RELATIONSHIPS BETWEEN BEHAVIOURAL TRAITS AND LIVEWEIGHT PERFORMANCE OF BRAHMAN STEERS IN A FEEDLOT

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Large variations in growth and feed conversion efficiency occur between cattle in feedlots. We aimed to test whether different behaviours of cattle may reflect some of these production differences.

Brahman steers aged 2 to 3 years were randomly allocated on liveweight to two treatments, feedlot naive and feedlot pre-exposed (Holroyd *et al.* 1996). There were 10 pens (5m x 30m), each of 10 animals fed at 0800 and 1400 daily. The behaviour of four focal animals per pen was recorded twice daily, once in the morning and again in the afternoon, by two observers, in a randomly allocated sequence of pens. Each focal animal was observed for 10 minutes and the following behavioural states recorded: feeding, lying alert, lying relaxed, ruminating (lying or standing), standing alert, standing relaxed and others (eg drinking, walking). Observations were made during days 1 to 14, 24 to 26, 38 to 40, 52 to 54, 73 to 75 and 94 to 96, that is on 29 days in all.

Times spent in each state were bulked across treatments, averaged over the 29 days and were divided into six periods *viz.* about ½ hour before morning feeding, 0-1 hour after morning feeding, 1-2 hours after morning feeding, about ½ hour before afternoon feeding, 0-1 hour after afternoon feeding, and 1-2 hours after afternoon feeding (periods 1 to 6 respectively, Table 1). Correlations between these behavioural states and overall ADG, from day 0 to day 97 were calculated for these periods.

Table 1. Percentages of times spent in various behavioural states and correlations with overall ADG (day 1 to 97) for six time periods

	Mean % of times in different states							Corresponding correlation with ADG (kg/day)						
	Period							Period						
	1	2	3	4	5	6	All	1	2	3	4	5	6	All
F[†]	5	22	12	8	17	15	13	0.26	0.13	0.17	0.06	0.35*	0.12	0.22
LA	2	2	3	4	3	3	3	-0.01	0.07	-0.13	0.12	0.18	-0.22	-0.04
LR	10	9	29	28	23	29	22	0.08	0.01	0.11	-0.08	-0.15	-0.07	-0.08
RU	13	5	8	7	13	7	9	0.33*	0.04	-0.20	-0.05	0.01	-0.43**	-0.02
SA	37	30	18	24	17	17	23	-0.46**	-0.47**	-0.23	-0.08	-0.00	-0.11	-0.28
SR	28	27	26	22	22	23	24	0.21	0.24	0.09	0.08	-0.34*	0.36*	0.17
Oth	5	5	5	7	5	6	6	0.17	0.06	0.13	0.16	0.11	0.03	0.19

[†] F feeding, LA lying alert, LR lying relaxed, RU ruminating, SA standing alert, SR standing relaxed, Oth other.
* P<0.05, **P< 0.01

Overall there were no significant (P > 0.05) correlations between behavioural states and ADG (day 0 to 97) but there were within some of the six periods. Time feeding in the hour after afternoon feedout (period 5) was positively correlated with ADG as was time ruminating before morning feeding (period 1). However time ruminating in period 6 was negatively correlated to ADG. Standing alert was negatively correlated with ADG in periods 1 and 2. The negative relationship between standing relaxed and ADG in period 5 was a direct contrast to that occurring in period 6.

The analyses have identified some relationships between behavioural states and overall ADG. However further data analyses are required to compare behavioural states and interim ADGs as treatment differences in liveweight performance occurred to day 55 (Holroyd *et al.* 1996).

HOLROYD, R.G., PETHERICK, J.C. and DOOGAN, V. (1996). *Proc. Aust. Soc. Anim. Prod.* **21**, 400.