Notes

CHEMICAL CONTROL OF KENTUCKY BLUEGRASS

This study is a part of the general pasture renovation program in New Jersey. The principle of substituting chemicals for tillage in pasture renovation was presented in an earlier paper by the junior author. The present study was designed to test the effectiveness of promising chemicals in conjunction with two cultivations at different seasons of the year for the eradication of Kentucky bluegrass (Poa pratensis).

METHODS AND MATERIALS

In the spring of 1951 an old representative pasture, with a dense sod of Kentucky bluegrass, was selected for experimental purposes. The grass grew vigorously in May, when the experiment began, and became characteristically unproductive during the hot months of July and August under continuous close grazing. The chemicals were applied on 5- by 10-foot plots on five successive dates, namely: May 26, June 27, July 31, September 7, and October 13.

The following chemicals were used at three rates (active material) each: sodium trichloroacetate at 50, 25, and 15 lbs. per acre and isopropyl-N-(3-chlorophenyl)-carbamate at 50, 25, and 5 lbs. per acre. Sodium arsenite at 50, 25, and 10 lbs. per acre was also included for comparative purposes. Half the plots were disked three times with a fixed tandem disk harrow 1 week after chemical application, and the remainder received no tillage. The experimental design was a split-plot with cultivations as the whole plots and the chemical treatments as the subplots with three replications. Injury to the grass was determined by random counts of the live and dead blades of bluegrass in each plot. These counts were made on three dates varying from 11 to 63 days after application of chemicals. Counts were obtained with sodium TCA applied on five dates between 11 and 63 days after application. L.S.D.'s (5% and 1% levels) for May, June, July, August, and September were 11.4% and 14.7%; June, 8.3% and 10.7%; July, 6.7% and 8.7%; August, 5.5% and 6.5%; September, 7.5% and 9.7%; October, 6.3% and 7.3%; no significance.

RESULTS

Of the chemicals studied, sodium TCA was superior at all dates and all rates (figure 1). Sodium TCA at 50 pounds per acre gave a complete kill when applied June 27 and July 31, and both 50 and 25 pounds per acre on September 7 gave a complete kill, since no significant difference exists between these two rates. Sodium TCA applied on June 27 and August 13 gave the best control of Kentucky bluegrass at any rate or date of application, and extensive counts were obtained with sodium TCA during the relatively hot, dry months of July through September, a time when Kentucky bluegrass makes very little growth. The efficiency of these chemicals is indicated by the maximum effect of TCA, which was superior at 50 pounds per acre and 50, 25, and 15 lbs. per acre. Sodium TCA was applied during the wet, cool months of May and October, giving 11.4% and 14.7% kill, and the maximum effect of sodium TCA was superior at 50 pounds per acre in May and at 15, 25, and 50 lbs. per acre in October. Sodium trichloroacetate at 50, 25, and 15 lbs. per acre gave a complete kill when applied June 27 and October 13. Of the chemicals studied, sodium trichloroacetate at 50, 25, and 15 lbs. per acre was superior at 50 pounds per acre in May and at 15, 25, and 50 lbs. per acre in October as compared to an average of 3.8 inches for these two months. Sodium trichloroacetate at 50, 25, and 15 lbs. per acre showed little variation from the average. Rainfall for May and June was close to the average of 3.8 inches for these two months but was slightly less than the average of 4.9 inches for July. Rainfall recorded in August was 3 inches as compared to the long-time average of 5 inches; 0.87 inches in September as compared to an average of 3.8 inches; 5 inches in October as compared to an average of 3.6 inches; and 6.7 inches in November as compared to an average of 3.3 inches.

Fig. 1.—The effect of sodium trichloroacetate (3-chlorophenyl)-carbamate upon Kentucky bluegrass at five dates of application. L.S.D.'s (5% and 1% levels) were May, 11.4% and 14.7%; June, 8.3% and 10.7%; July, 6.7% and 8.7%; August, 5.5% and 6.5%; September, 7.5% and 9.7%; October, 6.3% and 7.3%; no significance.

of time after treatment during those months.