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Stump Sprout CONTROL

THE STUMP SPROUT CONTROL tests reported here were initiated November 14, 1960, and were completed on February 14, 1961. All of the trees on the periphery of Watershed No. 2 at the Hopland Field Station were used in this study. Most of the trees were blue oak; however, sufficient black oak existed on the area to obtain some information about treatments upon this species. The treatments were conducted in solid blocks, with one complete set of treatments being located on the southern periphery of the watershed and the other set or replication on the northern boundary.

All of the trees not on the periphery had previously been cut-surface treated using 2,4-D amine, with the intention of conducting a controlled burn after most of the trees had fallen. The border trees were not cut-surface treated as this would have increased the difficulty of controlling the fire. The felling of these 1,200 to 1,500 border trees offered an opportunity to conduct this study.

The chemicals used were undiluted commercial preparations of water-soluble amines of 2,4-D (mixed alkanolamines) and 2,4,5-T (triethyl amine), containing 4 lbs of acid equivalent per gallon. These undiluted formulations were applied (about one fluid ounce for a 14-inch stump) to the tops of the stumps immediately after cutting the trees and after seven days, depending upon the time interval desired. Alternating blocks of trees were cut to a stump height of about 1 ft (cut low) or to a height of about 3 ft (cut high). A total of 42 blue oak and 11 black oak stumps were covered with heavy aluminum wrapping metal to keep the rain off the stumps following application of the 2,4-D or 2,4,5-T.

Records of sprouting were taken in 1961, 1962, and 1963. The effects produced by the treatments in 1962 were more clearly defined than in 1961 or in 1963, as shown in the tables. The sprouting of blue oak was controlled to a greater extent than was the sprouting of black oak; however, blue oak is not as strong a sprouter as black oak, as may be noted by the sprouting of the untreated controls. About 70% of the untreated blue oak and 100% of the untreated black oak trees sprouted.

As the tables indicate, 2,4,5-T amine was superior to 2,4-D amine in preventing sprouting. Stumps cut low did not sprout as much as those cut high. Treating the stumps immediately after cutting was more effective than delaying the treatment for seven days. Covering the stumps with aluminum metal resulted in more sprouting than when the stumps were left uncovered.

Final recordings of results of all treatments were made in September, 1963. Except for many of the controls, most of the blue oak and black oak stumps with live sprouts in 1962 no longer had any living sprouts. There were no live sprouts remaining on the buckeye. One live oak still had live sprouts. Such complete control of the sprouts was unexpected. The live sprouts were believed to be controlled by their use of water containing 2,4-D and 2,4,5-T which was present in the wood—probably occurring during periods of moisture stress. Heavy browsing by livestock and game was another important factor involved in weakening the sprouts.

All treatments were eventually successful in controlling the sprouting. However, nearly complete control is not always achieved; and under these conditions, there should be a clear advantage in cutting the stumps low and treating immediately after cutting. If chemical costs were not a factor, 2,4,5-T amine would be favored over 2,4-D amine; however, the final result was one of nearly complete control regardless of chemical. So the wisdom of using the more expensive chemical is open to question. Experience in many other tests also suggests that 2,4,5-T shows no advantage over 2,4-D on these species.

The purpose of covering the stumps with aluminum metal was to determine the importance of rainfall on the effectiveness of stump treatment. Previous tests had indicated that 2,4-D was not conducted downward in live oak stumps covered with aluminum metal during the winter period but did move downward in uncovered stumps. To a limited extent results reported in the tables substantiate these earlier findings; however, some 2,4-D must have been carried downward in the stumps, otherwise sprouting would have been similar to the control trees. It is assumed that water condensing on the underside of the aluminum metal dripped onto the stumps and carried the 2,4-D and 2,4,5-T downward. Sufficient chemical did move down to bring about control of the sprouts, since most of these stumps were dead in 1963.

The practical significance of the effect of rainfall was demonstrated by the poor control of sprouting obtained on Watershed No. 1 by stump treatment. Trees were cut and stumps were treated during the summer period and the entire area was burned soon afterwards. The lack of rainfall before burning, as well as rather severe burning of the stumps by the fire, evidently prevented much of the 2,4-D from moving down through the stumps with the rains which occurred later. Stump control may not be as good in areas of very low humidity and rainfall—possibly accounting for the impression that control is not as good in southern California as it is in northern California.

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EFFECT OF TREATMENT TIMING, AND 2,4-D OR 2,4,5-T AMINES ON SPROUTING OF BLUE OAK STUMPS 1½ YEARS AFTER TREATMENT.

Treatment	Stumps with sprouts	
	2,4-D	2,4,5-T
	%	%
Treated at time of cutting trees		
stumps cut low	5	0
stumps cut high	4	3
Treated 7 days after cutting		
stumps cut low	10	3
stumps cut high	16	9

COMPARISON OF BLUE OAK AND BLACK OAK EFFECTS OF STUMP TREATMENT 1½ YEARS FOLLOWING APPLICATION.

Treatment	Stumps with sprouts	
	Blue Oak	Black Oak
	%	%
2,4-D	9	48
2,4,5-T	4	30
Stumps cut low	4	10
Stumps cut high	8	53
Treat at time of cutting trees	3	30
Treat 7 days after cutting trees	9	43
Stumps covered	23	62
Stumps uncovered	3	30
Control	70	100