Effect of various herbicides on pasture production and weed control in a spray-graze system

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Capeweed (Arctotheca calendula) and storksbill (Erodium botrys) are common pasture weeds in North Eastern Victoria. The Spray-Graze technique (1) was used at two sites to examine the effect of various rates of 50% 2,4-D amine Reglone+ and Roundup on pasture productivity and weed control.

Methods

In mid-May 1983 (eight weeks after the autumn break), eight spray treatments (Table 1) were applied in a randomized block design at two sites. There were four replications. Site 1 was dominated by capeweed (90% ground cover) and site 2 by storksbill (60% ground cover). At each site the clover growing in association with the weeds had 5 to 6 true leaves. Ten days after spraying the plots were mob stocked with wethers for 14 days.

Regrowth after grazing was harvested with a reciprocating mower in mid spring.

Results and Discussions

Table 1 : D.M. yields (t ha-1) of pasture following Spray-Graze

			Site 1			Site 2		
No.	Treatment	Rate l ha^{-1}	T	S.C.	C	T	S.C.	S
1	2,4-D amine	.35	4.1b§	3.0ab	0.4b	3.9b	3.5a	0d
2	2,4-D amine	.70	4.0bc	3.0ab	0.1d	3.3c	2.5bc	0d
3	2,4-D amine	1.40	3.1c	2.0cd	0.0d	2.7d	1.8c	0d
4	Roundup	0.50	4.0bc	3.5ab	0.1d	0.6e	0.6d	0.6b
5	Roundup	1.00	1.9d	1.4d	0.0d	0.9f	0.2d	0.5bc
6	Reglone	0.40	5.8a	2.8abc	2.1a	4.7a	3.4a	0.6b
7	Reglone	0.80	5.3a	3.6a	1.2c	4.3ab	3.3ab	6.3bc
8	Control	0.00	5.1a	2.6bc	1.7b	4.0b	2.2c	1.3a

T = Total, S.C. = Sub. Clover, C = Capeweed, S = Storksbill
§ Within any column means not followed by a common letter differ significantly (P< 0.05).

At both sites sheep preferentially grazed plots sprayed with Roundup and 2,4-D amine and deferred grazing the Reglone treatments. Treatments 6, 7 and 8 were not grazed as closely as the others and gave the greatest total dry matter production at both sites and the worst weed control at Site 1.

Both weeds were satisfactorily controlled (at least 98% with all rates of 2,4-D amine. Roundup eliminated capeweed but did not give satisfactory control of storksbill. The yield of sub clover at the lowest rate of 2,4-D amine at Site 1 was similar to control, but was higher at Site 2 (P 0.05).

Spray-Graze can provide excellent control of capeweed and storksbill in pastures. The results suggest that 0.35 $1/ha^{-1}$ of 2,4-D amine is a cheap and effective treatment. The place of Roundup in a Spray-Graze system warrants further investigation. In these experiments stock showed a preference for grazing plants sprayed with Roundup and this combined with its efficacy on capeweed suggests that lower rates than 0.5 1 ha^{-l} might have a place as an alternative to 2,4-D amine in the Spray-Graze system.

+ I.C.I. Australia Operations Pty. Ltd. Monsanto Australia Limited.

1. Pearce G.A. (1972) J. Ag. W.A. 13:l 16-19