

Whole or ground maize grain for cattle grazing annual ryegrass pasture

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Supplementary feeding with grain and varying forage allowance (FA) are the main management tools farmers have to manage growth rates of cattle on high quality pastures. The cost of grain and the need for processing are important in determining the economic benefits of supplementary feeding. This experiment investigated the average daily gain and grain conversion efficiency of thirty–six Hereford steers (LW 278 ± 15.5 kg) grazing annual ryegrass pasture (first grazing) at two levels of FA (2.5 and 5.0 kg DM/100 kg LW) with no supplement or fed each morning, at 1 kg/100 kg LW, whole (WM) or ground (GM) maize grain. The experiment lasted 56 d starting on 6 June 2002. Pasture biomass during the experimental period was 1972 kg DM/ha, 22.3 cm high, and FA was adjusted weekly by varying paddock area. Grain refusals were weighed to determine actual daily intake of each animal. Mean dry matter (DM) content of the pasture was 190 g/kg. Ash, crude protein, NDF and ADF for pasture were respectively 116, 172, 461 and 249 g/kg DM and for the maize grain were 13, 82, 186 and 94 g/kg DM. Every 14 d, animals were weighed after 12 h with no access to feed or water. Data on LW were analysed using repeated measures analysis and adjusted to a linear equation. There was an

interaction ($P < 0.05$) between FA and supplementation on LW. Least squares means for LW gain are shown in Table 1.

At low FA, supplementation increased LW gain ($P < 0.05$) but did not increase it at the high FA. Grain intake was not affected ($P > 0.05$) by processing or FA. Maize grain processing (whole vs ground) had no effect on animal performance ($P > 0.05$). The average daily intake of whole maize by supplemented steers grazing at the low FA was 2.89 kg DM head/d and resulted in an increase in gain of 0.432 kg/d with respect to control ($P < 0.01$; Table 1) representing a conversion value of 6.68 kg maize/kg LW gain.

We conclude that ryegrass pasture offered at 5% of bodyweight was able to support high rates of gain in its first grazing without grain supplementation. When the amount of forage was restricted, simulating a higher stocking rate, supplementation with maize was efficient and there was no advantage in processing the grain.

NRC (1996). *Nutrient Requirements of Beef Cattle*, 7th Revised Edition. National Academy Press. Washington DC, USA.

Table 1 Least square means for liveweight gains (kg/d) during 56 d of steers grazing ryegrass pastures at two different forage allowances and offered whole or ground maize grain.

Supplementation	Forage allowance (kg DM/100 kg LW)		Mean gain
	2.5	5.0	
Control	0.873 ^{bB}	1.348 ^{aA}	1.111 ^A
Whole maize grain	1.305 ^{aA}	1.315 ^{aA}	1.310 ^B
Ground maize grain	1.252 ^{aA}	1.367 ^{aA}	1.310 ^B
Means	1.144 ^A	1.344 ^B	

^{ab}Means in the same column not sharing superscript differ ($P < 0.01$), Tukey test

^{AB}Means in the same row not sharing superscript differ ($P < 0.01$), Tukey test