

PROGRESS in USE of HERBICIDES on HIGHWAYS

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During 1956 there has been an increasing interest on the part of highway agencies and industry in the use of herbicides for the economical control of vegetation along roadsides. Undoubtedly, one of the reasons for this interest is the greatly increased acreage of roadsides which will result from the present highway construction program.

There have been no known developments during the year which require revision of the report on "Herbicides for Roadsides" presented to this committee in January 1956 (see "Roadside Development, 1956," HRB). However, there have been some further developments that should be reported.

There has been a need for a specification of 2,4-D and 2,4,5-T materials which would be suitable for use by public agencies to assure obtaining the specific material required. Use, in purchasing materials, of specifications which were too general or were lacking in specification of analyses has reportedly given some unfortunate results. The Agricultural Research Service of the U.S. Department of Agriculture has developed a specification of 2,4-D materials which, although not finally approved as a Federal specification, is proposed and has the approval of the National Agricultural Chemicals Association. This specification is reproduced herein as Appendix A. It is expected that similar specification of 2,4,5-T materials will soon be available.

The Agricultural Research Service has recommended that, if used, this specification should be adopted in its entirety.

A comprehensive table of susceptibility of plants, common on roadsides, to the several kinds of herbicides and methods of application should be available to personnel concerned with this work. The author has obtained known publications of this information from the several weed control conferences, from various state agricultural agencies, and from industry. One publication, "Reactions of Plants to Herbicides," prepared by the Agricultural Chemicals Division, Pittsburgh Coke & Chemical Co., is outstanding in comprehensiveness.

The results of continuing work with amino triazole indicate that it should be a standard material for use in weed and brush control. This material is effective on several plants that are resistant to the phenoxy materials. For example, poison ivy is particularly susceptible to this material, and a total kill may be expected with one treatment.

Amino triazole is readily taken in by the aerial parts of plants and translocates rapidly to the growing points. Chlorophyll synthesis of susceptible plants is upset after absorption of the chemical. Some plants, such as poison ivy, show a rapid and complete dessication soon after treatment. Other plants, such as ash, show a chlorotic condition for as long as a year following spraying, with death resulting the following fall or winter. The selectivity of amino triazole is of a different order from that of the phenoxy materials. Grasses are generally susceptible.

Amino triazole is applied as a foliage spray while plants are in leaf, using from 2 to 12 pounds per 100 gallons of water and applying to wet the foliage thoroughly.

Reports indicate the following plants to be susceptible to amino triazole at various rates:

White ash	Poison oak
Wild black cherry	Pricky ash, common
Hickory, various species	Quackgrass
Milkweed	Western snowberry
Oak, various species	Canada thistle
Poison ivy	

The most important aspect in the use of herbicides on roadsides during the past decade is undoubtedly the whole of the information available today. Ten years ago the study of herbicides was centered almost entirely on agriculture, so that roadside developers had to do much of their own research in adapting methods and materials to highway use. Today they can draw on the impressive amount of information available through the Weed Control Conferences, the U. S. Department of Agriculture, the schools and experiment stations, the chemical companies, and those highway agencies which have had experience in this field, not to discourage further study or demonstration but to eliminate as much as possible unnecessary duplication of effort.

DISCUSSION

ASTRUP: Is information on costs of herbicide work available?

GARMHAUSEN: The average cost of spray treatment per mile per season in Ohio has risen each year, from \$16.39 in 1953 to \$20.58 in 1955. This is chiefly because of a more intensified effort to cover the right-of-way completely with spray and to more widespread use of the multiple-type spray program. Of greater interest, however, is the lowering of mowing costs. In 1953, it cost \$91.78 per season to mow each mile (both sides) that was sprayed and \$92.75 per mile to mow roads not sprayed. In 1954, it cost \$82.61 per mile per season's mowing of sprayed road against \$117.89 per mile in counties not sprayed. In 1955, the average mowing costs on sprayed roads dropped still further to \$69.33 per mile, against an estimated \$119.00 per mile not sprayed. However, the true costs per mile should be obtained by combining the spray and mowing costs. In 1953, the combined cost was \$108.17 per mile; in 1955, it was \$89.91 per mile.

In 1956, 71 counties were sprayed, and one or more applications were made to 12,191 miles of roadsides at a cost of \$222,647.89. The average combined mowing and spraying cost on roadsides was \$70.03 per mile.

ASTRUP: Is there any way of correlating your mileage basis of cost to an acreage basis?

GARMHAUSEN: The average width of right-of-way in Ohio is 100 to 150 feet, or approximately 3 to 3½ acres per mile.

IURKA: Cost data previously reported to this committee may be found in HRB publications "Roadside Development" 1954 and 1955.

MADIGAN: In treatment of oak brush with amino triazole, was any damage done to nearby large oak trees?

IURKA: None. There is little if any hazard of damage due to volatility of this material.

NEALE: As Chairman of the Committee on Roadside Construction and Maintenance of the American Road Builders Association, I should like to call attention to their subcommittee on chemicals, which has in its personnel representatives of some of the leading chemical associations and companies who are most anxious to cooperate with this HRB committee. How can they help?

IURKA: The continuing exchange of information is advantageous to us all and is to be encouraged.