Chemicals Control Weed Trees in Tests

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Experimental use of chemicals for weed tree control has demonstrated that several species of unwanted hardwoods can be killed at reasonable cost. The report given here is a short synopsis of more effective treatments developed by the Forest Research Division of Oregon State University extending over a number of field seasons. A more complete report on the experiments is being prepared for publication at a later date. Results of effective treatments are discussed for several species recognized as major problems in the central Willamette Valley.

Bigleaf maple. Bigleaf maple trees were treated with 2,4-D—2,4,5-T mixtures (brushkillers), 2,4,-5-T, 2-(2,4,5-TP), ammate and polychlorobenzoic acids. Chemicals were applied as basal sprays or in axe-cut frills around the tree.

Principal basal treatments consisted of TBA, 2-4-D—2,4,5-T; 2,4,5-T alone or 2-(2,4,5-TP) in diesel or stove oil ranging from 6 to 30 pounds acid equivalent per 100 gallons of spray. Some trees were treated during all seasons of the year. Each tree was sprayed thoroughly around the lower two feet (or less) of the trunk. In some trials moss and other debris were removed from half of the trees to determine the necessity for this extra labor. In most treatments removal of moss was part of the standard procedure.

Experimental frilling was done during April and July applying 2,4-D amine, 2-4-D and 2,4,5-T esters, 2,4,5-T ester, 2-(2,4,5-TP) esters and amines; ammate; and Kilbrush immediately after the axe-frilling operation.

Both basal and frill applications of herbicide were effective on bigleaf maple with larger trees showing a

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TREE IN FOREGROUND has been completely killed with 2-(2, 4, 5-TP) applied as basal spray in oil at 32 ahg during March. Twin trees to the right rear were girdled. Crowns are still alive, will probably continue to live for at least four years after girdling and sprout profusely.

DEGREE OF CONTROL TO BE EXPECTED WITH SOME OF THE MORE SUCCESSFUL BRUSH TREATMENTS

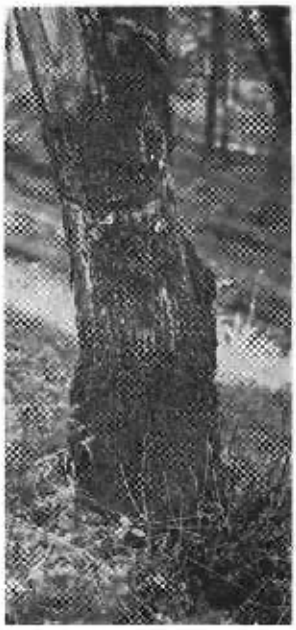
Species	Chemical	Concentration ahg	Season	Treatment	Expected Degree of Control
Bigleaf Maple	2-(2,4,5-TP) ester in oil	20	May-Sept.	Basal spray on lower 12" of bole with moss cleared (16 oz./12" tree approximate dose) for trees 12"—36#	100% kill
	2-(2,4,5-TP) ester in oil	12	May-Sept.	Basal spray for smaller stems—lower 6"-8" of stems	Excellent
Oregon Oak	2,4-D amine	Undiluted	April-July	Application of small amounts of 2,4-D (1 oz./16" tree) in cont. frill	Excellent Few sprouts
	2-(2,4,5-TP) ester in oil	20	April-July	Application of moderate amount of 2-(2,4,5-TP) (8 oz./16" tree) in continuous frills	100%
	2,4,5-T ester/oil	16	May-July	Same dose and treatment as for maple basal sprays	80%+
Vine Maple	2,4,5-T ester/oil	16	May-July	Basal spray on lower 6" of stem. Probably this is the best treatment on small scale.	Excellent
	2,4,5-T ester in water with detergent	4	June	Foliage spray wet thoroughly.	Fair
	2,4,5-T ester in oil	80	Post bud-bursting but pre-fir bud-bursting	Aerial spray 6 gal./acre.	Poor to very good
Snow-brush	2,4,5-T ester in oil	80	Post bud-bursting but pre-fir bud-bursting	Aerial spray 6 gal./acre.	Excellent

Formulations Listed

Specific designations for chemical abbreviations used in this report are as follows:

