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TREE AND BRUSH REMOVAL IN TEHAMA COUNTY

UNIVERSITY OF CALIFORNIA
AGRICULTURAL EXTENSION SERVICE
TEHAMA COUNTY

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REFERENCES:

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Brushland To Grassland - Agricultural Extension Service, San Diego County

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INTRODUCTION:

Of the 1,903,000 acres of land in Tehama County, 595,000 are classed as woodland-grass and 67,000 as hardwood (woodland oak, which could be solid stands of oak) intergrown with scrub oak, manzanita, and other chaparral species.

The brush and oaks reduce the value of the land for grazing. Their removal produces more grass. More grass produces more meat and greater prosperity for the individual and the county as a whole.

Replacement of brush and trees by grass cover increases water yield from range land watersheds. Deep-rooted summer-growing scrub trees and chaparral use more water than range grasses. Water saved by brush removal increases stream and spring flow and recharges groundwater supplies. A good grass cover prevents erosion.

An experimental watershed at Diamond Range and plots in Button Canyon are part of a statewide hydrology study being made by the University of California

WHY CLEAR HILL OAKS AND BRUSH FROM THE LAND?

1. Forage production is increased by 50 per cent, according to a number of ranchers who have removed scrub oaks.
2. Clearing oaks and brush increases the palatability of the forage and encourages more even distribution of livestock on the grazing lands. When trees are removed the cattle graze more evenly over the whole area, instead of concentrating heavily on clearings.

3. Ground water supply is increased.

4. It is easier to work range livestock.

5. Dense brush and chaparral can be converted to good pasture.

WHICH METHOD OF REMOVAL?

MECHANICAL? CHEMICAL? FIRE? OR A COMBINATION?

A number of factors need to be considered in determining the method of control for each range:

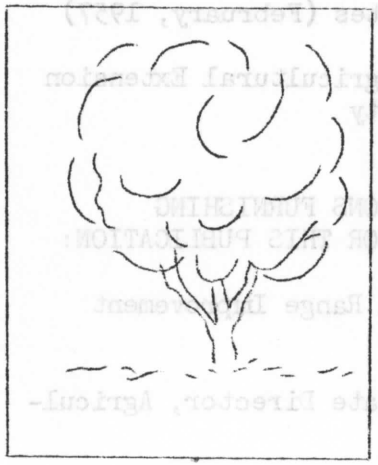
- The need for more forage production.
- The rancher's desire to remove oaks and brush.
- The soil series.
- The terrain -- steep, level, or moderately steep.

For very thick stands with small trees and a heavy brush undergrowth, the bulldozer is probably the most practical means of removal, unless a control burn followed by chemical treatment is employed.

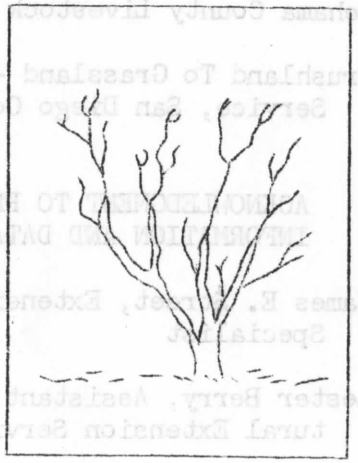
If trees are to be cut for wood, the chain saw is practical. The stumps should be painted with 2,4-D Amine.

If the rancher wants to clear only a few acres a year and does not want to use heavy equipment or saw, or if he does not want to disturb the soil on steep land, then the cut method or injection of 2,4-D Amine under the bark of trees would be applicable.

For soils that are very thin and steep, chemical treatment is recommended in combination with fire in order to avoid serious erosion.



Before chemical treatment



After chemical treatment

SPROUT CONTROL:

Blue oak or hill oak that has been cleared mechanically and burned sometimes sprouts and becomes a problem. These sprouts can be sprayed with 2,4,5-T Ester or with a mixture of 2,4-D, 2,4,5-T (Brush Killer), using 4 pounds of the actual chemical per 100 gallons of water. Spraying is usually done during May and June, but if the soil is wet enough for continual growth the work may be done later.

