SOURCES AND SELECTION OF HERD SIRES FOR COMMERCIAL BEEF HERDS

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SUMMARY

A random sample of 681 commercial and stud herds in Queensland was surveyed to determine the source of herd sires used in breeding herds and criteria on which they were selected. Sixty percent of herd sires were bred in recognised stud herds while the remainder were bred in commercial herds. Herds of less than 500 breeders tended to rely more on recognised studs for the supply of herd sires than larger herds. Straight bred Bos indicus and B. indicus x Bos taurus herds tended to have a higher proportion of sires from recognised studs than either straight bred B. taurus or commercial B. indicus x B. taurus herds. Conformation was considered to be the most important selection trait by respondents irrespective of breed category. Respondents who bred B. taurus x B. indicus cattle ranked temperament second to conformation while those breeding B. taurus ranked temperament fifth. Live weight for age was lowly ranked; however frame size had a high ranking and may indicate awareness of live weight. There was a wide spread belief by respondents that their herds were not of sufficient merit to warrant breeding herd sires irrespective of genotype category or herd size. Also, the fear of inbreeding was widespread except in herds of more than 5 000 breeders.

Keywords: Selection traits, Beef bulls, Genotype

INTRODUCTION

The bull component of the herd makes the major contribution to genetic change because each bull leaves many more progeny than does each cow. Mayer et al. (1980) demonstrated the value of selection of bulls for live weight for age in terms of improved progeny live weight. Venamore et al. (1982) showed that live weight for age ratios had little influence on price paid for bulls with purchasers preferring to concentrate on stud registration status, colour and liveweight irrespective of age. These findings supported the observations of extension officers who have noted little change towards selection of bulls for liveweight for age from the traditionally established criteria, such as conformation, breed type, colour (Rudder, pers. comm.).

This paper reports results from a survey designed to determine which selection traits breeders and buyers of herd sires perceive to be the most important.

MATERIALS AND METHODS

A stratified random sample of 724 beef breeding properties was selected according to herd size and region and 681 returns were received. The returns were completed by local beef cattle husbandry extension officers interviewing respondents.

Respondents listed all their preferred bull selection traits and reasons for discriminating against bulls in order of preference. These data were summarised according to the number of times, expressed as a percentage, that a given trait occurred in the first five preferences.

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The sources of herd sires were categorised into registered bulls from stud herds (SR), herd bulls from stud herds (SH), herd bulls from commercial herds (CH) and property bred bulls (PB). The various 'breeds were categorised as straight bred B. taurus breeds such as Hereford, Shorthorn (BT), B. indicus and B. indicus B. taurus recognised breeds such. as Brahman, Droughtmaster (SB1) and commercial B. indicus B. taurus crossbreds (XB1). The numbers in each breed category were 158, 209, 314 respectively.

RESULTS AND DISCUSSION

Source of herd sires

Bulls were bred in 44% of all herds sampled and this percentage varied from 27 to 54% in herds with 100 to 150 and 500 to 1000 breeders respectively. The percentage of XB1, SB1 and BT herds that bred bulls were 51, 44 and 31 respectively. No bulls were bred for use in the herd by respondents who had less than 100 breeders.

Of the herds sampled, 18, 42, 16 and 24% of replacement bulls were SR, SH, CH and PB respectively (Table 1). Over the herds sampled 60% of herd sires were bred by recognised stud breeders. Only 8% of the respondents had stud herds and of these herds the majority were in the less than 300 breeders category. This concentration of sires from stud herds rather than a wider use of sires from commercial herds represents a waste of potentially valuable genetic material unless the stud herds are markedly superior.

TABLE 1. The effect of genotype category on source of commercial herd sires

Source	BT (%)	SB1 (%)	XB1 (%)
Registered stud bulls (SR)	25	26	14
Stud herd bulls (SH)	33	44	43
Commercial herd bulls (CH)	14	13	18
Property bred bulls (PB)	28	17	25

Use of SR bulls was higher in herds with less than 500 breeders (Table 2); this includes the group which has the highest concentration of stud breeders. It is probable that a large proportion of SH and CH bulls in the larger herds are transfers from specialist bull. breeding depots of the same ownership. Company policy was a reason in 36% of the collective responses for not using PB bulls in herds of greater than 1000 breeders.

