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**MIDSUMMER FOLIAGE SPRAYS
ON
SALMONBERRY AND THIMBLEBERRY**

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ABSTRACT

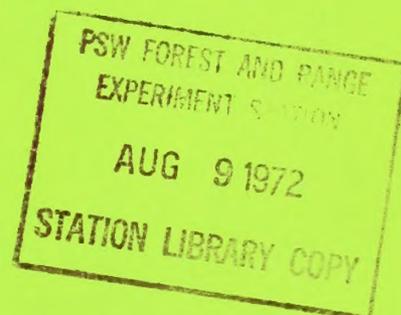
Mixtures of picloram and phenoxy herbicide amines were compared with amitrole-T and low volatile esters of 2,4,5-T in mid-summer foliage sprays on salmonberry (*Rubus spectabilis* Pursh) and thimbleberry (*Rubus parviflorus* Nutt.). Esters of 2,4,5-T were found to be the best herbicide for foliage sprays applied during late July in the Oregon Coast Ranges.

Keywords: Herbicides, spraying, brush control.



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Salmonberry (*Rubus spectabilis* Pursh) and thimbleberry (*Rubus parviflorus* Nutt.) are troublesome brush species on forest land in western Oregon and Washington. They are major components of most brushfields in the Coast Ranges and quickly occupy sites after logging or wildfires. One gallon of amitrole-T (2 lb. each of 3-amino-s-triazole and ammonium thiocyanate) per acre is generally applied as a foliage spray during early June to control salmonberry, but no herbicide gives long-term control of thimbleberry during that period. Foresters are seeking more effective herbicides and seasons of application for both species.

Finnis and Sund^{1/} used a mixture of picloram (4-amino-3,5,6-trichloropicolinic acid) and phenoxyacetic herbicides^{2/} to control salmonberry and concluded that such formulations show promise for chemical site preparation before planting nonstocked brushfields. This research note reports results from screening tests of two additional picloram-phenoxy herbicide mixtures as midsummer foliage sprays on salmonberry and thimbleberry. Control achieved with these mixtures is compared with that obtained using amitrole-T and low volatile esters of 2,4,5-T.

STUDY AREA AND METHODS

On July 22-23, 1966, two experimental formulations of picloram (M-2951 and M-3083^{3/}) were applied as foliage sprays on 1/100-acre plots of salmonberry and thimbleberry in the Oregon Coast Ranges near Coos Bay, Oregon. M-2951 contained 1/2 lb. ae^{4/} of picloram plus 2 lb. ae of 2,4,5-T per gallon, and M-3083 contained 1 lb. each of picloram, 2,4-D, and 2,4,5-T per gallon in the form of triisopropanolamine salts. Amitrole-T and low volatile propylene glycol butyl ether esters of 2,4,5-T were applied on adjacent plots for comparison.

^{1/} J. M. Finnis and Jimmie D. Sund. Planting of Douglas-fir seedlings following aerial application of Tordon 101 mixture herbicide. Down to Earth 26(1): 10-11, 1970.

^{2/} 2,4-D (2,4-dichlorophenoxyacetic acid) and 2,4,5-T (2,4,5-trichlorophenoxyacetic acid).

^{3/} Tordon formulations and 2,4,5-T were furnished by The Dow Chemical Company; amitrole-T was furnished by Amchem Products, Inc. Cooperation of both companies is sincerely appreciated.

^{4/} Acid equivalent.

Tordon 10K pellets, 10 percent ae picloram as a potassium salt, were also tested on thimbleberry at rates of 10 and 30 lb. of pellets per acre. Pellets were distributed by hand; a 2-percent diesel oil-in-water emulsion was used as the carrier for 2,4,5-T; the other herbicides were applied in water carriers.

All sprays were applied with knapsack sprayers on replicated plots of salmonberry. Only one set of thimbleberry plots was treated. Response to treatment was evaluated at the end of the next growing season, 15 months later, using the Dow Rating System based on 10 observations per plot.