2. Injector: The tree injector is a tubular bazooka-like tool about 4 feet in length. A cylinder at the top holds the chemical, and a sharp bit at the bottom is jabbed into the bark of the tree near its base. The chemical runs into the cut of the tree when the valve handle is tripped. Cuts should be spaced around the base of the tree near the crown, with no more than 2 inches of bark between cuts.

Fill either the squirt gun or the injector cylinder with 2,4-D Amine at the rate of 4 pounds of actual chemical per gallon, mixing equal parts of water and 2,4-D. Apply enough of this mixture to fill the cuts made at the base of the tree by axe or by injector bit.

MECHANICAL CLEARING

Bulldozing, chain sawing, and injection are the three primary methods used to clear hill oak and brush in Tehama County. A fourth method that could be used is girdling.

BULLDOZING:

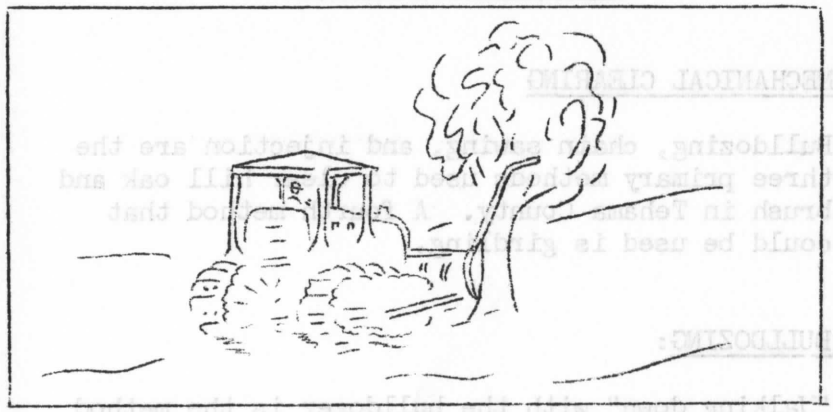
"Walking down" with the bulldozer is the method most used by Tehama County ranchers. More than 92 per cent of the 25,000 acres of hill oak cleared has been done with the dozer.

"Walking down" means moving the bulldozer along at such speed that it doesn't stop when it knocks a tree over but goes right over broken-down trees and brush, which are left as they fall to be burned two or three years later.

Both the machine operator and the rancher find "walking down" to be the fastest method, saving time and fuel.

The bulldozer operator regulates the blade height according to the size of the tree or brush it is going to push over. With large trees the operator lifts the blade for greater lever efficiency.

The bulldozer should also be equipped with a steel arm fastened to one side. This pushes the top of the tree while the blade hits the bottom (see illustration on page 4).



As the tree bends from the top the bulldozer blade hits near the base of the tree and down goes the tree without any backing or maneuvering or pushing and struggling.

Operators consider the D9 bulldozer the most practical and economical for mashing trees and brush. There is a saving of approximately $3 per acre over the D7 size.

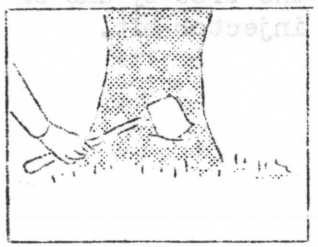
LIVE OAK:

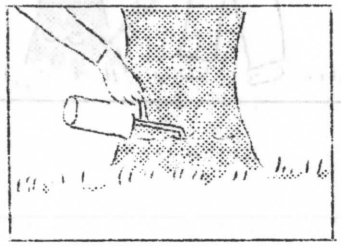
Live oak should only be "walked down" or worked with a bulldozer when the ground is damp and the entire tree can be taken out, roots and all. If a live oak tree is broken off or young whip-growth is left, a tremendous sucker problem will develop and the regrowth of brush may become an even greater problem than before.

CUT SURFACE TREATMENT:

The cut-surface treatment is proving a very efficient and inexpensive way to eliminate undesirable trees. Approximately 400 acres of hill oak in addition to small one- and two-acre plots have been treated by this method in Tehama County.

