

Spread of Range Forage Plants

practicality of seeding some types of range land through livestock under test in Fresno County

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Whether animal droppings can be used as seedbeds for the establishment of desirable forage plants on certain range areas is being studied near Squaw Valley.

Because of the cover—open brush and some rock outcropping—the range does not need control burning, which could supply a seedbed, but the range would be benefited by more desirable forage species establishment.

The study area near Squaw Valley is at an elevation of approximately 1,200'. Native forage species include: mixed filaree, Spanish clover, ripgut, soft chess, bur clover and with varying smaller amounts of weedy annuals.

The practice of feeding cottonseed meal to range cattle during the period of lower protein and increased fiber content in native forage usually commences around the first of July—depending upon the season and the condition of the available forage. The supplementary feed is generally continued through the fall and winter until the cattle begin to refuse it in favor of green grass.

Members of the Department of Agronomy at Davis have noted the spread of bur clover and rose clover through animal droppings in the same manner as various native forage plants are reseeded. Workers in other states too have recorded similar observations.

Seed germination trials using seeds of eight different potential range forage

plants—of known germination percentages—were conducted by the Department of Animal Husbandry with four steers placed in the digestion stall at Davis. Each seed species was fed in approximately one pound portions to ensure an ample supply of seeds would pass through the animals for reclamation and testing.

Feces collections were made 24 hours, 48 hours, and four days after the seeds were fed. To provide a small margin of error in calculating germination percentage, 200 seeds were taken of each seed variety.

It was noted during the experiment that the highest number of seeds passed through the animal in the first 24 hours and that the four-day sample showed very few seeds. The following table gives a summary of the results obtained from the 24-hour samples.

| | Control germination percentage | Reclaimed germination percentage |
|-------------------------------|--------------------------------|----------------------------------|
| Annual Rye | 97 | 95 |
| Subterranean Clover | 85 | 84.5 |
| Prairie Brome | 86.5 | 75.5 |
| Hardinggrass | 81.5 | 77 |
| Smilo | 85 | 84 |
| Rose Clover | 87 | 86.6 |
| Yellow Blossom | | |
| Sweet Clover | 92 | 89.5 |
| Tall Fescue | 96 | 93.5 |

Scene showing the cottonseed meal—salt—rose clover bunker with a sample of the range land in the background.



Rose clover plant which has rooted through the manure into mineral soil.

In the trials at the study area near Squaw Valley 35 pounds of rose clover seed—at approximately one to 1½ pounds of seed for every 100 pounds of meal—were introduced into the cottonseed meal bunker. The test was later expanded to include experimental feeding of domestic ryegrass, Hardinggrass, smilo, and yellow blossom sweet clover.

Field Observations

Field observations conformed to the results of the Davis work. Manure piles deposited shortly after eating the supplementary mix had by far the most introduced plant seeds. By count—specifically in the case of rose clover—the average number of seeds present in a single manure pile was 10. Because the number of seeds reclaimed was highest in the droppings near the cottonseed bunker and diminished as the distance from the bunker increased, the bunker location should be moved every 10 to 14 days for efficient spreading of the introduced seeds.

There seems to be no sifting out in the bunker of any of the species tried.

Germination observations also were very close to those found at Davis. Practically all rose clover seeds germinated. There was, however, a marked percentage difference between germination and permanent establishment. Those rose clover seeds that germinated close to the perimeter of the fecal material had a

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HARDINGGRASS

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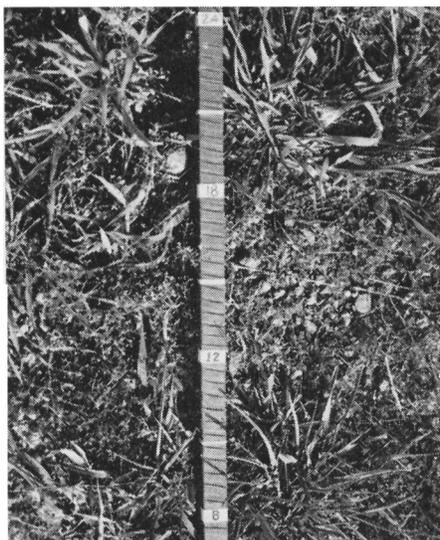
Sudan has the advantage that its seed does not germinate in the fall.

