RELATIVE EFFECTIVENESS OF VARIOUS CONCENTRATIONS OF 2,4-D IN BASAL, DORMANT-SEASON APPLICATIONS TO HAZEL BRUSH

Klug, H. A. and H. L. Hansen

Generally accepted recommendations for the killing of woody plants in the dormant-season involve the use of about 10 to 16 pounds of 2,4-D or 2,4,5-T acid in 100 gallons of diluent. A review of published information on the subject indicates that there is relatively little experimental evidence to support the use of such high concentrations on all species of woody plants for which control may be desired. Research by several authors (1,2) indicates that concentrations of 5 pounds and less have proven successful on some species.

In February, 1959, 180 individual hazel stems were selected on a three acre stand of hazel brush for study. Individual stems were randomly assigned to treatment with one of six different concentrations of the ethyl ester formulation of 2,4-dichlorophenoxyacetic acid. Concentrations used were: 0.5, 1.0, 1.5, 5.0, 10.0, and 15.0 pounds of 2,4-D acid equivalent per hundred gallons (ahg) of #2 fuel oil. Each concentration was applied to 30 hazel stems. Each stem was selected from a different hazel colony separated about 10 feet from the other colonies. On February 21 the herbicide solution was applied by brush on the individual hazel stems to a height of 50 cm above the root collar until runoff occurred.

It was observed by the middle of May that differences in reactions among hazel stems treated with the same concentration would necessitate separating the "hazel-brush" into beaked hazel (Corylus cornuta Marsh.) and American hazel (C. Americana Walt.). At the end of the growing season the difference in effectiveness of the herbicide on the two hazel species became obvious as shown in the figure.

Treatments at all the six concentrations were highly effective on beaked hazel with a range of mortality from 76 to 100 percent. No significant difference in the effectiveness of the herbicide was found above a concentration of 1.5 pounds. The 0.5 and 1.0 pound concentrations were, however, significantly less effective than the 5.0, 10.0 and 15.0 pound concentrations.

American hazel treated with concentrations of 5.0, 10.0 and 15.0 pounds sustained about the same mortality as did beaked hazel. However, the 0.5 and 1.5 pound concentrations of the herbicide were much less effective on American hazel than on beaked hazel.

These results suggest that in dealing with hazel brush either in terms of control by 2,4-D or in the planning of related research, it is important to distinguish between the species involved because their reactions to dormant-season applications are markedly different.

---

Research Assistant and Professor respectively, School of Forestry. Considerable assistance in the conduct of this project was given by Mr. Axel Hansen, County Agent Forester, Pine County, and Mr. Ray Anderson of the Section of Weed Control, Minnesota State Department of Agriculture, Dairy, and Food.

Published by the School of Forestry, University of Minnesota, St. Paul 1, Minnesota, cooperating with the Division of Forestry, Minnesota Conservation Department, and Forest Industries of Minnesota.
It is suggested from this study that the commonly recommended concentrations of 2,4-D are considerably higher than necessary for the control of hazel brush. It is evident that a basal dormant-season application of this herbicide at concentrations of about 5.0 pounds acid per 100 gallons of oil diluent will result in an effective kill for both hazel species.

Literature Cited


EFFECT OF 2,4-D ON CORYLUS SPECIES WHEN APPLIED IN FEBRUARY AT VARIOUS RATES OF APPLICATION