SUMMER RELEASE SPRAYING OF BLACK WALNUT

B.J. COSSLETT

Forest Research Institute, Christchurch

SUMMARY

Winter spray releasing of black walnut (*Juglans nigra*) is not always sufficient to keep trees weed-free throughout the summer. On some sites, releasing can be required two, or even three, times during the growing season. Hand or mechanical methods can be time-consuming, and include the risk of physical damage to the trees.

Five herbicides in various combinations at three rates (Table 1) were applied to 3-year old walnut trees on 24 January 1985. There were three replications with five to ten trees per plot. Thirty trees spread throughout the trial area were randomly selected to be untreated controls.

Applications were made using a knapsack sprayer at a pressure of 103 kPa. Walking speed was 1 m/sec. A 50 cm swathe was sprayed each side of the tree rows using a flat fan Tee-jet (model 11005) held 20 cm off the ground. Red clover (*Trifolium pratense*), white clover (*T. repens*) prairie grass (*Bromus willdenowii*), ryegrass (*Lolium*

TABLE 1: Percentage of trees with leaves blistered or burnt and overall weed score in each herbicide treatment. Trees assessed 22.2.85, weeds on 22.5.85

Herbicide and rate (kg ai/ha)	% trees with leaves blistered or burnt		Average weed score*
	sprayed around trees	sprayed over trees	
haloxyfop/clopyralid/simazine			
0.4 0.5 2.5	53	75	0.7
2.2 1.5 2.5	78	50	2.3
4.0 2.5 2.5	60	50	3.7
sethoxydim/clopyralid/simazine			
0.3 0.5 2.5	75	100	1.3
0.45 1.5 2.5	68	100	1.3
0.6 2.5 2.5	72	100	2.3
sethoxydim/terbuthylazine			
0.3 1.2	45	100	0.3
0.45 2.0	78	75	1.3
0.6 3.0	62	100	1.3
sethoxydim/oxyfluorfen			
0.3 0.28	72	100	0.7
0.45 1.28	88	100	1.0
0.6 2.24	76	75	0.7
terbuthylazine/terbumeton			
2.0 2.0	60	100	0.3
3.0 3.0	44	100	2.3
4.0 4.0	83	100	1.0
untreated control	60	73	0

*0=no effect to 4=75% weed kill or better

Products used: haloxyfop, Dowco-453; sethoxydim, Alloxol-S; clopyralid, Versatill; terbuthylazine/terbumeton, Caragard; terbuthylazine, Gardoprim; simazine, Simazol 5A.

Proc. 39th N.Z. Weed and Pest Control Conf.

sp.) couch (*Elytrigia repens*) and Californian thistle (*Cirsium arvense*), although irregularly distributed, were present in every treatment.

A second set of trees was sprayed over the top at the same speed and clearance using the same treatments. There were three to four trees per plot with one replication.

Overall weed kill, tree health and weed species were assessed visually by five people independently and the majority opinion (derived from the data sets) was used as the score for each character assessed. The walnut foliage, weed species and overall weed kill were assessed on 22 February 1985. Weed kill was again assessed on 22 May 1985 and both trees and weeds on 14 January 1986.

Since only 68 and 63 mm of rain fell in the 8 weeks either side of the spraying date, trees and weeds were under moisture stress.

No herbicides sprayed either around or over the walnut trees had any major effect on foliage (Table 1). Many of the trees both sprayed and unsprayed had small blisters on the leaf surfaces, or burn on the leaf edges, which may have been related to drought stress. All foliage was healthy the following season.

Haloxypol/clopyralid/simazine at 4.0/2.5/2.5 kg ai/ha gave good weed kill. All other mixtures/rates gave mediocre to poor results. Time and moisture resulted in a slight improvement. The combination of sethoxydim and oxyfluorfen at 0.45 and 1.26 kg ai/ha respectively and terbuthylazine/terbumeton at 3.0/3.0 kg ai/ha gave a better weed kill than the higher or lower rates.

Clovers and Californian thistle were affected by the higher rates of all treatments, but kills were only achieved by the clopyralid mixtures. Prairie grass was the most susceptible grass whereas ryegrass and couch were resistant to all but the highest rate of haloxypol.

When simazine was combined with haloxypol/clopyralid, the plots remained almost weed-free through to January 1986, when the trial was terminated.

This trial showed that, during a drought, black walnut foliage is tolerant to these herbicides. Vigorously growing trees, however may not be tolerant. Of the herbicides tested only clopyralid/haloxypol/simazine mixture gave a good weed kill under these conditions.