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Forage Improvement on Sagebrush-Grass Range Will Produce More Meat for Victory

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UNCLE SAM is calling upon the Colorado rancher to produce every pound of meat he can to help win the war. One important way in which livestock production can be increased is through improvement of forage on the range. Not only that, but improving the quality and quantity of forage on ranches is a sound investment which will minimize the stress of future lean years.

One range area of Colorado that is in particular need of improvement is the sagebrush-grass range of the Western Slope and mountain parks.

Several million acres of formerly productive sagebrush-grass range lying chiefly in Moffat, Jackson, Grand, Gunnison, and adjacent counties are capable of producing much more palatable range forage. Under heavy and formerly uncontrolled grazing the unpalatable sage has replaced much of the palatable grass and has made the existing forage largely unavailable.



Wasser

Where fair stands of grass known to be capable of revegetating sagebrush-grass ranges by protection or restricted grazing exist, or where small proportions of these ranges are desired as emergency winter feed for sheep, it may be advisable to leave them untreated. But the major portion of such ranges is capable of improvement by either sagebrush eradication treatment or artificial reseeding with better forage grasses or by both.

Sagebrush Eradication Methods

The density increase of grass obtained at North Park in experimental plots as well as the increased forage yield, as shown in the accompanying table, indicates the possibilities for improving sagebrush-grass ranges.

Grading with a road grader, rai-ling, or burning dense sagebrush ranges with an original scattered stand of grass results not only in substantial increases in grass density but in yields of twice as much grass forage. The greatest increase in forage yield, amounting to three times that of untreated range, was obtained by clearing the land of sagebrush in the fall and reseeding to crested wheatgrass the following spring.

Precautions to Observe

While rai-ling, grading, burning, and plowing and reseeding are generally recommended methods of improving low productivity sagebrush-grass ranges, certain prerequisites must be met if the desired improvement in forage conditions is to be obtained. At least a well-scattered stand of grass, capable of spreading when liberated from the sagebrush competition, must be present if rai-ling, grading, or burning is to succeed. To hasten the grass revegetation on a treated area it is advisable to protect or restrict grazing until after seed maturity the season before and one or more seasons after treatment. Burning is advised only when adequate fire breaks—roads, streams, or constructed lanes—exist and is not recommended for ranges adjacent to timber or on too steep slopes. Because of the danger of erosion, burning should never be combined with other treatments. It is bad practice to destroy any organic material, and therefore the sagebrush left in windrows after grading or plowing should NOT be burned. Research on this phase is to be conducted near Craig, Colo.

Care must be exercised that certain undesirable plants which will re-

Average square feet density and yield of grasses on sagebrush plots at Spicer, Colo.

Treatment	Square feet density of forage grasses (1936-1940)	Yield of air-dry forage in pounds per acre (1939)
Untreated and protected	3.11	250.31
Graded and protected	4.95	633.43
Railed and protected	3.67	512.13
Burned and protected	4.77	614.43
Plowed, reseeded to crested wheatgrass and protected	4.30	778.72



Untreated sagebrush range on left; range on right from which sagebrush has been removed with a road grader. Note the great increase in stand of grass and absence of sagebrush.

sist the eradication treatment and later spread do not compose a large proportion of the original cover of ranges to be treated. Low rabbitbrush, for example, resists all eradication methods except plowing, while lupine, poisonous to sheep, and needlegrass respond to burning with a stimulated germination of seed and spread. The more expensive treatment of preparing the land for artificial reseeding should be reserved for potentially productive areas not capable of naturally revegetating themselves with better forage after sagebrush eradication or for the better soils with abundant moisture which are capable of producing tame pasturage.

Burning in the fall with a moderately fast ground wind, damp soil, and dry vegetation has given good results in sagebrush eradication studies in North Park and on the Laramie River plains. The fact that sagebrush sprouts very weakly from the root crown and main stem make burning effective.

Snap off Stems

The success of raiing and grading depends to a large extent upon the operation of the machines to snap off the brittle sagebrush stems at or near the ground level and at the same time disturb grass crowns and roots to a minimum. Native bluegrasses, needlegrasses, wheatgrasses, fescues, and bromes found on sagebrush-grass ranges are predominantly bunchgrasses with superficial root systems which are easily uprooted if the rails and blades of such machinery cut into the ground. Western wheatgrass responds most quickly and aggress-

sively to sagebrush removal and may comprise a major portion of the cover of treated ranges. However, it may be desirable to broadcast adapted grass seed in front of the railer or grader to accelerate the revegetation of certain treated areas.

Reseeding crested wheatgrass on prepared sagebrush ranges has been quite successful. Western wheatgrass is adapted to slightly moister areas and alkaline conditions, while smooth brome responds to the better soil and moisture of bottomlands. A mixture of these three species at a rate of 6 to 8 pounds per acre is recommended for reseeding large areas embracing bottomlands, plains, and ridges; yellow-blossom sweetclover may be added to the mixture at a rate of 1 or 2 pounds per acre if a legume is desired. Seeding may be accomplished either in the spring, early fall (before mid-September), or late fall. Drilling or broadcasting on firm soil so as to get the seed into the soil and covered not more than 1½ inches deep gives better success than broadcasting without covering the seed. Protection from grazing for one or two seasons after seeding, followed by conservative grazing thereafter, will protect the investment and assure a permanently improved pasturage.

EDITOR'S NOTE: Grazing management, eradication, and artificial reseeding of typical sagebrush-grass rangelands are being investigated in more detail in an Experiment Station project in cooperation with the Soil Conservation Service near Great Divide, Colo. Cost of eradication is being studied.