

This equipment is easy to use and requires little maintenance; 180 miles were sprayed continuously with no lost time due to equipment failure.

Walking speed and trigger control on the nozzles contribute as much to economy of spray as they do to total coverage. Complete control of the spray is a necessity wherever plant cover varies in density as it does on mountain road shoulders. Dense cover always requires continuous spraying, but medium and light densities do not. Intermittent spraying---shutting off the nozzle between plants---prevents waste of material on bare ground.

Spraying can begin as early as May in the lower altitudes and continue throughout September in the higher altitudes. The season of most rapid plant growth does not occur until late in July in the high country, so that a long spray season can be planned.

Woody plant species, exposure, stage of plant growth, soils, temperatures, moisture and growth rate all change mile by mile on forest roads. These and other factors are thought to influence the root-killing power of 2,4-D and 2,4,5-T. But only one influencing factor can be made consistent throughout a mountain road brush-control job. That one factor is coverage, and a well-trained spray-crew and foreman who make total coverage a matter of pride can make the difference between poor control and 100 per cent control.

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POISON OAK CONTROL WORK AT FORT ORD,  
CALIFORNIA

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Poison oak poisoning, for some mysterious reason is often considered a slightly humorous disease. At Fort Ord, however, the Medical Officer gives it the more dignified name of poison oak dermatitis, and his reports on the extent of this poisoning among trainees do not make humorous reading to the training officers nor to the taxpayers.

Previous to starting the 1951 control program as many as 339 men in one month reported on sick call with poison oak dermatitis and as many as 34 cases in one month had to be hospitalized for an average of 7 days per case. This does not include the cases not serious enough to require a doctor. It can readily be seen that this shrub not only causes lost time and hospital costs but the interruption of the regular training sequences is even more costly. A man who loses one week from poison oak poisoning may have to be dropped from his unit and be held over several weeks to complete his training with another unit.

This loss, contrary to common opinion, is almost constant throughout the year with no consistent seasonal variation.

Nearly 27,000 acres at Fort Ord are used for training. The most intensively used areas are thickly infested with poison oak. They are used almost daily for marching, bivouacing, and infantry problems of all kinds, night and day.

One solution suggested for this poison oak problem is that Selective Service induct all poison oak susceptible men into the Navy instead of the Army. Until some such simple solution is found, however, it seems necessary to attack the poison oak.

I will briefly review three phases of the program:

1. Effect of one season's work on the number of poisoning cases.
2. Methods and costs.
3. Results insofar as they are obtainable at this early date.

Credit should go to the Sixth Army at San Francisco for recognizing the problem and providing funds for last year and for the coming season, and also for furnishing a machine called a Bushwacker, new to the west, for clearing the brushy areas. I am indebted to the Medical Officer at Fort Ord for the data on poisoning cases, and to the Post for authorization to hire an experienced weed control man to supervise the work.

The U. S. Department of Agriculture's Blister Rust people deserve special mention. Mr. H. R. Offord, M. V. Benedict and Art London besides giving us complete plans and advice based on their Ribes control experience, loaned us equipment and trained our men in the use of it. Dr. Oliver Leonard of the University of California at Davis has advised us on chemicals and put out dozens of test plots on the reservation. The State Extension Service, State Department of Agriculture, and the field men of several chemical companies have also been very helpful.

The control work seems to have given surprisingly quick results. To get the best possible comparative figures the period August 1 to December 31, 1950 was taken as representative of the period before intensive control work had been done, and the corresponding five months of 1951 were taken as representative of the results after an appreciable area had been treated. Actually by August 1, 1951 only 691 acres of an estimated 9000 needing treatment had been sprayed. Of course, the more heavily used areas were treated first.

Comparison of the two five-month periods shows that poison oak sick call cases, even with an increase in post strength, decreased 53%, the rate of incidence of poison oak cases per 1000 men decreased 57%, and the daily non-effective rate per 1000 men decreased 68%. Additional information is shown in Table 1.

The methods and equipment used for control work were selected after considerable study of methods used elsewhere. At Camp Adair, Oregon,

for example, the Army, assisted by the U. S. Department of Agriculture's Blister Rust Control people carried out an eradication program on 17,000 acres in 1942-3 using bulldozers, hand-grubbing and borax. Costs ran up to \$400 per acre with an average of \$18.00. Fort Ord has done extensive hand grubbing, diesel oil spraying and 2,4-D spraying in past years. Airplane spraying was considered but most of the poison oak is found under live oak trees which were needed as cover for the training work. It was felt, also, that airplane spraying might be hazardous to the lettuce and artichoke fields near the base.

The methods and equipment developed over a period of several years for Ribes control were therefore adopted. A spray rig consisting of a Bean "Royal 20" pump, Wisconsin VF-4 gasoline motor and a 500-gallon tank was purchased and mounted on a 2½-Ton 4-Wheel drive army truck. This rig works normally about 15 acres to a setting, using 1000 feet of ½" mainline hose and eight 3/8 inch lateral hoses, each 400 feet long. All couplings are of the type that can be quickly coupled and uncoupled under pressure. The rig requires 10 men for full operation. Each nozzle man works a lane 33 feet wide laid out with white string.

Chemicals used included 2,4-D and 2,5-T Esters alone and in various combinations, 2,4-D amine, and ammonium sulphamate. Diesel oil and a spreader sticker were used. Acid concentrations were between 3000 and 5000 p.p.m.

Daily records were kept so that we can go back to any area and know when and how it was treated. The records show that the requirement of herbicide usually ran between 4½ and 8 pounds of acid per acre, or one to two gallons of liquid herbicide. The spray rig when a full crew was available, would put out 1500 to 2000 gallons per 8 hour day.

A representative acre therefore would take 200 gallons of spray material (of which 1½ gallons would be 2,4-D - 2,4,5-T mixture, and 8 gallons diesel oil) and one man-day of labor. These materials cost about \$14.00 and the labor \$11.00, or \$25.00 per acre to which must be added all costs of equipment operation, depreciation, miscellaneous supplies, and office overhead.

During the season, April 2 to October 12, 875 acres were treated. As to the amount of kill obtained very little can be determined at this early date. The areas treated in 1949 and 1950 with straight 2,4-D and water re-sprouted heavily, The season of treatment seems to be very important. The winter work using the "dormant" spray method with 2,4-D and diesel oil was a failure. Our standard treatment applied before May 15th gave top kill but there was heavy sprouting in the open areas where leafing-out was late. The areas treated from May 15 to October 12 all appear dead at this time, but we expect some regrowth.

In conclusion, we are fairly well satisfied with the methods used last year, and with the results as far as they can be ascertained at this time. The 57% reduction in poison oak cases shows quicker results than were expected. We are interested in any improvement that can be made in equipment or materials or any way in which costs can be lowered or quicker kill obtained.