Successful stand of sericia lespedeza was seeded on this Union Electric right-of-way after clearing and spraying.

Oak root shows typical sprouting 2 years after clearing and prebasal spraying on Union Electric test plot.

Tordon 10K tends to stimulate grass cover, especially after first year. Plot was treated in 1964 at 80 pound rate.

Right-of-way Brush Control—

Multimillion Dollar Management Problem For Industry

SUPPOSE you had to wear the company hat of a supervisor responsible for brush control and tree clearance on 7000 pole miles of rights-of-way. Your first concern would likely be getting the job done right and keeping costs in line insofar as you were able.

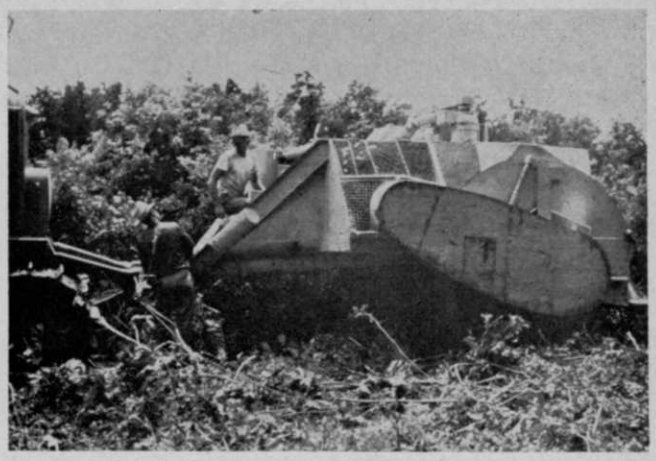
This is the position of Ray Bruns, forester for Union Electric Company at St. Louis, Mo., where he handles clearing and maintenance on the company's distribution lines. These are lines ranging in power from 34KV through 54KV. Six years ago when he joined Union Electric in this position, he questioned the expenditure of $80 to $100 per acre to spray stumps on newly cleared rights-of-way. Complete kill, meaning root kill, was only about 40% and much less in many cases. Methods used consisted of chemical applications to the cut surface and collar area of stumps at the time of initial clearing.

Early tests were based on the established practice of spraying newly cleared areas. A kill of 60% was deemed necessary to justify the cost of stump spraying. Various company products were used, but of the various esters of 2,4,5-T and 2,4-D, none indicated sufficient root kill to justify the cost. Result was that the practice of stump spraying on initial rights-of-way as these were cleared was eliminated. Other methods were explored via a continuing testing program.

Dow Chemical Company's Tordon 10K brush killer pellets proved to be the single chemical tested which met company requirements. All tests were made on newly cleared rights-of-way near Wright City, Mo., which is about 60 miles west of St. Louis. The area tested is rather rough, hilly land with rainfall of 32-34

Donald J. White, left, assistant forester, and Raymond R. Bruns, forester, both of Union Electric Company, discuss latest results on their chemical vegetation control test plots. Now in final phase, they expect to make recommendations to company for broad use this fall.

Dormant broadcast spray has been used on practically all distribution lines. Union Electric Company crew above sprays right-of-way.



Company built flail unit for use by maintenance crew is used to clear right-of-way of brush growth. Unit is pulled by crawler tractor.

inches each year. Foliage is mostly oak and hickory with some elm, mulberry, ash persimmon, maple and sassafras. Other types also crop up in very limited numbers. All Tordon 10K tests, based on twice-a-year recounts over a 3-year period, showed more than 90% kill. Other tests which failed during this period beginning in 1964 included prebasal spraying of trees 6 weeks prior to cutting, prebasal spraying 24 hours prior to cutting, and stump spraying immediately after cutting. Little difference was noted in the different time elements on prebasal spray tests.

Chemical Applied After Clearing Brush

In the successful test, Tordon 10K pellets were applied as a broadcast treatment to control stump and root sprouting. Application was made by a Hurricane seeder on 9 plots. Edges of plots were broadcast by hand for careful control. Three Dow representatives, Hoyt Nation, Hal Dilsworth and Larry Berra, worked with Union Electric representatives on this particular test.

The Tordon 10K pellets which are manufactured by Dow contain 11.6% active ingredient of 4-amino-3,5,6-trichloropicolinic acid as the potassium salt with an acid equivalent of 10%. Six plots using rates of 60, 80, and 100 pounds per acre were treated with Tordon 10K pellets. Each plot comprised about 1/5 acre and all treatments were made April 16, 1964. The right-of-way which was treated had been cleared about 2½ weeks earlier, on March 26.

Tree numbers on the treated plots were estimated at 250 stumps per 1/5 acre plot. An actual count was not made since a series of similar plots comprising four additional test areas were checked by count on either side of the Tordon 10K test area. Actual counts on these plots approximated the 250-tree per plot estimate. Check strips, half the size of each plot, were left untreated as a control check in each instance.

