IV - GRAZING MANAGEMENT

Management of the grazing animals has a direct influence on any effort to convert Oak Brushland to Grassland. Many brush sprouts will be browsed if livestock have access to them before they become too large and tough. Heavy grazing on a brush range the first spring after burning can effectively retard sprout growth. Such grazing is equally destructive to a seeded stand of perennial grasses. However, it does not seriously affect stands of Annual Ryegrass. In this respect, the use of Annual Ryegrass has another advantage over perennial grasses.

> Where it is desirable to establish a stand of perennial grasses, there should be little, if any grazing the first growing season. Thereafter, the most beneficial times for grazing are prior to heading and after the seed of the perennials is ripe.

It is desirable to graze these perennial stands during the winter and early spring to retard the competing annuals. Stock should be removed early enough for the perennials to mature and produce seed. This removal date varies with the elevation and the season, but will usually be in early April. After the seed of the perennials is ripe, further grazing can be permitted. The purpose of permitting the perennial grasses to produce seed is not so much for the value of the seed. The plants are also storing food in the roots, thus strengthening them for the coming year.

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CONVERTING OAK BRUSHLAND TO GRASSLAND IN TUOLUMNE COUNTY

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Agricultural Extension Service

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Converting

OAK BRUSHLAND to GRASSLAND in TUOLUMNE COUNTY

Those brushlands of Tuolumne County in which live oak is a major part, occupy some of the most productive soils of the county. Pastures established on such lands are likely to be sufficiently productive to justify considerable expense and effort in developing them.

The sprouting characteristic of the oaks and several of the associated shrubs make their control difficult. Several procedures are available for use against this brush - Fire, Bulldozers, Chemicals, Grazing animals and seeding. The use of these methods in this particular type of brush will be considered under these headings:

I - INITIAL CONTROL

II - SPROUT CONTROL

III - SEEDING

IV - GRAZING MANAGEMENT

would probably eliminate seeded perennials. Seeded annuals are usually a temporary crop. Within three to five years they will probably be replaced largely by native annuals.

Annual Ryegrass has given good results on brush burns. It has been as successful as other annuals on bulldozed areas. The seed of Annual Ryegrass is cheap, readily available and easy to sow. Where seeding of perennials does not appear advisable, there seems little reason for using any annual grass other than Annual Ryegrass. The addition of a legume, Rose Clover, to the seeding seems advisable to ultimately improve soil fertility. The rate of seeding recommended is:

Annual Ryegrass - 3 to 5 lbs. per acre, plus
Rose Clover - - - 1 lb. per acre.

Seeding recommendations for perennial grasses are more complex. More testing is needed. Different situations will probably need different seed mixtures. The perennial grasses now in use seem to rate about as follows:

1. Harding grass
2. Alta fescue
3. Smilo grass
4. Big Bluegrass
5. Orchard grass
6. Tall Oatgrass

A total of four to six pounds per acre of these perennial grass seeds is sufficient. It is probably not advisable to use more than three of these grasses in any one mixture. To the grass seed should be added two pounds per acre of Rose Clover and perhaps four pounds per acre of Alfalfa.

III - SEEDING

Range seeding has been successful on the white ash of brush burns. On land cleared of brush by bulldozing, the seeding of forage plants has been less successful. On areas that will not be immediately covered by native forage plants, seeding appears desirable. It protects the land from erosion. It gives competition to brush seedlings. It furnishes fuel for re-burning. It provides forage for livestock.

Where range seeding is to be undertaken on land being cleared of oak brush, you must decide whether to use annual or perennial grasses. Perennial grasses furnish green feed over a longer period than do annuals. They are affected less by adverse growing weather. On the other hand, the seed of the perennials used is more expensive than that of annuals. Perennials start more slowly and must be grazed more carefully. Since they are not so dry as annual grasses during the summer, the perennials do not make such good fuel for re-burning. Mixing annual and perennial grasses is not usually advisable. Seedling vigor of the annuals is greater and they tend to crowd out the perennials.

