RESPONSE OF *ROBINIA PSEUDOACACIA* TO THREE HERBICIDES

JOHN BALNEAVES and OTTO KRIJGSMAN

*Forestry Research Centre, Forest Research Institute
P.O. Box 31-011, Christchurch*

On the international scene *Robinia pseudoacacia*, a deciduous tree growing naturally in North America, is the third most widely planted hardwood after *Eucalyptus* spp. and poplar hybrids. It was introduced to Western Europe in the early 1600s and has been planted in Eastern European countries, the Balkans, Russia, and Korea resulting in approximately two million hectares of *Robinia* plantations. Plantations of *Robinia* have also been established in China, although the land area involved is not known.

Robinia timber is used for structural building, furniture, decorative purposes such as parquetry and panelling, and can be used as veneers. It is durable and does not require treatment, and is therefore an excellent wood for posts and poles. Its resistance to high impact makes it ideal for small wood products such as axe, spade, hammer, and broom handles.

Robinia produces a very highly valued honey. Some varieties are specially bred for honey production, although some of the improved strains of *Robinia* developed by the Hungarian Forest Research Institute are both good timber trees and good nectar producers. Small land-owners and farm foresters in New Zealand have shown an increasing interest in growing *Robinia* as a high value timber tree.

Weed control is essential during establishment of the crop. In Europe, because of the lack of a cost-effective herbicide and the sensitivity of *Robinia* to herbicides in general, weed control is carried out either by machine or manually, and tends to be very labour-intensive.

Three trials at Rangiora Nursery, North Canterbury, established to test the tolerance of coniferous tree species to metsulfuron-methyl (Escort), sulfometuron-methyl (Oust) and terbuthylazine (Gardoprim 500 FW), were also used to test the tolerance of *Robinia pseudoacacia* var. *Pusztavacs* to these chemicals.

The trials were laid out in a randomised block design. Per treatment, 12, 6-month-old, conditioned, bare-root seedlings, 30 cm tall, were planted mid-winter, in four replicates of three trees on plots 3 × 2m and monitored for 12 months to check growth and mortality in response to herbicide treatment.

The herbicides were applied as pre-plant and post-plant applications, over the top of seedlings, using a CO₂ precision boom spray unit. Details of the treatments and results are given in Table 1. The results are expressed as percent survival and mean height 12 months after planting. These preliminary screenings indicate that sulfometuron-methyl used as either a pre-plant or post-plant (pre-flush) application could be useful for control of herbaceous weeds where *Robinia* is to be planted. Metsulfuron-methyl and terbuthylazine cannot be recommended for use at this stage.

TABLE 1: Herbicide rate, timing of application, survival (%), and mean height (cm) of surviving plants 12 months after planting.

Herbicide rate a		Application Time(weeks)							
		Pre-plant					Post-plant		
		12	8	4	2	1	1 day	4 (pre-flush) ¹	8 (post-flush) ¹
ai/ha									
metsulfuron methyl									
100 g	surv (%)	100	91	83	75	50	50	-	-
	ht (cm)	68	67	48	47	32	24		
150 g	surv (%)	100	92	75	75	58	50	-	-
	ht (cm)	49	52	46	38	36	28		
200 g	surv (%)	100	91	83	66	50	42	-	-
	ht (cm)	66	53	45	36	37	22		
300 g	surv (%)	75	67	50	33	33	8	-	-
	ht (cm)	41	38	30	28	27	10		
sulfometuron-methyl									
50 g	surv (%)	100	100	100	100	83	-	98	50
	ht (cm)	124	111	110	109	100	-	120	20
100 g	surv (%)	100	100	100	100	100	-	100	42
	ht (cm)	106	108	98	97	90	-	120	20
200 g	surv (%)	100	100	92	92	100	-	98	33
	ht (cm)	108	98	95	100	95	-	108	20
400 g	surv (%)	83	100	100	100	85	-	100	16
	ht (cm)	82	98	91	90	103	-	102	27
terbuthylazine									
4.5 kg	surv (%)	-	-	-	-	-	-	74	37
	ht (cm)	-	-	-	-	-	-	87	27
6.0 kg	surv (%)	-	-	-	-	-	-	34	25
	ht (cm)	-	-	-	-	-	-	76	35
9.0 kg	surv (%)	-	-	-	-	-	-	37	12
	ht (cm)	-	-	-	-	-	-	47	26
12.0 kg	surv (%)	-	-	-	-	-	-	17	12
	ht (cm)	-	-	-	-	-	-	28	35

¹ Pre-flush/post-flush refers to pre- and post-leaf development in the spring

Hand-weeded control resulted in 100% survival with a mean height of 117cm 12 months after planting.