

PERFORMANCE OF STEERS GIVEN A MOLASSES BASED DIET
AND VARIOUS PROTEIN AND ENERGY SUPPLEMENTS

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Liquid molasses, supplemented with roughage and a source of non protein nitrogen and bypass protein has been widely used as a production ration for lot feeding cattle (Preston & Willis, 1974). Addition of a source of starch as maize grain to a molasses diet has also increased voluntary food intake, growth rate and food conversion ratio in bulls (Preston & Willis, 1975).

In this study, isonitrogenous supplements containing combinations of a bypass protein (soyabean meal) and starch (maize) were given to Hereford steers consuming a liquid molasses based diet. The steers received a molasses diet which contained (w/w) 3% urea and 5% minerals. The steers also received 1kg medium quality hay/hd/d and one of the following supplements (g/hd/d), a) 400 soyabean meal, b) 500 whole soya-bean, c) 500 whole soyabean extruded at 150°, d) 480 soyabeans + 320 maize + 50 sodium bentonite, e) 480 soyabeans + 320 maize + 50 sodium bentonite extruded at 150°. The experiment was conducted over an 80 day feeding period. The results are given in the table.

TABLE 1 Liveweight performance of steers given a molasses based diet.

	SUPPLEMENT					SEM
	a	b	c	d	e	
Initial live weight (kg)	173	174	169	171	173	8
Liveweight gain (kg/d)	0.42 ^a	0.55 ^{ab}	0.62 ^b	0.64 ^b	1.11 ^c	0.06
Dry matter intake (kg/d)	4.35	4.36	4.39	4.63	4.92	-
Food conversion ratio (kg DM/kg gain)	9.3	7.7	7.4	7.0	4.8	
Consumption index ⁺	2.3	2.2	2.3	2.4	2.3	

⁺ kg DM/100 kg body-weight

Extrusion of the maize/soyabean/bentonite mixture supported maximum growth rate (1.1 kg/d) in relation to all other supplements (mean 0.56 kg/d). Since the quantity of protein and energy provided in both the unextruded and extruded maize + soyabean supplements was similar, the observed growth responses indicated a change in the balance of nutrients available for absorption by the animal, which was attributable to the effects of extrusion. Extrusion could have increased the supply of fermentable substrate in the rumen and increased the efficiency of microbial protein synthesis, or it could have reduced the degradability of the protein and energy in the supplements and increased the flow of protein and energy to the intestines.

PRESTON, T.R. and WILLIS, M.B. (1974). 'Intensive Beef Production' p. 334-336. (Pergamon Press: Oxford.)

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