The perception that a herd was not of sufficient quality to warrant breeding bulls was a major constraint, irrespective of herd size or genotype category. Even in herds 'of up to 5000 breeders fear of inbreeding was put forward as a constraint to breeding bulls.

TABLE 2. The effect of herd size on source of commercial herd sires

Source of sires	Number of breeders				
	< 150	150-499	500-999	1000-5000	> 5000
	(%)	(%)	(%)	(%)	(%)
Registered bulls	34	33	21	17	8
Stud herd bulls	47	39	40	40	50
Commercial herd bulls	8	10	11	15	29
Property bred bulls	11	18	28	28	13

Selection traits

Respondents placed the greatest importance on conformation when selecting herd sires (Table 3) irrespective of breed category. Except for ensuring that bulls are structurally sound, selection for conformation is questionable in terms of yield of saleable meat. Fat cover influences conformation and fat surplus to market needs has the greatest effect on yield of saleable beef (Wythes and Ramsay 1981; Tierney et al. 1986).

Responses by those breeding SB1 and XB1 showed that temperament was an important consideration. This is justifiable from a managerial viewpoint and recent estimates indicate moderate heritability values (Fordyce et al. 1982). Cattle with poor temperament tend to have higher carcass bruising than those with good temperament, but significant relationships between temperament and bruise scores have not been established (Fordyce et al. 1985). Temperament was less important in BT herds and because of the general *docility* of these herds would be a minor reason for culling.

TABLE 3. Selection trait preferences by breed category

Breed category Rank	BT	SB1	XB1
1	Conformation	Conformation	Conformation
2	Frame size	Temperament	Temperament
3	Breed traits	Frame Size	Frame Size
4	Eye pigmentation	Breed traits	Est. weight/age
5	Temperament	Est. weight/age	Breed traits
6	Est. weight/age	Good sheath	Good sheath
7	Walking ability	Coat type	Coat type
8	Masculinity (head)	Polledness	Polledness
9	Testicle size	Actual weight/age	Walking ability
10	Pedigree records	Walking ability	Tick resistance

Frame size is positively correlated with live weight and while selection for weight for age, either estimated or actual, had low rankings the emphasis on live weight as a selection trait may be higher than indicated. Venamore et al,. (1982) reported that bull buyers tended to pay higher prices for heavier bulls irrespective of age or nutritional history. Therefore, it is doubtful. whether significant genetic improvement for live weight for-age is being achieved due to confounding with environmental effects such as age and nutrition.

The emphasis on breed traits is not surprising because breed promotion depends on a readily identifiable product. Also, uniform colour and markings give an illusion of uniformity of product. Although this has aesthetic and merchandising value, it has no effect on meat production. The importance of eye pigmentation in the BT category is probably due to a large proportion of Hereford cattle and associated problems with cancer eye.

The first five preferences in Table 3 collectively occurred in more than two-thirds of the respondents first five preferred selection traits. It appears that the last five preferences were not considered important by the majority of the respondents.

CONCLUSIONS

The preoccupation with conformation as a selection trait reduces selection intensity for live weight for age. Also, conformation is highly related to fat cover and unless discretion is used may contribute to over-fat animals for current market needs. More emphasis on actual live weight for age amongst groups with a comparable nutritional history could be expected to give greater genetic improvement in production.

This study indicated that the rate of increase of inbreeding is generally not well understood. Herds of 500 or more breeders could supply all their bull requirements while herds of down to 150 breeders could supply a large proportion of these requirements (Daly 1977).

There is no reason to assume commercial herds are genetically inferior to stud herds in terms of meat production (Daly 1977). The use of herd sires bred in commercial herds could allow higher selection differentials for, live weight for age and reduce costs of sires. This would permit an increase in the number and a reduction in the period for which bulls are used.

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