important Factors

The principal factors, listed in order of importance, seem to be:

- (1) Cessation of grassland fires that formerly occurred at frequent intervals.
- (2) Livestock grazing that spreads seeds of woody plants and removes much of the fuel that used to carry fires.
- (3) Reduction of competition from grasses as a result of selective grazing.
- (4) An increase in rodents that spread seeds of woody plants.

BELOW—Ranges do improve, if properly managed. At left, United States-Mexico boundary southwest of Bisbee as it looked in 1892; at right, the same spot as it looks in 1957.

New Plateaus of Training

(Continued from Page 3)

The possibilities based on training at the bachelor's degree level are definitely limited. Science has greatly advanced in recent decades, supplying new techniques, theories and procedures. The most responsible positions demand men and women with the Ph.D. degree or equivalent. This degree stands for the highest level of intellectual and scientific research attainment and certifies to creative ability on the part of the holder.

The problem of maintaining a supply of adequately trained scientific personnel in agriculture is becoming increasingly acute. This should serve as a challenge to every talented high school and college student in agriculture to select some phase of agricultural science which appeals to him, specialize in it for his life work, and then aim to go to the top!

- (5) Climatic changes that tend to open up grass stands and permit establishment of shrubs.

Chemicals May Curb Brush

It is generally conceded that burning is not a practicable method today of controlling the native mesquites and other woody plants on our southern Arizona ranges. Yet, these plants constitute an ever-present hindrance to full forage production. Control by chemicals, though costly and only partly successful in most instances, seems to be the most effective method available thus far.