1. The squirt can and the axe: With the axe make cuts near the base of the tree with no more than 2 inches of bark between cuts. The cuts should be level so the chemical will not run out. Then fill the cuts with 2,4-D Amine. For best results use a hydraulic-type squirt can and a small light axe.



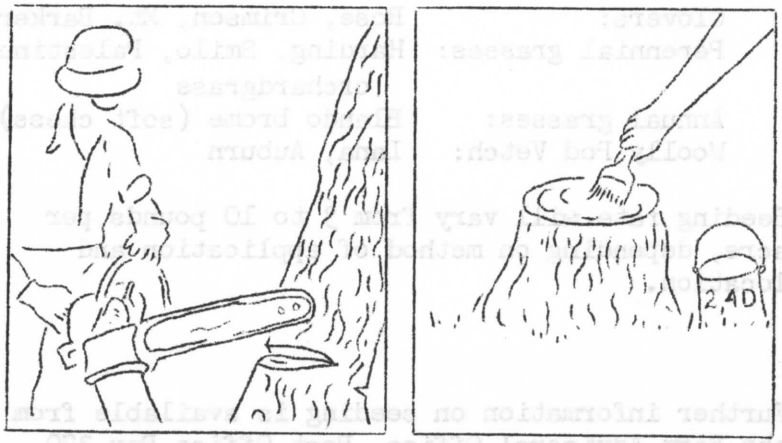


CHAIN SAW AND CHEMICAL COMBINATION:

The chain saw is not suited to all brush and tree removal, but it is useful where the rancher is either allowing a wood cutter to cut wood on his ranch or is cutting wood for his own use or sale. About 1000 acres of hill oak (blue oak) in grass-woodland areas of Tehama County have been cleared to date by chain saws.

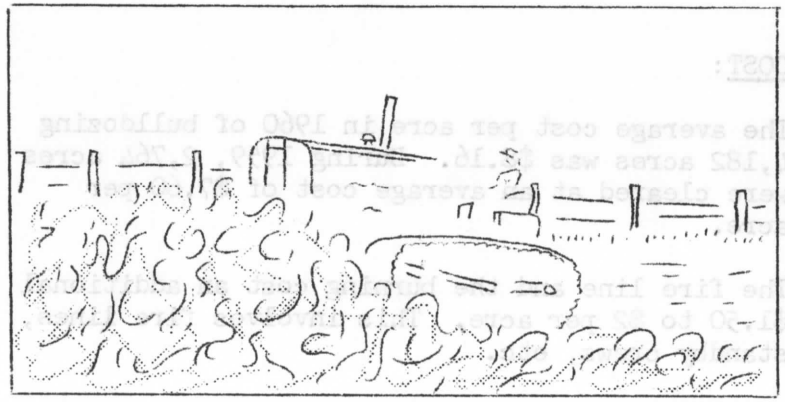
The stumps should be treated with 2,4-D to avoid sprouting and suckering. Control of sprouts has been about 80 per cent effective when the tree is cut relatively close to the ground and the top of the stump is brushed to the point of run-off with undiluted 2,4-D Amine (4 pounds of actual chemical per gallon).

Small trees and seedlings can be whipped to pieces by lightly touching them with the chain saw and then daubing the damaged part with the chemical. Excellent results have been achieved on small twig-like trees growing between larger trees.



REMOVE HOT SPOTS

Pushing away heavy brush growth from fire line areas as trees are bulldozed over will eliminate possible hot spots during the control burn. This also serves to create a controllable fire line at the time of pushing down trees and brush.



CLEARING DEBRIS:

Trees and brush are left to dry for three seasons before they are burned, so the trunks will be consumed by fire and no logs will be left on the range land.

A hot fire is also used to help control sprouting and to eliminate young whiplike trees that have developed from sprouts bent but not cut or broken off in bulldozing.

SPRAYING SPROUTS:

Sprout or whip growth and small seedlings will continue to grow after clearing land by bulldozer or other mechanical means. They can be controlled with 2,4,5-T plus 2,4-D (Brush Killer), using 4 pounds of actual material per gallon in 100 gallons of water.