Hardinggrass—chosen with alfalfa as a long-lived perennial for the Glenn County planting—is a husky, high-yielding, palatable, and leafy perennial bunchgrass. It is hardy, extremely drought tolerant, and very long-lived. There are some stands in the state 25 years old and still producing.

Harding lends stability to range and dryland pasture feed. Once it has set a seed crop it goes dormant, so late summer grazing does not harm the plant. It turns green even before the fall rains begin and so provides feed several weeks before the annuals are ready. Its season of use extends from mid-October to mid-May. This is in contrast to the native annual range which provides short feed for three or four months only.

Harding serves as an ideal companion crop to be grown with winter annual legumes. It has remarkable staying power and provides increasing amounts of feed year by year. Also, it helps make a sod so livestock can graze the area during the rainy period.

Successful dryland seedings—usually of two pounds of Harding seed with four or five pounds of a mixture of rose, crimson, burr, and sub clover—can be found on brushland burns all the way from Shasta County in the north to San



Ground area shown—looking straight down—illustrates crown development of 2nd-season Hardinggrass plants and density of stand.

Diego County in the south. Most of the Sierra foothill and Coast Range areas at lower elevations, now being seeded to annual clovers, will support good stands of Harding.

Establishment

Stands of Harding are not difficult to obtain on arable land when a good seedbed is seeded early in the fall. Early in the following spring the planting should be grazed rather heavily to remove weed

competition. Then animals must be removed and kept out of the freshly seeded area until fall.

On land that is not too weedy three pounds of Harding seed with six pounds of clover seed mixture per acre should be adequate to produce upwards of a ton of dry matter per acre.

If the land is foul with weeds, the Harding-clover mix should be seeded after a summer crop of sudan. The Harding-clover mix can be drilled into the sudan stubble.

An operator may prefer to postpone the seeding of Harding for a few years until the winter annual clovers have built up soil fertility and have crowded out most of the weedy species. Then the Harding can be seeded—at the rate of four pounds an acre—on a well-prepared seedbed. The stand of clovers should be thinned out somewhat to allow room for the Harding to get started. The end result is an excellent pasture mixture of Hardinggrass and clovers.

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The grazing test reported above was a cooperative project participated in by J. Kenneth Sexton, Glenn County; Jesse W. Bequette, Farm Advisor, Glenn County, University of California, and the Department of Agronomy, University of California, Davis.

SPREAD

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much higher percentage of permanent establishment.

Further observations showed that those rose clover seeds deposited during the relatively hot days of July, August, and September had higher per cent of permanent establishment than did those seeds deposited later in the fall. This was due, in all probability, to the rapid drying and the resultant dissipation of excess nitrogen, plus the fact that these piles had a much greater chance of being slightly broken up. This was not enough to allow native competition, but enough to reduce the distance to mineral soil for sprouting rose clover plants.

Through the summer of 1953 the most encouraging results were with smilo. Permanent establishment of rose clover has been somewhat disappointing in all but a few cases. Hardinggrass, ryegrass, and yellow blossom sweet clover have failed to respond to this method of range reseeding.

Whether the use of livestock to reseed range areas with such species as smilo or rose clover proves to be practical will

not be easily discernible except over a long period of time.

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EXPORTS

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stuff. Because of the wide availability of fats and oils, countries which are short of dollars will sometimes obtain their supplies outside the United States even at higher prices.

Subsidies

Domestic price-support programs complicate the export situation. It has been argued that the conflict between price-support and export policy would be more acute with high and rigid supports than with flexible supports at somewhat lower average levels. Furthermore, high United States prices have encouraged foreign sources of supply. This is most noticeable in cotton.

Since 1935 public funds have been used to subsidize exports for about 90 crops. Most current programs under Section 32 of the Agricultural Adjustment Act involve payments to commercial exporters following export of privately owned commodities. One current provision is that payment can be made only in connection with export sales for free dollars—dollars not obtained from the United States government.

The Act of 1949 requires that Section 32 export subsidization funds be used principally for perishable nonbasic agricultural commodities. Of these funds, \$402 millions were available for use in 1952-53.

There has been considerable resistance in foreign countries to accepting subsidized exports from the United States, except in cases of a serious food-storage condition such as Pakistan experienced recently. A United Nations world famine relief fund has attracted favorable attention because it would permit United States surpluses to be used for emergency relief abroad under special conditions which could not be labeled dumping.

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