

Herbicide effectiveness and subsequent pasture establishment in direct drilled white clover pastures

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Establishing new clover cultivars in old white clover, *Trifolium repens*, pasture is often difficult. New Zealand research (1), suggests that the most successful method is where the new cultivar is direct drilled after the old white clover is controlled using a knockdown herbicide. In this study, the efficacy of a range of herbicides and their effect on subsequent perennial ryegrass and subterranean clover establishment was assessed.

Methods

A constant rate of 1350 g a.i./ha of glyphosate with 0.2% of the surfactant "Wetter-TX" was used in the treatments: glyphosate alone, glyphosate + 6 g a.i./ha Ally (metsulfuron methyl (methyl ester)), glyphosate + 140 g a.i./ha dicamba (dimethylamine salt), and glyphosate + 800 g a.i./ha 2,4-D (ethyl ester). These treatments were applied to a 45-year old white clover, perennial ryegrass, *Lolium perenne*, Yorkshire fog grass, *Holcus lanans*, pasture at Cooriemungle in a four replicate small plot trial on 25 March 1991. A perennial ryegrass, subterranean clover, *Trifolium subterraneum*, seed mix was direct drilled into the plots on 15 April. The survival of established white clover and the establishment and growth of the drilled seed mix was assessed on 23 May.

Results

A mixture of glyphosate and Ally or dicamba was significantly more effective in controlling established white clover than glyphosate alone or mixed with 2,4-D. (Table 1). As expected, soil residues of Ally reduced the number of pasture seedlings establishing and seriously retarded their development. Competition from surviving white clover in the glyphosate and glyphosate + 2,4-D treatments was also found to suppress sub clover seedling numbers and weight. It is concluded that the glyphosate + dicamba mix provided the best combination of white clover control and seedling establishment.

Table 1. Effect of herbicides on white clover survival and the establishment (seedlings/m drill run) and growth of sub clover and perennial ryegrass seedlings.

Herbicide treatment	White clover ground cover (%)	Perennial ryegrass		Subterranean clover	
		Seedling wt (g)	Seedlings /m	Seedling wt (g)	Seedlings /m
Glyphosate	93	0.11	144	0.23	38
Glyphosate + Ally	6	0.05	95	0.08	27
Glyphosate + Dicamba	14	0.17	137	0.35	63
Glyphosate + 2,4-D ester	76	0.13	119	0.22	47
l.s.d. (P=0.05)	28	0.04	43	0.07	13

References

1. Ledgard, S.F., Brier, G.J. and Watson, R.N. 1988. Proc. N.Z. Grassld. Assn. 49,207-11.