Results of the tests which will be finalized after the 8th recount (due this fall and 3½ years after application) will determine the recommendations to be made to Union Electric engineering and construction administrators. Following the 6th recount, made after 2½ years, root kill results are as follows:

92.2% kill at 60 lbs./acre
93.0% kill at 80 lbs./acre
96.8% kill at 100 lbs./acre

If these results hold after the 8th recount, and Bruns believes they will, then recommendations will be made to treat all newly cleared rights-of-way with Tordon 10K pellets at a rate of 60 pounds per acre. Estimated cost of Tordon 10K at bulk rates will likely be about $1 per pound. Thus, each additional 1% kill over 60 pounds per acre would cost about $10 more for each acre treated. Bruns estimates that kill will be adequate for 10 to 12 years which in effect delays maintenance treatments and also allows more selective handling of tree species.

Each metal tooth or chain which is used for flail unit weighs 75 pounds and literally beats brush crop back.

In this particular area, original line clearing costs have been running $300 to $500 per acre. This includes use of bulldozers, sawing crews and either windrowing alone or windrowing and burning, depending on the area. Also company policy is to remove any standing dead trees adjacent to such rights-of-way. Clearance and spraying on new rights-of-way have been handled by contract on a cost plus man-hour basis. In cases of liability, all claims are the responsibility of the contractor. Seven line clearance foremen administer the contract in the field. The company in previous work where spraying has been done has specified only chemicals and the concentration to be used.

Maintenance work is normally handled by contract crews on the distribution lines which are the responsibility of Bruns. Dormant broadcast spraying for maintenance is also handled by the contract.

Bruns believes that change in

Stump Treatments With Tordon 10K On Union Electric Test Plots Near Wright City, Mo., Showing Results of 6th Recount Made October 4, 1966

Check Strip D-1 (Treated at 60 Pounds Per Acre)

Species	Collar Sprouts by Stump Diameter 0-2	2-4	4-6	6-8	8-10	12+	Total	Root Sprouts	Total Sprouts
Oak	4	2				1	7		7
Hickory	3						3	3	6
Ash		1					1		1
Elm	1						1		1
Wild Cherry								2	2
Total	8	3				1	12	5	17

Check Strip D-6 (Treated at 60 Pounds Per Acre)

Species	Collar Sprouts by Stump Diameter 0-2	2-4	4-6	6-8	8-10	12+	Total	Root Sprouts	Total Sprouts
Oak	3	1				2	6	3	9
Hickory	2		1				3	1	4
Elm	3	1			1		5	1	6
Wild Cherry								3	3
Total	8	2	1		1	2	14	8	22

Check Strip D-2 (Treated at 80 Pounds Per Acre)

Species	Collar Sprouts by Stump Diameter 0-2	2-4	4-6	6-8	8-10	12+	Total	Root Sprouts	Total Sprouts
Oak	3	1				5	9	5	14
Hickory	3						3	3	6
Total	6	1				5	12	8	20

Check Strip D-7 (Treated at 80 Pounds Per Acre)

Species	Collar Sprouts by Stump Diameter 0-2	2-4	4-6	6-8	8-10	12+	Total	Root Sprouts	Total Sprouts
Oak	4	2				1	7	1	8
Elm		1					1	3	4
Hickory	1						1	2	3
Total	5	3				1	9	6	15

Check Strip D-3 (Treated at 100 Pounds Per Acre)

Species	Collar Sprouts by Stump Diameter 0-2	2-4	4-6	6-8	8-10	12+	Total	Root Sprouts	Total Sprouts
Oak		2		1		3	6	3	9
Wild Cherry								3	3
Total		2		1		3	6	6	12

Check Strip D-8 (Treated at 100 Pounds Per Acre)

Species	Collar Sprouts by Stump Diameter 0-2	2-4	4-6	6-8	8-10	12+	Total	Root Sprouts	Total Sprouts
Oak						1	1		1
Elm	2						2		2
Wild Cherry								1	1
Total	2					1	3	1	4

both chemicals and methods will continue to be the rule in the industry. Much has already been learned about kill and more will come. Research is being done by both public institutions and by private industry throughout the nation. Bruns believes this to be necessary. Because of variations in climate, soil, land use, terrain and species, test results with chemicals have not always been reliable in all areas. Bruns points out that these same variables exist within the service area of Union Electric which covers parts of Missouri, Illinois and Iowa. Answers to specific problems, he feels, must be solved sectionally. For example, he personally favors company tests on a field basis rather than those by technical personnel under controlled conditions.

In light of this, he believes it will be necessary for Union Electric and others to continually reappraise vegetation control methods and do considerable experimenting to keep costs in line and at the same time handle the job adequately on their ever-expanding facilities.

A WTT staff report based on vegetation control chemical tests of Union Electric Company, St. Louis, Mo. Supplying data for the company were Raymond R. Bruns, Union Electric Forester, and Donald J. White, Union Electric Assistant Forester.

Fast Herbicide Residue Test

Certain herbicide residues can be measured in only 48 hours.

Purdue University research horticulturists use a new type of buckwheat root-growth test. Called a bio-assay, it involves growth of the roots under controlled temperature. The test is sensitive to 50 parts per billion.

Purdue scientists have used the new method to study rate of decomposition of two weed killers, IPC and CIPC. Their tests showed no evidence of either within 4 weeks following application.