COST:

The average cost per acre in 1960 of bulldozing 4,182 acres was $8.16. During 1959, 2,764 acres were cleared at an average cost of $7.60 per acre.

The fire line and the burning cost an additional $1.50 to $2 per acre. This involves fire lines, standby crews, etc.

The cost of injecting 200 acres in 1959 with the tree injector was $5 per acre for labor and chemical. The time involved in supervising and hauling chemical to the ranch was not included in this cost. In 1960, on a contract basis, costs were $7.50 per acre.

The cost of sawing and painting stumps on 1000 acres was approximately $10 per acre.

BURNING:

Fire can be an excellent tool if properly used. It is also an inexpensive method of control. The control burn must be planned and organized in advance in cooperation with the State Division of Forestry.

it is also necessary to have a burning permit for control burns. Actually, before clearing the land, it is wise to have the Ranger in your district help you lay out the cleared land so it will make an effective burn three years later.

SEEDING:

Following a burn there is considerable white ash, which makes an ideal seed-bed for many of our introduced species.

Fall seeding is recommended for optimum results. Plant from October 15 through December.

Seeding can be accomplished either by ground or air application. Spot seeding in the white ash from jeep or horse could also be used satisfactorily.

We recommend the following varieties, which have shown great promise in Tehama County:

Clovers:	Rose, Crimson, Mt. Barker
Perennial grasses:	Harding, Smilo, Palestine orchardgrass
Annual grasses:	Blando brome (soft chess)
Woolly Pod Vetch:	Lana, Auburn

Seeding rate will vary from 3 to 10 pounds per acre, depending on method of application and location.

Further information on seeding is available from the Farm Advisors' Office, Post Office Box 370, Red Bluff, California - Telephone LA 7-3101.

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COST STUDY
OF
CLEARING OAKS
BY
INJECTION OF CHEMICALS

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COST OF TREATING OAK WITH 2,4-D AMINE

Number of acres	224
Number of trees per acre	202
Percent of kill	94%
Total gallons of chemical	116
Total cost of chemical (including 4% tax)	$422.24
*Number quarts chemical per acre	2.07
Cost of chemical per acre	$1.88
Total hours labor	577
Total cost of labor	$1154.00
Hours labor per acre	2 hrs., 35 min.
**Cost of labor per acre	$5.16
Misc. supplies & Depreciation on equipment	$76.00
Total cost of project	$1651.96
Total cost per acre	$7.38

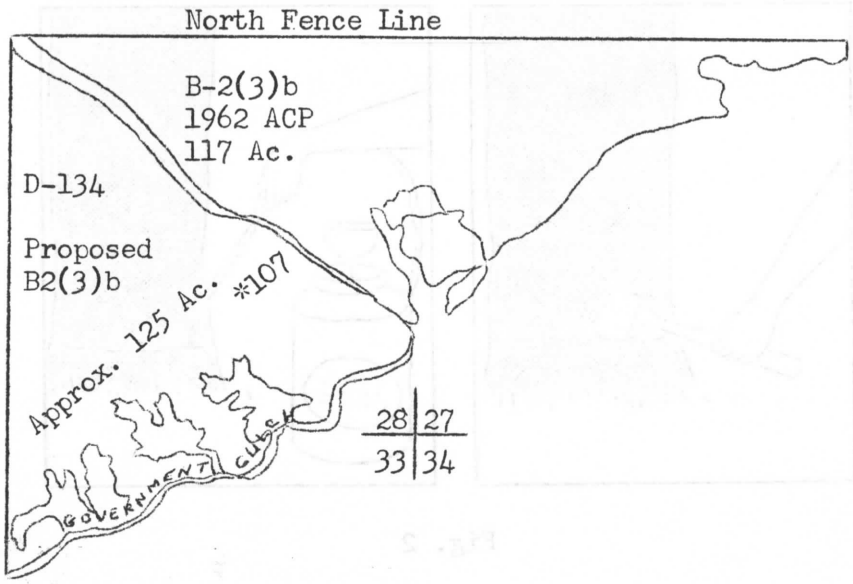
*Mixed half 2,4-D Amine, one half water

**This did not allow for time in purchasing of chemical, insurance on laborers, or time going to and from the project.

COST STUDY OF CLEARING OAKS
by
INJECTION OF CHEMICALS

This leaflet presents information on a cost study of killing oaks with 2,4-D Amine by the injection or cut surface method.

