

Weed and Brush Control by Spraying

L. L. COULTER

Agronomist

Field Agricultural Chemicals Research
South Haven, Michigan

Weed and brush control with the selective chemicals 2,4-D and 2,4,5-T has become an accepted practice along many miles of roadside where vegetation has previously been handled by hand labor or mechanical methods. Brush which restricts visibility, clogs drainage ditches and complicates the problem of snow removal can now be controlled by more economical and effective methods. Weeds such as wild carrot, chicory, etc., which have normally been subdued by mowing can be killed by chemical treatment. These problems have long been troublesome to maintenance people, and highway vegetation control is not new. However the recommended chemical control practices have been developed within the last five years and are summarized here.

THE 2,4-D AND 2,4,5-T WEED KILLERS

2,4-D and 2,4,5-T are growth substances which are absorbed by the leaves and small stems of plants. Once they have been absorbed, they move through the plant to the roots, exerting their lethal action as they go. In general they are effective on most types of vegetation other than grasses. This permits spraying of weeds and brush without injury to grasses, and a desirable turf can be maintained. These compounds produce a slower type of kill than other materials which kill only the leaves—not the roots of the plant. Neither 2,4,5-T or 2,4-D are directly toxic to livestock or humans in the concentrations generally used for spray work.

Mixtures containing equal amounts of 2,4,5-T and 2,4-D esters are commonly used for the control of woody plants during the growing season. Applications can be made any time after the leaves are fully developed. Earlier treatments may give a quick leaf kill but frequently do not kill the roots. Spraying can be continued throughout the summer until a short time before frost is



Fig. 1. Wherever Highway Departments have chosen to try chemical maintenance of roadsides, interest of farmers has been high.

anticipated. In areas where such resistant species as ash, oak, and hickory are present, 4 pounds (4 quarts) acid equivalent per 100 gallons should be applied, using sufficient spray to adequately wet all leaves and stems. On brush 3 to 5 feet high this may require 125-175 gallons per acre. This gives a chemical cost in the range of \$15 per acre. On such species as oak, osage orange and poison ivy 2,4,5-T is more effective than 2,4-D. If these or other 2,4,5-T susceptible species predominate, 2,4,5-T ester alone can be used at 3 lbs./100 gal. of water (3 qts.).

These applications are effective on species of any height. However, in areas where the appearance of dead brush is undesirable, it is best to spray only short brush. If short brush is to be sprayed, it should be borne in mind that sprouts should not be sprayed too soon after they have emerged from the stump since they are very succulent and apparently do not move the chemicals to the roots well.

Spraying is usually done with power equipment, using an orchard type gun and 150 to 200 pounds pressure. This equipment should include a piston type pump with a capacity in the range of 10 to 15 gallons per minute and at least a 200 gallon tank. The pump and tank may be mounted as a unit on a skid so that transfer from one truck to another can be accomplished in a few minutes.

DORMANT SEASON BRUSH CONTROL

The control of woody plants during the dormant period offers certain advantages which make this procedure a valuable tool for roadside maintenance. It offers effective brush control at a time when crops sensitive to spray drift are not being grown, provides an opportunity to utilize off-season labor, and gives a high degree of control without the appearance of dead leaves as with foliage sprays. Esters of 2,4,5-T at $\frac{1}{2}$ lb. (1 pt.) in three gallons of fuel oil or the 2,4,5-T—2,4-D mixture at $\frac{3}{4}$ lb. ($1\frac{1}{2}$ pts.) in three gallons of fuel oil are recommended spray mixtures. Water is ineffective as a carrier for these materials during the dormant



Fig. 2. Power, telephone and telegraph companies are choosing chemical maintenance, too.

season. Spray should be applied to the base of standing brush, wetting the area thoroughly from the ground up 18 inches or so on the stems.

The same mixtures may be applied to stumps cut at any time of the year. This is an excellent procedure for highway maintenance, since it leaves no dead standing brush and both cutting and spraying can be accomplished in one operation. In either basal or stump spraying the entire basal area or, in the case of stumps, the area exposed above the ground should be wet thoroughly in such a manner that the oil runs down the bark surfaces to the ground.

Dormant spraying can be done most satisfactorily with hand sprayers using conventional weed nozzles.

ROADSIDE WEED CONTROL

The control of roadside weeds can be effected in a very economical manner with 2,4-D. Weeds which generally are mowed several times during the summer can be killed with an application of a low volatile 2,4-D ester or amine salt. In some areas of Ohio roadsides have been maintained in a weed-free condition at slightly less than half the cost of normal mowing operations. Since weeds are actually killed rather than just set back, the roadsides present a better appearance.



Fig. 3. Chemical weed control will save America's railroads millions of dollars in maintenance costs.

Weed sprays are most effective during the periods when weeds are growing well. That is during May and June and again in September and October when fall rains encourage the growth of seedlings. Spraying such weeds as dock, wild carrot and chicory after the plants have begun to make seed will generally give poor results and is not recommended.

Most roadside weeds can be controlled with two pounds acid equivalent (2 quarts) of the propylene glycol butyl ether ester of 2,4-D per acre. This amount should be applied in 50 gallons of water per acre to insure adequate coverage of weeds. Some perennial weeds, such as Canada thistle, should be expected to survive this treatment, where such spots of resistant perennials persists, repeated applications are necessary for their control.

Considerable roadside weed spraying is being done using a series of nozzles on a weed boom. This type of set-up works well in open areas but is not flexible enough for spraying where many obstacles such as mailboxes and trees are present. The development of an off-center nozzle known as "OC" has been an aid in this spraying operation.

SPECIAL WEED CONTROL PROBLEMS

Vegetation growing around bridges and guard rails can be controlled by "chemical mowing" at appreciable savings over hand cutting. A non-selective herbicidal spray for this purpose can be made by mixing 3 pints of Dow General (dinitro-ortho-secondary-butylphenol) and 20 gallons of oil in 100 gallons of water. When this mixture is applied as a thorough wetting spray, annual and perennial weeds will be killed to the ground. The roots of grasses will not be killed however, and there is no opportunity for erosion to develop. Retreatment will be necessary when grasses again reach mowing height.

Areas of Johnson grass can be controlled by the liberal use of sodium TCA (sodium trichloroacetate). Fall applications of 120 pounds of sodium TCA per acre have given good control of established Johnson grass. The grass should be mowed some time before treatment so that the new growth is 8 to 12 inches high at the time of application. TCA acts primarily through the roots of grasses and gives best results when applied during periods of adequate soil moisture.

GENERAL CONSIDERATIONS

The sprayer should be turned off when approaching sensitive crops adjacent to the right-of-way. If there is any question about safety of spraying in the area, DO NOT SPRAY. Take time to familiarize spraying personnel with the nature of these compounds and methods of their use. The spray crew is the key to successful, safe operation, and the small amount of time spent with them will pay dividends.