Evaluation of Herbicide Tolerance in *Lotononis bainesii* Baker cv. INIA Glencoe

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Key words : herbicide tolerance ,herbicide susceptibility

Introduction *Lotononis bainesii* Baker cv . INIA Glencoe is a summer growing perennial forage legume from South Africa . It is a highly nutritious , palatable and drought tolerant species (Real , 2006) . One of its major draw back is its small seed size that relates to two agronomic problems : (a) slow establishment and (b) modest seed yields . To overcome the seed size problem we can breed to increase seed size and/or apply agronomic practices to improve establishment and seed production . One of these agronomic practices is to have a suite of herbicides that can reduce competition at the establishment phase reducing the chance of being out competed by weeds and at adult plant level to have pure stands for seed production reducing competition and contamination in the seed production phase . The objective of this study was to evaluate the tolerance of *L . bainesii* cv . INIA Glencoe to an autumn spraying of seven herbicides .

Materials and methods The experiment was conducted in a two year old *L . bainesii* crop at the Research Station INIA Glencoe" of INIA , Uruguay (lat . 32° 00′24″ ; long . 57° 08′ 01″ ; altitude 124m) . The experimental design was a randomized complete block with 5 replicates . The herbicide treatments sprayed in autumn 2004 are presented in Table 1 . The characters measured were : (a) visual damage score (1 = no damage and 10 = complete plant dead) 30 days after the spraying ; and at harvesting time (10 Feb . 2005) (b) forage yield , (c) number of inflorescences/m2 and (d) seed yield .

Results and discussion *Lotononis bainesii* was most susceptible to the broad-leaf herbicides 2 ,4 DB and flumetsulam + 2 ,4 DB with the highest levels of damage scores and reductions in forage and seed yields . The lowest dose of flumetsulam and both doses of imazethapyr had forage and seed yields equal to the weed-free control . The four grass selective herbicides at the two recommended doses had the same forage and seed yields than the weed-free control (Table 1) .

Table 1 *Herbicide treatments , damage score , forage and seed yields and number of inflorescences/m*^{2} *in L . bainesii .*

Herbicide	Dose (kg . ha^{-1})	Damage score (1 to 10)	Forage Yield (kg DM .ha^{-1})	Number of inflorescences .m^{-2}	Seed Yield (kg .ha^{-1})
Flumetsulam[1]	0 .036	1 .4 de[3]	2808 abc[3]	592 a[3]	50 ab[3]
Flumetsulam	0 .05	2 .0 cde	2768 abc	428 ab	35 bc
2 ,4 DB[1]	1 .2	5 .0 a	2544 abc	450 ab	20 bc
2 ,4 DB	1 .5	5 .4 a	2412 c	180 b	14 bc
Flumetsulam+2 ,4DB	0 .03+1 .0	3 .8 abc	2968 abc	170 b	24 bc
Flumetsulam+2 ,4DB	0 .036+1 .2	3 .0 bcd	2492 bc	123 b	8 c
Imazethapyr[1 2]	0 .05	1 .0 e	2960 abc	430 ab	48 ab
Imazethapyr	0 .08	1 .4 de	3182 abc	420 ab	46 ab
Clethodim[2]	0 .09	1 .0 e	2684 abc	590 a	75a
Clethodim	0 .18	1 .0 e	2835 abc	605 a	70 a
Fenoxaprop-P-ethyl[2]	0 .1	1 .0 e	2728 abc	610 a	78 a
Fenoxaprop-P-ethyl	0 .165	1 .0 e	2752 abc	590 a	73 a
Fluazifop-P-butyl[2]	0 .0245	1 .0 e	2784 abc	595 a	77 a
Fluazifop-P-butyl	0 .035	1 .0 e	2740 abc	600 a	81 a
Haloxyfop methyl[2]	0 .088	1 .0 e	3324 ab	610 a	79 a
Haloxyfop methyl	0 .125	1 .0 e	2740 abc	592 a	77 a
Weed-free Control			3380 a	640 a	82 a

[1] Broad-leaf herbicide ,[2] G^{r}ass herbicide ,[3] Different letters in each column indicate significant differences (P = 0 .05) .

Conclusion The highest seed yields in *L . bainesii* were obtained with the spraying of the low dose of flumetsulam , both doses of imazathapyr and the four grass herbicides .

Reference

Real , D . 2006 . *Lotononis bainesii* Baker . *http ://www .fao .org/ag/AGP/agpc/doc/Gbase/DATA/Pf000048 .HTM .*