THE EFFECT OF GRAIN FEEDING ON GROWTH RATES AND CARCASE ATTRIBUTES OF GRAZING STEERS IN CENTRAL QUEENSLAND

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In order to take advantage of the increasing demand for beef from developing Asian markets, Australian beef producers need to increase both the number and proportion of carcases meeting specific market requirements. The Japanese and Korean markets have specific requirements for carcase weight, carcase fat depth, dentition and carcase fat colour, with these requirements expected to become even more stringent. In many finishing areas of Queensland, up to 30% of animals fail to meet target liveweights for premium markets by winter. Producers are then faced with the decision of holding these animals longer on pasture, in some cases up to 12 months, selling them in an unfinished condition, or increasing nutritional inputs to overcome pasture quality deficiencies caused by frosts or dry conditions. In this experiment, the effects of feeding a grain ration on growth and carcase attributes were studied in grazing steers that were unsuitable for the Korean grass-fed market by winter.

Ninety nine *Bos indicus* cross steers approximately 2.5 years old were allocated on fasted liveweight (mean 460kg) into nine groups of 11 animals each and placed on frosted buffel grass pastures in July. One group was slaughtered to provide base carcase data (I), while the other groups were placed into two treatments; Pasture only (P) and Pasture + grain ration (P+G). The grain ration (16% concentrates, 84% cracked grain) was offered on an *ad lib* basis through self feeders. Mean intakes were 8.3 kg/hd/day from day 0 to 60, reducing to 3.5 kg/hd/day from day 60 to 88. Steers were turned off for slaughter at target carcase weights between 260 and 280 kg. There were two turnoff groups within each treatment. At slaughter, carcase weight, subcutaneous rump (P8) fat depth and the visual assessment of intermuscular fat colour using the AUS-MEAT chiller assessment system were recorded (Table 1).

Table 1 **Growth rates and carcase attributes of steers grazing pasture with or without access to a grain ration.**

Treatment	Days to turnoff	Average daily gain (kg/hd/day)	Carcase weight (kg)	Rump fat depth (mm)	Fat Colour						
					AUS-MEAT Score[1]	AUS-MEAT score distribution (%)					
						≤2	3	4	5	6	7
I	-	-	239	12	4.6	-	9	36	36	19	-
P											
Turnoff 1	116	0.48	247	13	5.0	-	10	30	20	30	10
Turnoff 2	213	0.51	283	18	5.5	-	3	15	27	40	15
P+G											
Turnoff 1	60	0.98	272	14	4.8	-	5	29	52	14	-
Turnoff 2	88	0.69	264	16	3.7	9	35	35	17	4	-

1 Ten point scale, 0=white, 9=yellow, assessed on intermuscular fat.

Feeding a grain ration to steers grazing frosted sown grass pastures decreased the time required for animals to reach liveweights suitable for the Korean market, compared to steers grazing pastures only. Carcase weights of the P - Turnoff 1 group were lower than desired because of delays at slaughter. Average daily gains were increased by up to 0.5kg/hd/day due to grain feeding. Rump fat depth increased with carcase weight in the P treatment as expected, but not in the P+G treatment. All treatment steers achieved the required minimum fat depth (7mm), however seven % of I steers had insufficient (<7mm) fat depth to meet Korean market specifications. Short term grain feeding had no influence on subcutaneous rump fat depth. Feeding grain to steers in the paddock for 60 days failed to improve (whiten) intermuscular fat colour, however feeding for an additional 28 days improved intermuscular fat colour. There was little difference in the proportion of AUS-MEAT intermuscular fat colour scores <5 between I and P - Turnoff 1 and P - Turnoff 2 and P+G at - Turnoff 1, however, P+G had noticeably more carcases (79%) with fat scores <5 at 88 days (Turnoff 2).

This experiment has shown that feeding a grain ration to steers entering the winter period when pasture quality declines, will increase growth rates and decrease the time required to ensure market suitability. Extended periods of grain feeding may also improve (whiten) intermuscular fat colour.

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