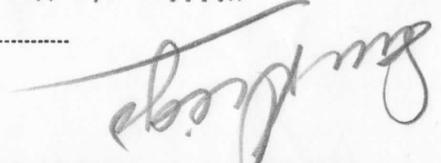


Progress Report

San Diego County

Name of Project: Killing the Woody Type of Range Plants by Use of Herbicides



PROJECT NUMBER: State 3682 County 140

REPORT PREPARED BY Victor W. Brown

Farm Advisor

DATE October 9, 1959

Are project and progress reports to continue? Yes.....No.....

I. PROCEDURE USED:

No change in procedure.

II. RESULTS:

1958. Rates of application of the material were 8, 16, and 32 lbs. per acre. Each rate was applied on an area of 50' x 50' per plot.

Species Treated

Observations

Chamise
 Good leaf symptoms first year - need 32-lb. rate to effect 50% or better kill.

Buckwheat
 Good leaf symptoms first year - 90% of plants treated recovered.

Ceanothus
 Leaf symptoms first year - 75-80% recovery.

Wild Rose
 No effect.

Mountain Mahogany
 90% kill at 16-lb. rate.

Bracken Fern
 No effect.

Coastal Sage
 90% kill at 16-lb. rate.

Live Oak Tree Control

Cut surface treatment was applied to live oak trees May 17, 1956, using concentrated 2,4-D Amine in the cuts about 1-1 1/2 ft. above the ground line. Dieback appeared in the tops of the trees the first year, but recovery appeared the second year. Upon stripping the bark, the trunk appeared to be alive below the cuts. It is believed that more success would result if the material were applied earlier in the spring and also that the cuts should be as close to the ground level as possible. Two other plots were put out to check this theory.

Specialists:

Victor P. Osterl
 W. A. Harvey

SIGNATURE:



Farm Advisor

III. CONCLUSIONS:

Fenuron: (1) Some evidence points out that there is a critical time of applying fenuron according to soil moisture - the same as for foliar spray. (2) Fenuron does not affect all species of brush alike. (3) Fenuron washes outside the plot according to the slope and the nature of the first rain after applying the material. On one plot leaf symptoms were seen on chamise 75 ft. from the boundary of the plot.

Cut Surface Treatment of Live Oaks: (1) Cut surface treatment of oaks is not 100% effective, depending on time of application and location of cuts. (2) Treatment in May 1956 on trunks 1-1 1/2 ft. above ground effected only a partial kill.

UNIVERSITY OF CALIFORNIA
AGRICULTURAL EXTENSION SERVICE
PROGRESS REPORT

County of San Diego Date October 2, 1953 State Number 3682
Name of Project Killing Woody Type of County Number 140
Range Plants by Use Reported by F. W. Dorman
of Herbicides

1. Procedure: No Change.
2. Results: Scrub oak regrowth control:

Starr Ranch

Series "J" and "K" were established March 26, 1953, on regrowth two to four feet high. The objective was to apply the herbicide in water during the rainy season in sufficient quantity to allow run-off and some penetration into the soil at the base of the clump, hoping to get root absorption of the herbicide. In all cases that portion of the growth sprayed suffered a leaf kill. In most cases where the top of the clump was not sprayed, it stayed green. In the K series where concentrations of 15,000 and 20,000 ppm were used, defoliation of the top branches is also occurring.

Conclusions: The idea of applying large quantities of a dilute solution of herbicide as a basal spray, hoping to get root absorption may have merit, but it is too early to tell definitely. It does seem to curtail sprouting from the crown, but only with the more concentrated solutions does it give sufficient limb damage to reduce sucker growth from basal limbs.

Samataguna Ranch:

Observations and conclusions on the "J" and "K" series was essentially the same as on the Starr Ranch.

Treatments 1 through 6, consisting of 1,000, 2,000, and 4,000 ppm of the amine of 24-D and 245-F applied as a foliage spray looked good nine months after treatment, but two years after treatment little damage could be seen except that the clumps were not as large as the controls.

Treatments 7 through 12 still show severe top injury 18 months after application but are now putting out vigorous basal sprouts. This treatment was the same as 1 through 6 except for the season of application.

Conclusions: Same as the Starr plots on series "J" and "K". On treatments 1 through 12 it appears that the dilute foliage sprays give a top burn only, and that follow-up work must be done within 18 months if progress is to be made.

