

Implementing a Year-Round Forage Program in California

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In 1937 there was established with the University of California at Davis and the livestock men of California a range improvement program. During my nine years on the State Board of Forestry I became quite familiar with this work. By the end of 1955 this program had covered a million acres throughout the State, with many fine results in improving brush grazing lands.

The Departments of Agronomy and Animal Husbandry were involved in the State Division of Forestry's Range Improvement program. The Agronomy Department developed and improved many grasses and clovers. They planted them in test plots in various types of mixed forage of grasses and clovers. The Animal Husbandry Department put livestock on the plots after they had invoiced the different types of forage to determine the selective feeding of the livestock as to their forage preference. After this the forage was again invoiced as to performance which represented feed value.

Sheep are more selective feeders than cattle and no doubt can identify the protein content in the feed. Protein in grasses and clovers is what we are after to make fast growth and finish on our livestock. All ranchers in range improvement should follow this plan.

In the past three years I have converted all of my irrigated land to birdsfoot trefoil (*Lotus corniculatus*), all of my dryland to rose clover (*Trifolium hirtum*), and the lowland to Mt. Barker subclover (*T. subterraneum*). The trefoil furnishes the highest percentage of protein

feed, is a heavy producer from February to November but due to low temperatures produces a reduced amount of feed from November to February. The rose clover sprouts with the rain and soon makes feed to offset the decrease in trefoil feed until April, when all the livestock are taken off, and the rose clover allowed to make full growth and a seed crop. When the seed is mature and the clover dry, about June 1, the rose clover fields are ready to put the livestock on until it rains. The trefoil increases in volume during this period and relieves the rose clover fields.

If you have the trefoil and rose clover fields in balance as to forage production, you will have year-round feed providing the rains are normal in the fall.

We have some ten million acres of brushlands to develop into forage and water production. There are about three million acres of this land on the west slope of the Sierra Mountains, starting at the foot of the mountains, that will produce some good grazing forage from the native annual grasses and clovers up to the 1,200-foot level, which is the frost belt level.

Above this 1,200-foot level we have about three million acres up to the timber line which has good soil and additional rainfall. This area is now growing only a small feed crop of annuals in the spring on account of lower temperatures. If the lower levels were improved by seeding rose, crimson (*Trifolium incarnatum*) and subclovers and the higher levels were seeded to valuable, perennial, deep rooted grasses

such as hardinggrass (*Phalaris tuberosa* var. *stenoptera*) these areas would produce spring and summer feed until the rains bring on the annual grasses and clovers on the lower levels.

This combination of lands on the two levels would set up a year-round grazing program. Again this program requires a land balance in the production of forage. It is important that seed from high value forage be used.

There are many acres of grazing land in California that have medium to heavy stands of residue grasses which have little feed value. Most of these grasses and soils are deficient in phosphate, and, if nitrogen fertilizer is used, it will increase the growth of these resident grasses which in turn will cause a real handicap in establishing a good stand of valuable grasses and clovers. There is no doubt that it is basic to utilize phosphate or sulfur to promote the growth of the annual reseeding clovers which in turn produces the valuable grasses you have seeded. Time and intensity of grazing is the answer to the establishment of a good stand of forage, but there is more leeway in livestock use after the first three years, because of the reservoir of hard seed in the ground.

I have suggested ways of developing our areas of land by combining the lower and higher levels for year-round grazing. On land that is irrigated and with about the same amount of dryland it is much easier to produce a variety of forage for year-round feed.

During the period of several years in the development of a year-round production of forage you will have time to work out the balance of forage production as it develops on the different lands, so as to give a balance in forage for your year-round needs.