Where the land to be seeded is, or can be, fenced off from native range, the use of the perennial grasses may be advisable. Such fields can be protected and managed for the advantage of the perennials. Only where the perennials can be so protected does their use seem advisable.

Where only a small portion of a field is suitable for seeding, the use of annuals seems indicated. Here the entire field must be managed for the native annual grasses. Such management

I - INITIAL CONTROL

You can make the first attack on fields of dense brush either with a bulldozer, or fire, or a combination of the two. Chemicals have not yet been successful in killing tall stands of dense brush of this type. Machines, other than bulldozers have not yet demonstrated their value in this kind of brush.

For controlling brush, fire has many advantages. Usually it is a cheap method. It disposes of much debris that would otherwise retard forage growth. It does something to the soil that stimulates plant growth. It kills many non-sprouting shrubs and the tops of many sprouting species. It does not disturb the soil and does not expose it to erosion to the extent that bulldozing does.

Controlled burning has generally been more successful where part or all of the brush has been crushed down before burning. This is usually done with a bulldozer by holding the blade one or two feet above the ground. Smashed brush can be burned in fall or spring when danger of fire escape is less. Falling larger trees with a chain saw has also been helpful. There is some evidence that frost damage to new stands of grass is more severe where the brush has been crushed before burning.

Clearing live oak brush by bulldozer is expensive and does not eliminate sprouting. Even where the stumps are dug out or a brush blade used, sprouting is abundant. Grass seeding is not nearly so successful on bulldozed as on burned brushland.

In locations where burning is too hazzardous, bulldozing may be the only method available.

If there is a scattering of native grass in the field and the bulldozing is done when the soil is dry and grass seed ripe, a good stand of native grass will usually be present the next season. Under these circumstances, it seems advisable to disturb the soil as little as possible, leaving stumps in the ground. In this event, considerable follow-up work will be necessary to control brush sprouts.

Occasionally you may wish to go to the other extreme, if the land is suitable for cultivation. Here, as much as possible of the stumps and roots are removed. In the following years, the land can be cultivated and seeded to grain or sudan grass as frequently as necessary to control the sprouts and produce some feed. Once the sprouts are controlled, a permanent pasture seeding can be made.

II - SPROUT CONTROL

Frequently in fields of oak brush cleared by burning or bulldozing, the sprout growth is so rapid that within a few years the brush has again closed in. Re-burns appear to hold little promise for controlling these sprouts. Chemical treatment of live oak sprouts is expensive and not entirely successful. It appears to offer greater possibilities, however, than any other method tried, where burning alone does not give satisfactory control.

Until research provides something better, we recommend treating live oak sprouts and associated sprouting species with a one-half percent mixture of 2,4,5-T and 2,4-D in water. The new low volatil esters of 2,4,5-T and 2,4-D appear most promising. The mixture probably should contain from one-third to one-half 2,4,5-T. Such mixtures can be purchased, ready mixed and are usually called "Brush Killers".

It may be more economical for you to buy the ingredients and do the mixing yourself. It appears desirable to add about one percent oil to this mixture, to serve as a spreader. An orchard spray oil or diesel oil would be satisfactory. If diesel oil is used, an emulsifier should also be added. Here is how you might prepare this mixture:

1 gal. "Brush Killer" (Containing 4 lbs. 2,4-D and 2,4,5-T)

2 gal. Diesel Oil

1 cup Detergent Soap

96 gal. Water

If your "Brush Killer" contains but two pounds per gallon of 2,4-D and 2,4,5-T, you should, of course, add two gallons rather than one.

Use a sprayer which has an agitator to keep the ingredients well mixed. As much as practical of the stem and foliage of each sprout should be sprayed. Thorough coverage is important. It appears most economical to spray the sprouts before they get very large. Repeated treatments, probably at yearly intervals will doubtless be necessary, at least on live oak.

On small fields, a flame thrower can be used to advantage to kill sprouts back. Plants so treated will probably sprout again. Grazing animals, particularly goats can also be used effectively against sprouts.