Tentative Conclusions: (1) With the possible exception of the cut stump treatment using herbicide in oil, or the basal stem - foliage spray with heavy run-off using 245-F in water, no method yet found shows promise of giving control in one application. Both of the above are considered impractical for commercial operators. (2) If more than

one treatment is going to be necessary to control scrub-oak, the basal-stem-foliage spray with run-off, using the cheaper materials amine and the ester of 24-D may have promise. With the heavy application there seemed to be less basal sprouting and less sucker growth than when only the foliage was wet. The entire leaf area should be wet, not just the base, to increase the injury and to assist in getting absorption through both roots and foliage. This method might be more effective if used earlier in the rainy season instead of March.

(3) Follow-up work will be needed if a complete kill is to be secured with any practical method of treatment yet tried.

Live Oak Control:

Stone Ranch

"B" series was established in September 1951 and consisted of a basal stem spray with water as a diluent. Complete stem coverage was sought, but not excess run-off. Dosages consisted of 10,000, 15,000 and 20,000 ppm of 24-D ester, Brush-Killer, and ester of 245-T. All of the clumps showed severe injury a year after treatment, although some are now making a recovery.

Conclusions: Those clumps receiving applications of Brush-Killer and 245-T were more apt to be killed or to have a top kill than those treated with 24-D. The heavier concentrations were more effective than the lighter ones. Retreatment will be necessary to secure complete control.

"C" series was established in February 1952 and consisted of a basal stem spray with diesel as the diluent. 10,000, 15,000, and 20,000 ppm of 245-T and 10,000 and 15,000 ppm of ester of 24-D were used.

Conclusions: The 24-D seemed as effective as the 245-T. The effectiveness of any given treatment decreased as the size of the stem and the size of the stump from which it sprouts increased. Follow-up will be needed.

"D" series was established in November of 1952 with diesel as the diluent in a cut surface application using 10,000 and 20,000 ppm of 245-T and Brush-Killer as the herbicides. The cut surfaces and sides of the stems were wet with the spray solution, with a small amount of run-off except for 1-DX in which twice the amount of material was applied, allowing for considerable run-off.

Conclusions: The results so far appear very encouraging, but it is still too early to draw definite conclusions. It is evident that some follow-up work will be needed.

"E" series was applied in January of 1953 as a cut surface spray with run-off using Brush-killer in diesel except for 6-E in which water was used. Concentrations of 5,000, 10,000 and 20,000 ppm were used.

Conclusions: The 5,000 ppm concentrations are already showing some sprouting. It is too early to draw definite conclusions but it is apparent that some follow-up work will be needed.

The "H" and "J" series consisted of basal stem sprays with water as the diluent and with heavy run-off, hoping to get root absorption. Applications were made in February 1953. Herbicides were amine of 24-D and 245-T, Brush-Killer and ester of 24-D. The "H" series consisted of 2000 and 4000 ppm and the "J" series 4000 and 8000 ppm of herbicide in water. Only half the volume of solution was applied in the "J" as in the "H". The size of the clump determined the volume used for any given series.

Conclusions: None can be drawn as yet. Little if any growth has occurred since the application, but that part of the clump not hit with the spray is still green.

The "H" series is a repetition of the "H" and "J" except that the application was made in July 1953. No conclusions can be drawn yet.

Alford Ranch

Plots were put out too late in the season to warrant any conclusions being drawn at this time.

Alford has cut many oaks and treated the stumps himself. Observations indicated that when freshly cut stumps are sprayed with a 15,000 ppm solution of ester 24-D in diesel a 50% kill can be expected. On follow-up work, 15,000 ppm of ester 24-D in water looks as effective as the same in oil.

Mirasol Ranch

Observations made of work done on the Mirasol indicate at least a 50% kill where 20,000 ppm ester 24-D in oil was used as a basal stump spray. There are also good indications that the per cent kill decreases fast as the treatment is delayed after cutting.

Tentative Conclusions:

1. The stump or cut surface treatment, when made on the freshly cut surface with the sides of the trunk being well wet and some run-off allowed, using 15,000 to 20,000 ppm of ester 24-D, 245-T or Brush-Killer in oil shows the most promise. When the application is carefully made a 50% kill should result. This is an expensive way to treat regrowth due to the labor involved in cutting.
2. The possibility of killing regrowth clumps by using smaller concentrations of herbicide in water should be further explored. The initial kill may be relatively small, but labor and material costs are low so follow-up work would be justified. If applied during the rainy season with enough volume to allow for run-off and possibly injury through root absorption, the results are looking favorable. Basal sprouting seems to be inhibited. The amines do not give the stem injury of the ester of 245-T or Brush-Killer, but their use may be justified due to the lower cost. The size of the stem seems to greatly effect the results of this type treatment.
3. On follow-up work, where new tender growth is being treated, water as a diluent seems to be as effective as oil.
4. Regardless of the treatment used, follow-up work will be needed in most cases.

