REVEGETATION OF WASTE RANGE LAND

BY HERBERT C. HANSON

COLORADO EXPERIMENT STATION
BOTANY SECTION
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There are many areas of range land in Colorado that at present are lying waste or are producing very little palatable forage. These areas are abandoned fields that were once cultivated, irrigated lands containing a high concentration of alkali or with a shallow water table, and lands covered with sagebrush, greasewood or other shrubs. In the aggregate this waste land amounts to thousands of acres. Some of it can be made much more productive as shown by experiments of reseeding, removal of sagebrush and deferred grazing. The following explanation of conditions on waste areas and the suggested remedial measures should prove of value in various parts of the state.

Reclamation of Abandoned Plowed Areas

In the range country just below the yellow pines and in the openings between the yellow pines, there are numerous areas that were plowed by homesteaders years ago and afterwards

FIGURE 1.—ON THE RIGHT IS SHOWN NATURAL SOD CONSISTING OF BLUE GRAMA GRASS AND WESTERN WHEAT GRASS. ON THE LEFT IS AN OLD ABANDONED PLOWED AREA COVERED CHIEFLY WITH MOUNTAIN SAGE. IT TAKES MANY YEARS FOR THE NATIVE GRASSES TO WORK INTO SUCH PLOWED GROUND. THEY CAN BE RECLAIMED BY PROPER RESEEDING. (NEAR VIRGINIA DALE, COLORADO.)
abandoned. Most of these areas still support only a growth of weeds, as mountain sage, snakeweed and weedy grasses such as three-awned grass and Texas crab grass. Often these places are the most favorable for grass growth on the range but at present are practically worthless. The plants growing on them are of very little or no value for grazing. Adjacent areas may be closely grazed while the old broken areas are hardly touched (Figure 1). Natural revegetation on this land is very slow in most places. How to improve the forage on these abandoned acres is an important problem with many stockmen.

Experiments have shown that on ranges where grama grass, fescues and similar grasses are native, smooth brome grass, slender wheat grass and crested wheat grass will grow very successfully on abandoned plowed areas when the land is properly prepared. The land should be plowed or disked and the seedbed made as fine and firm as possible. The seed may be drilled in, or broadcast and then covered by means of a harrow. This should be done as early in the spring as possible. These tame grasses will out-yield the native grasses, provided they are given proper care. They should not, however, be grazed the first season (Figures 2 and 3). Usually it will pay to fence the planted areas so that rotation grazing may be used. This sys-

FIGURE 2.—A GOOD TWO-YEAR-OLD DRYLAND PASTURE OF SMOOTH BROME GRASS NEAR VIRGINIA DALE, COLORADO. MANY ABANDONED PLOWED AREAS CAN BE RECLAIMED LIKE THIS ONE HAS BEEN BY SEEDING TO SUITABLE GRASSES.
tem, which provides for alternate periods of growth and cropping, gives greater yields of forage than continuous cropping.

In swales and meadows where moisture conditions are more favorable, other plants as timothy, Kentucky blue grass, Canada blue grass, white clover and alsike clover will grow on soil properly prepared. As a rule, however, it is a waste of seed to sow in unprepared soil. The plants already growing there are making such complete use of the soil that additional seedlings stand no chance.

Alkali Seepage Land

In many places in the state, as along the South Platte and Arkansas rivers, the water table is very shallow and often the alkali content is very high. Much of this land is unprofitable for crop production and drainage cannot be secured. Often such areas are in native grasses. If the soil is extremely alkaline or the water stands on the surface it is best to pasture these areas as they are.
Common native grasses on this kind of soil are salt grass, alkali sacation and alkali meadow grass. Salt grass often forms pure stands but the best pastures are composed of all three. All are perennial, the former propagating by rhizomes and forming a turf, the other two being bunch grasses. These three grasses are palatable to cattle and horses, alkali meadow grass being the most palatable. Salt grass and alkali sacaton should be fairly closely grazed so as not to allow them to become dry, when they are unpalatable. If they are eaten closely, new growth continues to form and is readily eaten by stock (Figure 4).

If the land supports some wheat grass, sometimes called bluestem, or if beets and barley can grow on it, then certain tame forage plants will grow. The most suitable for these conditions are yellow sweet clover, slender wheat grass (Agropyron tenerum), meadow fescue, red top and smooth brome grass. These plants are also valuable on fields that have been abandoned due to excess alkali or a shallow water table (Figure 5).

Increasing the Forage on Sagebrush Range

In much of the western part of the state sagebrush is the dominant shrub, growing usually at elevations up to 6000 or
7500 feet. Large areas covered with sagebrush and other similar shrubs, as rabbit brush, extend as far east as the Laramie River Valley in northern Colorado. Nearly one-fourth of the state is covered with this type of vegetation. There is usually considerable space between the brush clumps. These are occupied by a variety of forage plants such as the fescue grasses, wheat grasses and arid blue grasses.

The sagebrush in many places hinders the growth of grass. This is the case especially on deep fertile soil where the sagebrush may grow three to five feet tall (Figure 6). Usually sagebrush is grazed only to a slight extent but the grasses that have been suppressed are highly palatable and nutritious. The first step, then, in increasing the amount of forage is to give the grasses a chance by removing the sagebrush.

Experiments have shown that burning is an easy method to clear land of tall sagebrush (Figure 7). The best time for burning appears to be in the fall after growth has ceased for the season and the woody stems are rather dry. With a suitable wind much land can be cleared in a short time. The improvement in the stand of grasses appears the first year following burning. This increase in stand is due to the natural spreading of the grasses already on the ground by rootstocks, their greater vigor and larger growth when the sagebrush competition has been eliminated. Sagebrush seedlings are much less numerous on the
grassed areas than on those where the sagebrush has not been burned.

Conclusion

Abandoned plowed areas in the foothills may be reclaimed by preparing the soil and then sowing suitable forage plants as smooth brome grass, slender wheat grass and crested wheat grass.

The grazing value of much alkali seepage land may be improved by sowing such plants as slender wheat grass, yellow sweet clover, meadow fescue, red top and smooth brome grass on properly prepared soil.

The stand of grasses on sagebrush land increases naturally in many parts of Colorado when the sagebrush has been removed. With a suitable wind the brush, especially where it is tall and dense, may be quickly destroyed by burning in the fall. However, where there is danger of forest fires the method is not advisable.
Areas undergoing revegetation should be protected from grazing for at least one year. Maximum forage yields and highest carrying capacities are secured on these areas after the first year by using the deferred rotation system of grazing.