- 2,4-D is 2,4-dichlorophenoxy acetic acid
- 2,4,5-T is 2,4,5-trichlorophenoxy acetic acid
- 2-(2,4,5-TP) is 2-(2,4,5-trichlorophenoxy) propionic acid
- TBA is the 2,3,6 isomer of trichlorobenzoic acid
- Ammate is ammonium sulfamate
- Brushkiller is a 1:1 mixture of 2,4-D and 2,4,5-T
- Killbrush is a trade name for a thickened mayonnaise-like emulsion containing various concentrations of brushkiller.
- Ahg is pounds of acid equivalent per 100 gallons of spray

40-INCH bigleaf maple has been fully killed. Treated in September with 32 ahg, 2-(2, 4, 5-TP) as basal spray. Four pints of oil-chemical material were applied to lower 12 inches of stem. Few basal sprouts on basal burls are also dead. Photo taken 1½ years after treatment.



16-INCH bigleaf maple, right, was treated with undiluted 2, 4-D amine applied in axed-cut continuous frill around bole. Although crown has been reduced to 40 percent of normal density, it was still alive 2 years after treatment. Numerous basal sprouts are also living, but have been heavily browsed by deer.

slower reaction than the smaller ones. Treatments during the growing season were most effective with basal sprays using concentrations of 22 pounds (ahg) of acid per 100 gallons of spray to produce 100 per cent kill with 2-(2,4,5-TP).

Similar concentrations of 2,4-D—2,4,5-T, and 2,4,5-T alone were less effective, especially on the larger rough-barked trees. TBA has not been effective. Moss removal seemed to increase effectiveness. The results indicated that a full two feet of the trunk need not be treated in order to get adequate kill, particularly on small trees.

Frilling treatments on large trees were unsuccessful, particularly with regard to sprout control, with all chemicals except 2-(2,4,5-TP). The most effective applications were dilute ester-in-oil solutions, although concentrated 2-(2,4,5-TP) amine produced 85 per cent average defoliation when applied in continuous frills.

Frilling or basal spraying were done for approximately $8.50 per acre. The greater cost for materials in the basal spray treatment is offset by the lower cost in labor.

Oregon white oak. Using similar chemicals, season and dosage, herbicides were applied on oak as they were on maple.

Most successful basal sprays consisted of 2,4,5-T ester in oil at a concentration of 22 pounds (ahg) of acid or more. Defoliation was at least 80 per cent in all such treatments applied during February, July and August. Some 2,4-D and 2,4,5-T mixes were more erratic in performance particularly in sprout control. Limited trials with a polychlorobenzoic acid formulation gave excellent results both at 15 and 30 ahg.

Frilling produced more consistent results with the use of concentrated 2,4-D amine or 2-(2,4,5-TP) ester in oil at 22 pounds (ahg) of acid. These chemicals produced a 100 per cent crown kill and fair to excellent sprout control. The cost of application of 2,4-D amine approximates the cost of basal sprays of 2,4,5-T.

Perfect sprout control is not necessary in these treatments and is probably not essential where planting is to be done. The growth of oak sprouts is normally slow, permitting conifers to overtop them. In this case undiluted 2,4-D amine applied in frills appears to be the most satisfactory treatment.

Vine maple. With their many small stems individual vine maple plants are difficult to treat. Trials on single plants have shown that vine maple is more susceptible to 2,4,5-T or 2-(2,4,5-TP) than to 2,4-D and 2,4,5-T mixtures, or to some trichlorobenzoic acids. This species was more sensitive to herbicide treatment in the growing season than in winter.

Examination of some aerial spray projects conducted by the Bureau of Land Management indicated that small plants are much more easily killed than large ones; however, in general aerial sprays have given rather erratic results.

Snowbrush. *(Ceanothus velutinus)* An aerial spray operation by the Bureau of Land Management during early April (dormant season) has demonstrated that 2,4,5-T is very effective for control of this species. Application of four pounds per acre of 2,4,5-T in six gallons of diesel oil resulted in a 100 per cent kill of this species on 320 acres two years after treatment. Sprouting was neglible.

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