Annual forage legume response to herbicides labelled for lucerne establishment

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Keywords: herbicide tolerance, forage legume yield

Introduction Weed competition reduces stand establishment, thus lowering forage production and quality. However, there are no herbicides labelled for annual legume establishment, despite several labelled for the establishment of lucerne (*Medicago sativa*). Some of these may be useful in the establishment and production of annual forage legumes. Lucerne herbicides have greater potential for use on other legumes, since they have grazing and feeding clearance. The objective of this paper is to summarize annual legume yield response trials to herbicides labelled for lucerne establishment.

Materials and methods Herbicides were applied either pre-emergent (benefin and EPTC) or early post-emergent (imazethapyr, imazamox, imazapic, bromoxynil and 2,4-DB) to 18 annual legumes (Table 1) with a CO_2 backpack sprayer delivering 140 L/ha over the 2002-04 growing seasons. Forage dry matter (DM) yields were estimated by hand clipping 3 randomly placed quadrats (30.5 x 61 cm) from each treatment.

Results *Lathyrus* and *Pisum* spp. were most tolerant of imazethapyr, imazamox and 2,4-DB; annual *Medicago* spp. were most tolerant of EPTC, imazethapyr and 2,4-DB; *Strophostyles* spp. were most tolerant of benefin, imazethapyr and imazamox; *Trifolium* spp. were most tolerant of 2,4-DB (Conrad & Stritzke, 1980; Grichar et al., 1993); and *Vicia* spp. were most tolerant of imazethapyr, producing the same or more forage than the untreated controls.

Table 1 Forage yield of annual legumes in response to herbicides labelled for lucerne

Herbicide Treatment	Rate (kg ai//ha)	*Lathyrus/ Pisum*- Peas[1]	*Medicago* - Annual medic[2]	*Strophostyles- Wild Bean*[3]	*Trifolium*- Clovers[4]	*Vicia*- Vetch[5]
		----------kg DM/ha----------				
No Herbicide	-	4480 b	2087 b	1336 a	1950 bc	4884 b
Pre-emergent						
Balan (benefin)	1.34	4155 b	2578 b	1580 a	1490 c	4888 b
Eptam (EPTC)	3.90	4548 b	3619 a	701 bc	2266 b	5320 b
Post-emergent						
Pursuit (imazethapyr)	0.052	5941 a	3637 a	1172 a	2095 b	7305 a
Raptor (imazamox)	0.026	5910 a	3753 a	1206 a	2536 b	5426 b
Plateau (imazapic)	0.052	247 d	0 c	893 b	0 d	451 d
Buctril (bromoxynil)	0.84	3441 c	2413 b	264 c	2346 b	3998 c
Butyrac (2,4-DB)	1.12	5069 ab	4126 a	397 bc	3255 a	4587 b

Means of : [1] *P. sativum* and *L. hirsutus* VNS and AU groundcover; [2] *M. lupulina* BEBLK, *M. orbicularis* Estes, *M. polymorpha* Armadillo, and *M. minima* Devine; [3] *S. helvula* and *S. leiosperma*; [4] *T. vesiculosum* Yuchi and Apache, *T. hirsutum* Overton R-18, *T. incarnatum* AU robin, and *T. nigrescens VNS*; [5] *V. villosa* VNS and AU early cover, and *V. sativa VNS.*

Conclusions Herbicides labelled for lucerne establishment have potential for use in establishing annual legumes. However, based on growth stage and environment, legume species vary in their susceptibility. Therefore more trials are needed to determine the level of safety of herbicides to forage legumes at varying growth stages and different environments.

References

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