BREED OF SIRE INFLUENCE ON WEIGHT FOR AGE
AND AGE AT SALE OF COMMERCIAL STEERS

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SUMMARY

Live weights of tropically adapted steers born during two consecutive calvings were analysed to measure the effect of breed of sire and breed of dam on weight per day of age at 6, 12, 16, 23 and 29 months of age at sale, and age of sale. These steers were sired by Brahman, Hereford, Santa Gertrudis, Droughtmaster, and Belmont Red Bulls from low Brahman (about 1/2 Brahman) and high Brahman (about 3/4 Brahman) cows.

There was no consistent breed of sire effects, but year by breed of sire interactions were present for weight per day of age at 6 and 12 months of sale, and for age at sale (P < 0.01).

There were no breed of dam, or breed of dam by breed of sire effects on weight per day of age of the steer progeny. This may be explained by previous selection practices in the breeding herd.

Correlations of weight per day of age at sale, and age at sale (38 months) with 23 and 29 months weight per day of age indicate that either of the two later ages may be a reliable indicator of the commercial value of steers.

INTRODUCTION

The concept of using Bos indicus genotypes to breed tropically adapted cattle is widely accepted and adopted in central and northern Queensland (Anon. 1978). Research results that support this breeding policy are widely documented.

Most tropically adapted herds are based on Brahman and Hereford or Shorthorn crosses. The choice of breed of sire to join with Brahman-British crossbreeds is debated widely in the beef industry.

Lapworth et al. (1976) reported weight per day of age at 7, 23 and 29 months of steers by Brahman, Hereford and Santa Gertrudis bulls from approximately 1/2 Brahman cows, approximately 3/4 Brahman cows and approximately 1/2 Brahman cows respectively. The residual component of these cows was Hereford. The major trend in these data was a year by breed of sire interaction with little evidence of a consistent breed of sire effect over four calf groups.

Data from steers produced by joinings of Brahman, Santa Gertrudis, Drought-master and Belmont Red with approximately 1/2 Brahman cows; and Hereford bulls with approximately 3/4 Brahman cows showed a strong year by breed of sire interaction on weight per day of age at 5, 12 and 16 months (Rudder et al. 1976). There was no consistent breed of sire effect over the two calf drops.

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In both of the previous reports the magnitude of the breed of sire
constants for weight per day of age decreased as the age of the steers increased.
This trend, combined with the interactions with year, implied that breed of sire
may be of little commercial significance in many tropically adapted breeding
herds. This paper reports weight per day at 6, 12, 16, 23 and 29 months of age,
sale, and age at sale. With minor varation, the data presented are a contin-
uation of those presented by Rudder et al. (1976)..

MATERIALS AND METHODS

The data were collected from steers bred and grown at "Mount Eugene",
Jambin, Queensland. Breeding and management programmes, and environment have
been described previously Rudder et al.(1976).

Liveweight data from steers sired by Brahman, Hereford, Santa Gertrudis,
Droughtmaster and Belmont Red bulls from 3/4 Brahmancontent, and 1/2 Braham
content cows were recorded from weaning to sale.

Steers used in this observation were from two consecutive calvings and
had a mean day of birth of September 27 ± 35 days standard deviation.

Liveweight data were analysed by the least squares method (Harvey 1960)
using a model that included years, dam age, dam breed, sire breed, all first
order interactions, and the partial regressions of weight per day of age on dam
weight at weaning, and day of birth. This approach was taken to isolate
environmental effects from dam breed and breed of sire effects.

Time of sale was determined by live weight, seasonal conditions, and
visual assessment of a suitable degree of fatness to present a product to meet
apparent requirements. These cattle were sold at average live weight of 560 kg
because the most reliable market in this region is for steers about this weight
to satisfy export markets.

RESULTS AND DISCUSSION

Effects of breed of sire and breed of dam are given in Table 1.

TABLE 1 Least squares means for weight per day of age at 6, 12, 16, 23 and 29
months at sale, and age at sale.

	No.	Weight/age (kg/day) 6 mo	12 mo	16 mo	23 mo	29 mo	Sale	Sale Age(d)
Overall Means	539	1.124	0.675	0.662	0.564	0.543	0.488	37.8
Sire Breed								
Brahman	135	1.142	0.688	0.669	0.567	0.541	0.488	37.5
Hereford	171	1.086	0.663	0.658	0.555	0.542	0.474	39.0
Santa Gertrudis	38	1.157	0.683	0.668	0.592	0.550	0.505	36.4
Droughtmaster	105	1.128	0.668	0.664	0.561	0.546	0.490	37.8
Belmont Red	90	1.109	0.675	0.650	0.545	0.534	0.484	38.2
Dam Breed								
High Brahman	260	1.118	0.679	0.669	0.573	0.545	0.490	37.8
Low Brahman	279	1.130	0.671	0.655	0.555	0.541	0.486	37.7

There were no breed of sire effect over the two years' data, but year by breed of sire interactions were significant at 6 months (P<0.005) and 12 months (P< 0.01), at sale (P<0.01), and age at sale (P< 0.005).

Breed of dam, and breed of dam by breed of sire interaction had no effect on weight per day of age at any of the observations. The absence of breed of dam by breed of sire interactions on weight per day of steer progeny may be a function of selection. In this herd, maiden heifers had to grow sufficiently to conceive and calve at approximately two years of age, and lactating cows had to conceive and calve the following year to remain in the herd. It is logical to suggest that only those cows having adequate environmental adaptation, remained in the herd. Therefore, it is possible that there was little genetic variation between the approximately 3/4 Brahmanand the approximately 1/2 Brahman cows that produced these steers.

The year by breed of sire interactions are probably a reflection of variation between genotypes in their ability to cope with annual variation in environmental factors. The interactions also demonstrate the need to repeat this type of work over years and at various ages of the steers. Year and breed of sire effects at sale are shown in Table 2, and illustrate how one year's data could be misleading.

TABLE 2 Lea&squares means for year and breed of sire effects on weight per day of age at sale (kg/d) and age at sale (d)

Breed of Sire	Year of Birth					
	1972			1974		
	No.	kg/day	months	No.	kg/day	months
Brahman	64	0.501	35.0	71	0.475	38.7
Hereford	65	0.488	38.3	106	0.460	39.6
Santa Gertrudis	21	0.480	39.1	17	0.531	33.8
Droughtmaster	53	0.511	36.7	52	0.470	38.9
Belmont Red	40	0.483	37.7	50	0.484	38.8

Simple correlations between weight per day of age at sale and age at sale with weight per day of age at 23 and 29 months were highly significant (P <0.01). The correlation coefficients ranged from 0.582 to 0.775 and the values associated with age at sale were negative. Weight per day of age at sale was strongly correlated with age at sale (P< 0.01;r = -0.842) indicating there was no conflict between apparent market suitability and high weight per day of age. Correlations between the two parameters at sale and weight per day of age at the three earlier ages were significant (P< 0.01) but were generally too low to have reliable predictive value.

These data indicate that weight per day of age through to sale, and age at sale will not vary markedly over a relatively wide range of Bos indicus component. It follows that choice of breed of sire to use over Brahman Hereford cows should be based on traits other than weight per day of age.

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