

SILAGE OR HAY BASED DIETS SUPPLEMENTED WITH DIFFERENT LEVELS OF GRAIN FOR FATTENING BEEF CATTLE

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Summer-autumn finishing of beef cattle in south west of Western Australia is based on high grain diets under opportunistic feedlot conditions, with low quality hay included in the diet as a source of fibre. Nevertheless, ryegrass/clover pastures have the potential to produce good quality silage with a concomitant reduction in the level of grain required to sustain liveweight gains in excess of 1 kg/day. The aim of this experiment was to determine whether silage could promote higher levels of production than hay when fed in conjunction with grain at 3 differing levels.

The silage and hay were prepared from adjacent paddocks that had been treated similarly during the growing season. The paddock used for silage was locked up from 5 August 1991 for 64 days prior to harvest and the cut pasture was wilted overnight, ensiled in 2 covered field stacks one of which was treated with an enzyme additive (0.2 L/t fresh material) using a single chop forage harvester. The hay paddock was locked up from 13 August 1991 for 84 days and the cut material was field dried for 8 days prior to baling as small square bales.

The intakes (DMI) and feed conversion ratios (FCR) of 54 individually penned Hereford-Limousin steers (average initial liveweight (ILW) 280 kg) fed diets of silage or hay with grain were measured over 90 days and the final liveweights (FLW) were recorded. The animals were randomly allocated to treatments after blocking on initial liveweight. Nine diets were formulated with 3 roughage sources: 2 types of silage (untreated (US) and enzyme treated silage (ES)) and hay (H) offered *ad libitum* with 3 levels of concentrate (barley/lupin mix (70:30)) fed at 0.5, 1.0, 1.5 % of liveweight. After slaughter the dressing % and P8 fat depth were measured.

The quality of both silages was superior to hay in terms of estimated metabolisable energy [ME (MJ/kg DM)] and crude protein [CP (%)] (US, 9.7, 14.9; ES, 9.3, 14.0; H, 8.6, 8.2 respectively). Animal performance data also reflected the superiority of silage over hay as a source of nutrients (Table 1). Total intakes and average daily gains were higher with silage based diets compared to hay based diets.

Table 1. Performance of steers fed hay or silage with different amounts of concentrate feed

Concentrate (% LW):	Hay			Untreated silage			Enzyme silage			l.s.d. (<i>P</i> = 0.05)
	0.5	1.0	1.5	0.5	1.0	1.5	0.5	1.0	1.5	
ILW (kg)	281	284	290	279	278	283	284	284	279	30.9
FLW (kg)	320	350	369	355	378	376	357	372	381	22.0
ADG (kg/day)	0.33	0.62	0.87	0.81	1.10	1.20	0.76	1.10	1.22	0.199
Forage DMI (kg/day)	4.34	3.89	2.95	4.93	4.18	3.59	4.26	4.04	3.35	0.547
Conc. DMI (kg/day)	1.38	2.91	4.51	1.43	2.91	4.39	1.43	2.94	4.46	0.247
Total DMI (kg/day)	5.72	6.80	7.46	6.36	7.09	7.98	5.69	6.98	7.81	0.639
FCR	22.0	11.6	8.8	7.7	6.5	7.0	7.8	6.6	6.7	4.72
Dressing %	56.0	55.8	56.3	54.9	56.4	56.7	56.0	55.6	56.6	1.95
P8 fat (mm)	2.7	4.8	6.8	5.2	6.0	7.7	6.0	6.5	7.0	2.17

At equivalent levels of grain addition feed conversion ratios were more efficient for silage based diets. There were no significant differences in animal performance between the 2 types of silages. At slaughter dressing percentages were similar for all diets and increasing grain levels produced heavier and fatter carcasses.

This experiment demonstrates the production potential of these silages relative to hay produced from similar pasture when used to fatten steers for the summer autumn beef-market in the south west of Western Australia.