Chaparral Control:

Plots were put out on the Starr, Samataguma and Mirasol ranches using herbicides in oil and applied to simulate aerial applications. Ester 24-D and Brush-killer at the rate of two pounds per acre in ten gallons of diesel were used. It is still too early to draw conclusions, but the kill of brush seedlings looks good.

Wild Rose Control:

Two types of Brush-Killer and ester 24-D were applied to roses on the Dave Mendenhall ranch. Some of the roses had been burned off the previous winter, so that all the material went on to new growth. Final results will come later.

Sumac Control:

Plots testing both foliage and basal stem applications have been established on the Peter Marston ranch in Blossom Valley. Results are not yet conclusive, but early results look favorable.

3. Conclusions:

1. The stump or cut surface treatment has proven to give the most effective initial kill of both scrub oak and live oak.
2. Follow-up work will be needed in a high percentage of cases regardless of the method of treatment or the materials used.
3. More work needs to be done on the best methods and materials to be used for the control of the regrowth following the initial treatment. Indications are that fairly dilute concentrations of herbicides in water would be as effective as the same in oil for follow-up work.
4. Due to the expense of labor and materials involved only the best land can be treated with ground applications. The plots simulating aerial applications need to be expanded.

Note: See County Project File No. 140 for notes on: The Effect of Seeding Forage Grasses on Brush Regrowth and seedling development; Spraying Brush Regrowth With Molasses; Use of a Herbicide Foliage Spray on Brush Prior to Burning.

San Diego

Management of Burned Brushlands

11 September 1953

Control of Regrowth by Seeding and Management:

Following the Conejos fire of 1950, several plots were put out in the burned area to determine the effect of seed coverage on the resulting stand of forage plants. Plots on the Samatagama Ranch and the H. C. Kerns Ranch were put out in late September and early October. Fair to good stands of both perennials and annuals were secured on both sites, the stands on both ranches being of approximate equal density. The difference in the brush density between the annual and the perennial plots were so striking on the Samatagama planting it was decided to make counts of both seedlings and sprouting brush types. This was done on April 8, 1953. The results are as follows:

<u>Treatment</u>	<u>Sprouters/ 1/100 acre</u>	<u>Seedlings/ 1/100 acre</u>
Annuals--Sheepsfoot	19.75	24.0
Perennials "	17.00	57
Annuals--Disked	19.25	31.50
Perennials "	42.66	86.0
Annuals--Railed	33.75	64.25
Perennials "	52.33	177.66

Each 1/100th acre count consisted of the average of three or four replications. The counts show a definite relationship between the type of seed coverage (and the resulting stand) and the regrowth of brush. There are still good stands of both annuals and perennials in this plot. The area has been used as a winter pasture, so that plants have had an opportunity to fully develop, set seed, and utilize the soil moisture. Counts made on the H. C. Kern (Massey) plots were as follows:

<u>Treatment</u>	<u>Sprouters/ 1/100 acre</u>	<u>Seedlings/ 1/100 acre</u>
Annuals, railed before seeding	64.25	171.0
Perennials " "	66.0	112.25
Annuals, Packed after	37.25	131.75
Perennials, " "	32.5	48.25
Annuals, Control	58.75	42.5
Perennials, Control	42.5	69.75
Annuals, disked	61.75	137.5
Perennials "	51.25	54.5

These counts are all averages of four 1/100 acre replications. This plot was located where cattle had access to it the year around, and where there has been a rather consistent shortage of feed. The result is that there is only a remnant of the annuals left and the perennials are weak and seriously overgrazed.

In considering both plots it must be concluded that grazing management of pastures seeded onto burned brushland not only effects the survival of the seeded plants and forage production, but the re-establishment of the brush stand. The seeded forage plants must be allowed to develop sufficiently to provide the competition needed to prevent the development of brush stand.

Results from the Samatagama plot show 1st that the faster developing annuals are of more value than the perennials in retarding brush development and, 2nd, that the better the seed coverage the lower the brush counts. It was unfortunate the counts on the controls were lost on this plot.

