

THE LIVELWEIGHT GAIN RESPONSE OF CATTLE SUPPLEMENTED WITH MOLASSES AND GRAIN WHILE GRAZING IRRIGATED LEUCAENA/PANGOLA PASTURES IN THE ORD RIVER IRRIGATION AREA

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The liveweight gain of cattle grazing leucaena (*Leucaena leucocephala* cv. Cunningham)/pangola (*Digitaria eriantha* cv. Studel) pastures in the Ord River Irrigation Area (ORIA) of north Western Australia can be increased from 0.7 to 1.1 kg/day in the dry season by supplementing with 1.5 kg/day of maize (Petty *et al.* 1997). Molasses is now available in the ORIA from the local sugar mill and provides a cheaper source of energy than maize.

This experiment measured the liveweight gain of cattle rotationally grazing leucaena/pangola pastures in the ORIA and supplemented with four levels (daily intakes, as fed) of molasses (M; 1.25, 2.5, 3.75 and 5.0 kg) and 2 levels of maize (0.75 and 1.5 kg); one group was unsupplemented (control). Seventy heifers with a mean initial liveweight of 252±3.8 kg were allocated to the seven treatments, with two replicates of each treatment (five heifers per replicate). The experiment was conducted over 106 days of the dry season. Estimates of herbage mass and residual herbage mass were made monthly.

The mean herbage mass, residual herbage mass, herbage allowance and herbage intake (estimated from changes in herbage mass) were 3.78 t/ha, 3.11 t/ha, 13.1 kg DM/100 kg W and 2.34 kg DM/100 kg W, respectively, averaged over all treatments. Pangola contributed 79% on average of the herbage mass and 64% of the herbage consumed. Increasing supplement intake had no significant effect on forage intake, that is, no substitution effect. The liveweight changes are shown in Table 1.

Table 1. Liveweight gain (LWG) of heifers grazing leucaena/pangola pastures and supplemented with varying amounts of molasses and maize

	Control	Molasses intake (kg/day)				Maize intake (kg/day)	
		1.25	2.5	3.75	5.0	0.75	1.5
LWG (kg/d)	0.71 ^a	1.12 ^c	1.01 ^{bc}	1.01 ^{bc}	0.87 ^{ab}	0.77 ^a	0.89 ^{abc}

Values followed by a different superscript are significantly different ($P < 0.05$)

Molasses supplementation resulted in a higher liveweight gain than that achieved with maize, particularly at low intakes of supplement. This effect is more pronounced if the two energy sources are compared on an ME intake basis, by virtue of the lower DM content and slightly lower ME content (on a DM basis) of molasses compared with maize (9.0 and 11.4 MJ/kg DM respectively). The highest response with molasses tended to occur at the lowest level of supplementation, which equated to only 0.4% of liveweight, and the decline in growth rate at higher levels of feeding is difficult to understand as there was no apparent substitution occurring. Nevertheless, provision of small amounts of carbohydrate readily fermentable in the rumen appears to stimulate animal growth on leucaena/pangola pasture, presumably through an increased supply of microbial protein for absorption in the intestines. This apparently supplements the high bypass protein supply coming from the leucaena. More research is needed to further define the reasons for these responses.

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