The study was conducted on the C. C. Williams Coon Hollow Ranch southeast of Flournoy in Tehama County. The area was approximately 242 acres divided in two plot areas; plot one containing 117 acres which was treated May 21 to June 9, 1962, and plot two containing 107 acres which was treated during the period November 11, 1962, to January 26, 1963. (See map of layout, Fig. 1).



*107 actual tree acreage.

Fig. 1

METHOD OF TREATMENT

The cut-surface treatment is an efficient, inexpensive way to eliminate undesirable trees. Two methods of treatment were used in this study.

1) Axe and pressure or squirt can

Cuts were made through the bark well into the wood near the ground with the axe. The cuts are continuous around the tree, about two inches apart. (See Fig. 2). The cuts were filled with 2,4-D Amine mixed with one part water to one part chemical. We found in this study that the one and two gallon pressure garden sprayer was more efficient than the quart squirt can.

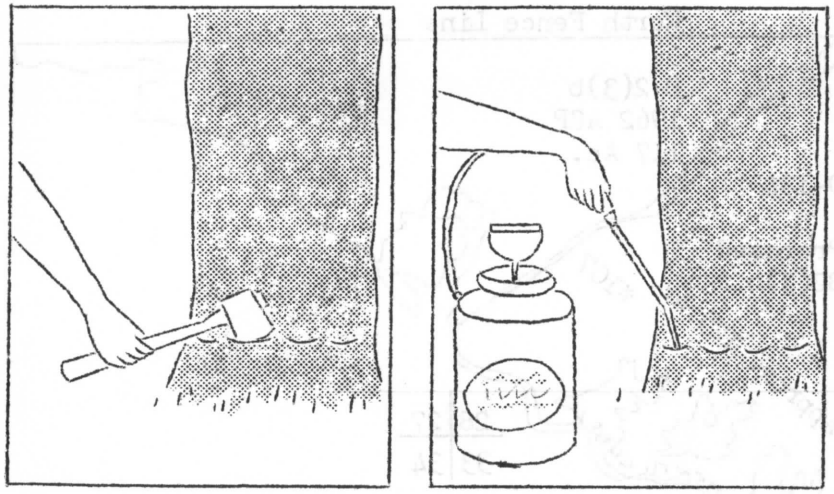


Fig. 2

2) Injector

The tree injector is a tubular bazooka-like tool, a cylinder about four feet in length with a cutting bit on the bottom and a valve on top making it possible for the chemical to flow through a hole in the bit. The injector is jabbed into the tree, near the base, and the chemical runs into the cut when the valve handle is tripped. The cuts are placed around the tree about two inches apart, making sure they are through the bark and well into the wood. (See Fig. 3).

(Use 2,4-D Amine, 4 pounds of chemical per gallon of material).

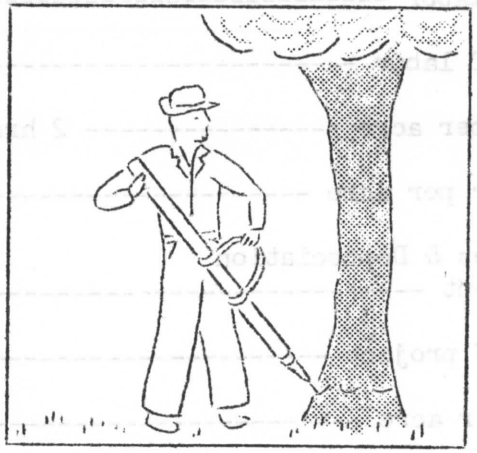


Fig. 3

The men were paid $2.00 per hour, chemical was purchased in 30 and 10 gallon lots at $3.50 per gallon, f.o.b. Red Bluff + 4% tax. There was an average of 202 trees per acre, ranging from 2 inches to 30 inches in diameter, and a ninety-four percent kill was obtained.