Spraying Brush Regrowth with Molasses:

Two observation plots were put out where regrowth from the 1950 Conejos fire was sprayed with molasses thinned with water. These were on the Grandville Martin and the Samatagama Ranch operations. A plot was also put out on the Garbani Ranch where brush had been cut by hand. On the Garbani plot no difference could be seen between the molasses sprayed brush and the controls. Both were browsed as closely as the cattle could eat them. Plots on the Martin place were not placed where cattle pass frequently, there is lots of other brouse as well as other feed. The molasses sprayed brush here was hardly touched. On the Samatagama place, the sprayed brush was vigorous, succulent growth, near an area frequented by the cattle. There is an abundance of other brouse and native feed. Here the cattle did a good job of eating the sprayed foliage down to stems $\frac{1}{2}$ inch in diameter.

The results of these plots might indicate that where regrowth is already being browsed, spraying with molasses will not increase consumption, and that the sprayed brush should be in or near areas frequented by the stock.

Use of a Foliage Spray of Herbicide on Brush Prior to Burning

11 September 1953

The use of a foliage spray of herbicide on standing brush that is to be burned is being investigated for several reasons. These are:

1. To secure dehydration of foliage to assist in getting a fire started when burning conditions are safer, as in winter burning.
2. To secure dehydration to facilitate getting a fire started in light brush.
3. To injure the brush plants so that the fire will kill a higher percentage of the brush.

To date, plots have been put out only on the Mirasol ranch. This brush is to be burned this fall. Plots have been put out in Mesa Grande in cooperation with Stone, Alford and Davis if they decide to burn along the Black Canyon Road. Plans are included in the Wiegand Brush Control project to spray one of the plots with herbicide about six months prior to burning to see if it will give a better burn and result in a higher brush kill. This last will be an aerial application of the entire plot. The first is a foliage spray only of those areas easily reached and located where the additional heat will aid in the burning.

UNIVERSITY OF CALIFORNIA
AGRICULTURAL EXTENSION SERVICE
PROGRESS REPORT

County of San Diego

Date November 13, 1953

State Number 2028

County Number 90

Name of Project Storage Grass Trials

Reported by F. W. Dorman

1. Procedure: No change.
2. Results: The plots reported below were planted in 1950 on burned brushland.

Messoy Ranch

A good stand of perennials still remains in spite of heavy and almost continuous grazing. Stipas, snilo and harding look best. Alfalfa has practically disappeared. Tall fescue is also disappearing.

Due to heavy use early in the spring the seeded annuals have almost completely disappeared from the planting site.

W. B. Kirk Ranch

Seeded perennials are still in excellent stand, especially snilo, harding and the stipas. Tall fescue is fair to good. No alfalfa could be found.

There is still evidence of annual ryegrass and there is an abundance of bur clover.

Sanatocuma Ranch

Snilo, stipa and harding look best in the perennial plot although tall fescue and big bluegrass can be found. No alfalfa remains. An excellent stand of annual ryegrass remains in the annual planting with some soft chess. No rose clover could be found late in the season.

Ivanhoe Ranch

Harding, snilo and veldt look especially good in the perennial plot in spite of extremely heavy grazing. Other plants could not be identified in November due to heavy grazing. The annuals planted have apparently completely disappeared.

Plots established in 1952-53

Henry Schnell's Bichenlaub Ranch, seeded January, 1953, on a burn. An excellent stand of perennials was secured where the seed coverage was adequate. Snilo, harding and alfalfa look especially good. Very little veldt went into the mixture of seed. Rose clover looked exceptionally good, due possibly to great care with inoculation at planting and too late rains.

Schnell's Stokes Valley, planted January, 1953.

A poor stand of perennials was secured due to light rainfall and soil of low moisture holding capacity.

Schnell's Stokes Valley (Continued)

Rose, bur and sweet clovers were seeded as an understory in barley. Care was taken in inoculation. The rose clover did very well, the others did not set seed.

Perennial seeding made in 1948

Jim Schutte, Bonita

Plantings of milo, veldt, stipa and alfalfa were made to test the possibilities of seed production on adobe land. Excellent stands of all were secured. The idea of seed production has been given up, but the seeding has been left. All perennials have survived in an excellent stand in spite of the low rainfall in the area and the shallow soil. Grazing has been very limited and confined to one short season of use.

3. Conclusions:

- a. It is possible to secure stands of perennials on clean ground and to maintain them provided grazing management is reasonably favorable.
- b. Annual grasses are easy to get established but will not persist except in the more favorable sites and under good management. They are definitely indicated on burned brushland as a means of controlling brush seedling development.
- c. The rather general success with rose clover this past season revived interest in this legume. The success may be due to better inoculation and to the late rain. Further trials will be put out.
- d. Alfalfa has practically disappeared from the 1950 plots, and tall fescue and orchard seem to be going out. All showed to good advantage the first year or two after planting.

J W Downer
Farm Advisor

18 Nov 53
Date