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# PRODUCTION PERFORMANCE OF STEERS GRAZING DROUGHTED BLACK SPEARGRASS (*HETEROPOGON CONTORTUS*) DOMINANT PASTURES

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## ABSTRACT

Liveweight gain performance for steers grazing black speargrass (*Heteropogon contortus*) dominant pastures has been measured over 5 years within a large grazing trial in sub-tropical Queensland under conditions of near continuous drought. The treatments include: (a) legume-augmentation, (b) three land classes, and (c) four stocking rates. Key findings are that: (a) legume-augmentation offered a production advantage in most seasons, (b) slope position had no significant effect on production, and (c) although the heaviest stocking rate (0.9 steers/ha) consistently generated the most liveweight gain per hectare, this was associated with significantly lower liveweight gain per animal and could not be recommended.

## INTRODUCTION

Because of their effect on profit and longer term resource stability, pasture improvement and the determination of appropriate stocking rates remain two of the most significant decisions facing managers of extensive grazing enterprises. Animal production results are presented from the joint CSIRO-QDPI 'GLASS' trial conducted on black speargrass (*Heteropogon contortus*) dominant pastures in subtropical Queensland since 1989.

## METHODS

The GLASS trial was established on 440 hectares of leased grazing land (Glenwood, 25°41'S 150°52'E, average annual rainfall 716 mm). Belmont Red steers (2 yo and 3 yo) were grazed at four stocking rates (0.15, 0.3, 0.6 and 0.9 steers/ha) in 16 paddocks comprising either native pastures or legume-augmented native pastures on three land classes (lower slope, mid-slope, upper slope). A mixture of six legumes (3 kg/ha seed weight as 50% *Macroptilium atropurpureum*, 17% *Chamaecrista rotundifolia*, 12% *Stylosanthes guianensis* var. *intermedia*, 5% *Stylosanthes scabra*, 5% *Aeschynomene falcata* and 4% *Lotononis bainesii*) with fertiliser (45 kg/ha molybdenised superphosphate which was 0.02% Mo, 8.8% P) was oversown by bandseeding in November 1989 and, due to poor initial establishment, again in February 1993. The steers were introduced as weaners and retained in the paddocks for two years, with a changeover of half the animals in July each year. Because of continuing drought conditions stocking rates were not fully maintained in the first three years of the trial. For the last two years stocking rates were fully maintained and the animals were fed hay (20 kg/animal-week) or a hay plus mineral supplement (Rumevite Lik-block 30% C.P.) in winter if peak pre-loss body weight declined below a set of triggers (10% and 15% first year animal, 15% and 20% second year animal). This only applied in 1994-95 for 60% of the 0.6 steers/hectare and 100% of the 0.9 steers/hectare treatments for 18 and 30 weeks respectively. Production data were analysed using ANOVA.

## RESULTS

### Effect of Legume-Augmentation on Liveweight Gain

With the exception of 1993-94, which spans the period of the second sowing of the legume treatment paddocks, there was a significant difference between the native pasture and legume-augmented treatments in each year of the trial (Table 1a).

### Effect of Land Class on Liveweight Gain

There was no significant land class treatment effect recorded for any of the years (Table 1b).

### Effect of Stocking Rate on Liveweight Gain

Despite the need to supplement all of the stock in the highest stocking rate treatment in 1994-95, the liveweight gain per head was significantly lower than that for the other three treatments (Table 1c). There was a significant difference in liveweight gain per hectare between the stocking rate treatments in each year of the trial (Table 2).

**Table 1.** Liveweight gain (kg/head) for treatments 1990-95.

Treatment	1990-91	1991-92	1992-93	1993-94	1994-95
<b>(a) +/- Legumes*</b>					
Native pasture	135	120	121	140	114
Legume-augmented	160	153	141	153	135
l.s.d. (P<0.05)	22	25	16	n.s.	12
<b>(b) Land Class*</b>					
Lower slope	128	124	125	154	136
Mid slope	173	167	140	166	166
Upper slope	163	150	127	160	141
l.s.d. (P<0.05)	n.s.	n.s.	n.s.	n.s.	n.s.
<b>(c) Stocking rate (steers/ha)</b>					
0.15	176	178	143	187	158
0.3	155	155	137	169	163
0.6	173	155	149	156	144
0.9	160	142	122	111	100
l.s.d. (P<0.05)	n.s.	n.s.	n.s.	23	27

\* 0.6 steers/ha treatment paddocks only.

**Table 2.** Liveweight gain (kg/hectare) for stocking rate treatments 1990-95.

Stocking rate (steers/ha)	1990-91	1991-92	1992-93	1993-94	1994-95
0.15	53	54	43	28	24
0.3	93	93	82	51	49
0.6	104	93	89	94	86
0.9	144	128	110	100	90
l.s.d. (P<0.05)	17	14	21	15	18

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