plishment of the stated objectives and year-to-year results of the spraying program based on current control measures and practices.

HERBICIDE WORK on NEW YORK STATE HIGHWAYS

Landscape Bureau
New York State Department of Public Works

WEED CONTROL

In the Buffalo district, 318 miles and, in the Hornell district, 225 miles of highways were treated with plant hormones to control broad-leaf weeds in order to reduce the number of mowings required. Two lb. of the acid equivalent of 2,4-D in the ester form in 15 gal. of water was applied to an acre in late June and July. Chickory, Queen Ann's lace, and ragweed, the three most troublesome weeds were satisfactorily controlled, resulting in the elimination of one mowing. Cost of material was $1.38 per acre sprayed.

In the Babylon district there was an unexplained failure of control of broad-leaved weeds, including such susceptible species as dandelion, plantain, and black locust, in turf areas by treatment on May 11-13, 1955, with 2 lb. acid equivalent per acre of 2,4-D in the ester form applied with water at 15 gal. of mix per acre.

In this district $\frac{1}{2}$ gal. of Chloro IPC (47 percent active ingredients) and 40 gal. of water was applied per acre on April 6, 1955, to control weeds growing in woody plant beds. Control was unsatisfactory. The weeds observed were largely grasses.

CHEMICAL MOWING

Recognition of the efficiency of chemical control of vegetation along guard rails and similar structures to eliminate costly mowing resulted in an increased program of this work by the department in 1955. Most of the work was done with Weedkiller 7B, as trials of the newer materials in 1954 had not been considered sufficiently complete to recommend their statewide use.

Weedkiller 7B

In the Syracuse district over 300 miles of highways were treated in six counties. Because only one spray crew was used, the first application of 1 part 7B and 3 parts fuel oil at 40 gal. per acre required nine days, and the second application of 1 part 7B to 5 parts fuel oil at 40 gal. per acre required 10 days. Results were judged satisfactory except for the effect of timing. In some cases, growth reached an undesirable height before treatment.

In the Buffalo district more than 500 miles of highways were treated. The first treatment was made in May, with 5 gal. of 7B, $1\frac{1}{2}$ gal. of 2,4-D, and 33.5 gal. of fuel oil per acre. The second treatment was made in July, using 5 gal. 7B and 35 gal. fuel oil per acre. Results were satisfactory, virtually all mowing of treated areas being eliminated.

In the Hornell district a portion of the 107 miles of highways treated was with this material, using 1 part 7B to 6 parts fuel oil applied early in May and again at the end of June. Cost of material was $27.47 per mile sprayed (3 ft. wide). Discoloration of metal guard rail was quite objectionable. Control was satisfactory.

In the Watertown district this material was used around some posts and signs on 75 miles of highways. One part 7B and 7 parts fuel oil was applied to drench

existing growth in May. No retreatment was made. Control was satisfactory for annual fall weeds.

In the Babylon district this material was applied along 250 miles of highways at the rates and speed of travel shown in the table:

Gallons per acre		Rate of Application
7B	Fuel Oil No. 2	(mph.)
10*	10	30
10*	10	15
5	30	15

*Used in areas of heavier soils.

The first application was made the first week of May and the second application the second week of July. Control was satisfactory, no mowing being required.

Dalapon

In the Hornell district Dalapon was applied at the rate of 18 lb. together with ½ gal. of 2,4-D ester per acre on May 2. Cost of material was $6.23 per mile sprayed. Control was satisfactory.

In the Babylon district Dalapon at the rate of 15 and 20 lb. per acre together with 2,4-D in the ester form at the rate of ½ gal. per acre was applied on May 2. Control was satisfactory for the year, although some broad-leaved weeds were observed on September 22.

Telvar

In the Hornell district Telvar was applied at the rate of 27 lb. per acre on April 15 and at 20 lb. per acre on June 8-10. Cost of material at the 20-lb. rate was $21.34 per mile sprayed. Control was satisfactory at both rates.

In the Babylon district Telvar DW was applied at the rate of approximately 20 lb. per acre on April 5. Control was satisfactory for the season. Control was not satisfactory in 1955, the second year, from a treatment of Telvar W at 20 lb. per acre made on April 30, 1954, which gave satisfactory control in 1954.

Baron

In the Hornell district Baron was applied at rates of approximately 15, 25, 35, and 45 gal. per acre on August 5. A slight discoloration of vegetation was observed several weeks later on the area treated at the 35-gal. rate. On October 18 there was no observable effect due to any of the treatments.

In the Babylon district Baron was applied at rates of approximately 20, 30, and 40 gal. per acre on July 27, 1955. On September 22 and subsequently all vegetation (largely red fescue) was brown, no regrowth was observed, and there appeared to be no difference in results attributable to the different rates of application.

BRUSH CONTROL

Hormone Treatments

Brush control carried out in several districts was effective. On islands in the Chemung River observations of the result of 2,4-D and 2,4,5-T treatment of brush which had roots partly in the water seem to indicate erratic control, whereas

plants with roots not in water were controlled as expected. No other unusual treatments or results were noted.

The Poughkeepsie district has had continuing success in the control of poison ivy, using 2,4-D and water in the proportion of 1:200. Control has averaged about 90 percent.

The economy of efficient methods and equipment is indicated by data from the Babylon district. Two miles of roadside overgrown by brush to such an extent that shoulders were reduced in effectiveness was brushed out and the stumps sprayed on February 9 and 10, 1955. Cutting brush required 288 man-hours. Spraying with equipment provided only 30 psi. required 60 man-hours. Control was effective except for regrowth of sumac, honeysuckle, and smilax. A foliage spray was made on September 27, 1955, to control this regrowth and some additional depth of honeysuckle and smilax growing into trees. With equipment delivering 300 psi., this work required 4 man-hours. Control appears to be effective.

Sodium Arsenite

Control of brush on islands in the Chemung River as part of flood-control measures has been successful with the use of sodium arsenite since 1948. Effective control of ash coppice has been obtained by stump treatment. Stumps so treated disintegrated readily when bulldozed three years later. The methods of application and materials were those recommended by the Department of Forestry of Cornell University.

CHEMICAL WEED CONTROL on OHIO'S HIGHWAYS

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With so wide a general acceptance of the spray operation as a boon to roadside maintenance, overenthusiasm must be guarded against. Herbicidal material remains a potent and deadly force when applied to areas abutting, or misdirected into, fields, gardens, or home plantings containing susceptible plants or crops, with large damage claims resulting. Further, application to valuable plants on the right-of-way can arouse public criticism of the destructiveness of the material and operations. It is also necessary to guard against excessive use of the material, either by too many applications on any given area per season, or too high strength of mixture. It is not true that if some does a good job more will do better. This only raises costs and increases the danger of damaging nearby plants and property. Third, and very important, the spraying and mowing operations must be coordinated if a reduction in costs is to be realized. Failure to do so can make spraying just another added and costly operation.

The Ohio chemical weed-control program was started in 1945 when experiments were begun in use of herbicides to eradicate poison ivy. The following year areas that could not be mowed by power equipment were included. In 1947 a total of 850.17 miles were sprayed at a cost of $14.62 per mile. The conclusions at the close of this short period were that time loss and suffering due to ivy poisoning were greatly reduced, the vegetation was more effectively controlled, and the right-of-way was cleaner and more economically maintained.

In 1951 it was decided to spray all the roadsides in an entire county. The 264.55 miles were sprayed at a cost of $18.37 per mile. The program continued to expand because of results obtained.

In 1955 the Department made the greatest effort to date to lower the cost of