RESULTS AND DISCUSSION

Salmonberry

M-3083 at a rate of 1-1/2 gal. per acre produced a noticeably higher percentage of kill than any of the other treatments (table 1). This should be a useful treatment for controlling salmonberry in preparing nonstocked sites for reforestation with conifers. However, none of the picloram treatments would be useful for releasing young Douglas-firs from salmonberry. Young firs are damaged by picloram sprays.

Table 1.--*Effect of midsummer foliage sprays on salmonberry*

Herbicide	Treatment		Degree of control ^{1/}
	Rate per acre	Carrier	
Amitrole-T	1 gal.	Water	2.4
Amitrole-T	1-1/2 gal.	Water	2.4
M-2951	1 gal.	Water	2.8
2,4,5-T	3 lb. ae	Emulsion	3.5
M-3083	1 gal.	Water	3.5
M-3083	1-1/2 gal.	Water	4.1

^{1/} A rating of 1.0 indicates little or no effect; a rating of 5.0 indicates complete kill with no resprouting.

Although 1 gal. of amitrole-T per acre is generally prescribed to release young Douglas-firs from salmonberry,^{5/} low volatile esters of 2, 4, 5-T appear far more preferable than either amitrole-T or picloram-phenoxy herbicide mixtures in midsummer foliage sprays. In this test, 3 lb. ae of 2, 4, 5-T killed a higher percentage of the salmonberry shrubs than either of the amitrole-T sprays and at a far lower cost than either amitrole-T or picloram mixtures. In contrast to picloram, neither amitrole-T nor 2, 4, 5-T damaged small Douglas-firs on the spray plots.

Thimbleberry

Low volatile esters of 2, 4, 5-T also were more effective than either amitrole-T or mixtures of picloram and phenoxyacetic amines in the midsummer foliage sprays on thimbleberry (table 2). Thimbleberry kill obtained with 2, 4, 5-T was good--almost equal to that obtained with 1-1/2 gal. of M-3083 per acre and far better than that obtained with amitrole-T. In addition, 2, 4, 5-T did not damage young Douglas-firs in the plot; M-3083 defoliated and damaged similar trees.

Table 2.--*Effect of midsummer foliage sprays and picloram pellets on thimbleberry*

Herbicide	Treatment		Degree of control ^{1/}
	Rate per acre	Carrier	
Amitrole-T	1-1/2 gal.	Water	2
Tordon 10K ^{2/}	10 lb.	None	2
Tordon 10K ^{2/}	30 lb.	None	2
M-2951	1-1/2 gal.	Water	2
2,4,5-T	3 lb. ae	Emulsion	4
M-3083	1-1/2 gal.	Water	4.5

^{1/} A rating of 1.0 indicates little or no effect; a rating of 5.0 indicates all shrubs on the plot are dead.

^{2/} Picloram pellets distributed on soil surface.

^{5/} P. G. Lauterbach. Chemical weeding and release of conifers in western Oregon and Washington. *In* *Herbicides and Vegetation Management*. Oreg. State Univ., Corvallis, Oreg., p. 148-151, 1967.

Where conifers are to be released from thimbleberry, low volatile esters of 2, 4, 5-T would be preferable to the mixture of picloram and phenoxy herbicides in M-3083. Even for site preparation in nonstocked brushfields, 2, 4, 5-T should provide as good control of thimbleberry at lower cost than possible with M-3083.

CONCLUSIONS

Although amitrole-T is generally considered better than 2, 4, 5-T for controlling salmonberry during the growing season, these limited tests indicate that there is a reversal in relative effectiveness of the two chemicals by midsummer. Low volatile esters of 2, 4, 5-T appear to be more effective than amitrole-T and less expensive than mixtures of picloram and phenoxy herbicide amines in midsummer foliage sprays to control salmonberry and thimbleberry.

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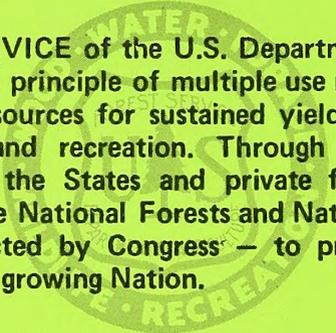
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