IMPROVING RANGELAND IN MARIN COUNTY

UNIVERSITY OF CALIFORNIA
AGRICULTURAL EXTENSION SERVICE
MARIN COUNTY

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FERTILIZING ESTABLISHED FIELDS

Properly inoculated legumes, in vigorous condition, supply their own nitrogen by bacteria fixation. Grasses cannot do this but grasses are more vigorous than legumes if supplied with adequate nitrogen.

Therefore, legumes usually produce more feed with addition of phosphorus, and grasses with the addition of nitrogen. Thus the composition of forage produced may be controlled to some extent.

Sometimes a phosphorus deficiency will limit the growth of grasses when nitrogen is added. In this case, a combination of the two elements will be necessary to get additional feed. The addition of nitrogen in the fall will usually result in earlier growth.

It is difficult to make accurate suggestions for an economical fertilizer program without trials in the pasture or on the ranch. Fertilization of a few strips across a field will provide a reasonable trial if grazing is delayed until the fertilizer has had time to be effective. The amount and time of rainfall will greatly affect response.

Test plots in some areas have shown economical returns from fertilizers when as much as 100 pounds of actual nitrogen and 100 pounds of actual phosphorus per acre were applied. About one half that amount is the more usual application.

SOME COMMON FERTILIZERS

Ammonium sulphate	21% Nitrogen
Ammonium nitrate	33% Nitrogen
Urea	45% Nitrogen
Single superphosphate	19% Phosphorus
Triple superphosphate	45% Phosphorus
Ammonium phosphate-sulphate	16% N., 20% P.

Many combinations of nitrogen and phosphorus are available.

SEED MIXTURES

Many varieties of grasses and legumes are available, but a few have proven to be most adapted to this area. Great variety in a seed mix is not necessary. Two or three grasses and two or three legumes will do. Six or seven pounds of seed will often be enough, but most operators feel safer using 10 to 12 pounds per acre.

RECOMMENDED MIXES

1. Shallow soils (soils that will not store enough water to support perennials)

   6 pounds of Mt. Barker subclover
   OR
   4 pounds of Mt. Barker subclover
   2 pounds annual rye

2. Loam or clay soils

   3 pounds Harding grass
   2 pounds orchard grass
   3 pounds Mt. Barker subclover
   1 pound narrowleaf birdsfoot trefoil
   1 pound broadleaf birdsfoot trefoil

Perennial rye grass often is added to this suggested mix. The seed is relatively inexpensive and the early growth is impressive, but it can be just as competitive as annual grasses. If you add perennial rye, limit it to one pound per acre.

CHEMICAL CONTROL OF BRUSH

The principal chemicals used for control of woody plants are 2,4-D and 2,4,5-T in a combination marketed as brush-killer. These materials can be applied by hand sprayers to isolated plants, or by power sprayers in areas accessible with a jeep or tractor. Aircraft are used for large areas and areas too steep for other methods. Good spray coverage on the plants to be killed, and proper season of application are extremely important.

IMPROVING RANGELANDS IN MARIN COUNTY

Marin County ranchers can make their rangeland produce more feed by clearing brush, planting better forage species, and by the wise use of fertilizers.

A good stand of perennial grasses and legumes will produce higher quality feed and the growing season will be longer. Fertilizers can be applied to correct soil deficiencies and supply needed plant foods when necessary.

Areas of deep soil can usually be improved by seeding grasses and legumes. Areas of thin soils cannot be expected to produce large amounts of forage but sometimes can be improved by seeding.

Fall is the time of year to seed. If seeding is done in October or early November, you can usually depend on the first good rains to germinate the seed before the weather turns cold.

Fall is a good time to apply fertilizers, too, but spring is also a good time if the ground is dry enough to use equipment. Split applications of fertilizers are becoming more common.

Nitrogen is the plant-food element most likely to limit growth of range plants in Marin County. Phosphorus is the only other element that has been proven to be limiting. In most areas, grasses and legumes will respond to animal manures, which contain both nitrogen and phosphorus.

Late spring is the best time for spraying brush. Mechanical clearing can be done whenever weather conditions permit.

PREPARING THE SEEDBED

There are two reasons for preparing a seedbed. First, a proper seedbed provides an environment for the seeds to germinate in and the seedlings to get their roots into. Second, it destroys the early annual weed growth that gives rough competition to small perennials.

On deep soils, careful plowing or deep discing followed by harrowing and rolling will provide an ideal seedbed. The rolling may be combined with the seeding operation. If the land has been under cultivation recently, a light discing may be all that is necessary. If the area to be planted is foul with weedy grasses, it may be advisable to clean up the land by planting a grain crop in the fall or sudan grass in the spring prior to range seeding. Sudan stubble makes an ideal seedbed into which the pasture mix should be drilled without further preparation.

Steeper hills are subject to erosion and it is often more practical to seed with little or no land preparation, but some method of seed coverage will improve your chances of a good stand.

SEEDING

Many kinds of equipment are used for seeding rangeland. The brillion grass seeder, a grain drill with a grass attachment, the endgate seeder, and the grassland drill are all used for reseeding. The breast broadcaster is very practical for small areas, and aircraft are often used over very rough terrain.

Do not get the seed buried too deeply. It is better to press the seed into the soil with a roller than to drill it in too deep. About $\frac{1}{4}$ inch is the ideal depth for seed placement, except on very sandy soils.

INOCULATING LEGUMES

Subclovers, trefoils, and other legumes will do much better if freshly inoculated before planting. Purchase subclover seed separately and apply the inoculant the day you seed. Remember, too, there are different inoculants for the various legumes. Be sure you use the right kind.

FERTILIZING BEFORE SEEDING

Much of the land in Marin County is low in phosphorus. The addition of 200 to 300 pounds of single superphosphate per acre at the time of seedbed preparation or at seeding stimulates the growth of new plants, especially legumes.

Nitrogen fertilizers may stimulate weedy annual grasses so greatly that they crowd out the slower growing perennials. Weeds must be controlled. For this reason, do not apply nitrogen at planting time unless it is placed in a row under the seed. The grassland seeder has a fertilizer attachment that places a band of fertilizer directly under the drilled seed.

FIRST SEASON MANAGEMENT

Correct management of the new pasture will determine whether it will become established or will revert to an annual-type cover. Uncontrolled early growth of weeds and annual grasses will crowd out the slower growing perennials and legumes.

Graze or clip the early growth when it is about six inches high, or as soon as the ground is dry enough. The small seedlings withstand trampling better than crowding by annuals. It may be necessary to repeat the clipping or grazing.