The scoring system developed gives a quick and easy method of estimating the response of an animal to handling in the crush and bail head. However, further work investigating repeatability of measurements over time will be needed before one could be confident to cull on a single score.

REFERENCES:

BARLOW, R., HEARNSHAW, H., THOMPSON, J., and WANT, G. (1978) Progress in crossbreeding research with cattle on Coastal N.S.W. *Wool Technology and Sheep Breeding*. XXVI: 5-12.

TULLOH, N.M. (1961) Behaviour in cattle yards. II A study of temperament. *Anim. Behav.* IX: 25-30.

* * * *

SELECTION AND CROSSBREEDING TO REDUCE BLOAT

R.J. Smith[1] and R. Barlow[2]

[1] Agricultural Research Station, Grafton, NSW, 2460

[2] Agricultural Research Institute, Dublin, Eire

With the current upturn in cattle prices and the increasing use of superphosphate on clover based pastures, renewed interest will be given to reducing the risk of bloat in cattle. Graziers will now be reluctant to let cattle die from bloat as a means of achieving a more bloat tolerant strain of cattle.

Antibloat chemicals offered as blocks or in drinking water have been used by graziers to reduce bloat risk, but variable animal intake can reduce the protection afforded. As well, this method can be costly.

Some graziers believe that an alternative method of reducing bloat risk is to use a less susceptible breed or cross of cattle, particularly *Bos indicus* types. Evidence to support this claim has been lacking (Piper, 1973), but recent observations in a crossbreeding herd at Grafton support this observation. The possibility of using bloat resistant cattle within a breed also deserves consideration.

During a period of moderate bloat risk in October 1978, four cow genotypes from the crossbreeding trial (Barlow & O'Neill, 1978) grazing together were scored for four days on a 0-4 scale (Wolf & Lazenby, 1972). If an animal was observed to have a bloat score ≥ 1 on more than one day, she was regarded as bloating. The percentage of cows bloating during the four days is shown in Table 1.

TABLE 1. Bloat incidence in various genotypes

Breed Cross	Number	Cows bloating (%)
Hereford x Hereford	22	41
Simmental x Hereford	27	33
Friesian x Hereford	26	8
Brahman x Hereford	24	0
Total	99	

The incidence of bloat was different ($P < 0.01$) in the four groups. These results suggest additive genetic differences rather than heterotic effects on the assumption that the amount of heterosis between the crosses are similar. Alternatively, different levels of heterosis could be hypothesised for the breed types or a genotype by environment interaction.

Generally, little is known of the genetics of bloat susceptibility. Quite large within breed variation in susceptibility has been reported by Cockrem & McIntosh (1976) and the New Zealand Dairy Board (1961) has estimated bloat heritability from the daughters of Friesian and Jersey bulls ($h^2 = 0.06$). This could provide graziers with the opportunity to correct the problem through selection.

There exists the possibility of broadening our understanding of bloat genetics by the inclusion of a bloat scoring option in experimental projects and analysing any correlations with other production traits.

While a 0-4 bloat score may be adequate for field investigations, Lippke et al (1972) achieved increased accuracy by using an 11 point score. Additional accuracy may also be gained by defining each of the 11 scores in simple anatomical and behavioural terms. To this end an 11 point descriptive bloat scoring method for use in field investigations is proposed in Table 2.

TABLE 2. Proposed 11 point bloat scoring method.

0 = no sign of abnormal gut distension or bloat

1 = gut distended slightly - probably normal

2 = gut distended slightly - probably bloat

3 = left flank slightly distended

4 = left flank distinctly distended

5 = left flank markedly distended and right side distended - slight discomfort.

6 = as for 5 but marked discomfort

7 = slightly distressed - death unlikely

8 = chronically distressed - death possible

9 = critical state - close to death

10 = Dead

Using this method it is estimated that 100 cattle could be bloat scored in one to two hours. Quite often this amount of time is spent each day checking cattle during periods of high bloat risk. Two weeks of observations would be desirable with all cattle being scored daily. Scoring should be conducted during that part of the day or night when bloat is most prevalent, as determined by an initial survey (Cockrem & McIntosh, 1978).

A preliminary report by Cockrem & McIntosh (1978) suggests that a biochemical assay of saliva may be possible and that this procedure is more sensitive when using bloat potent pasture than non-bloating pasture. However, this technique is restricted largely to pen studies.

REFERENCES:

BARLOW, R. and O'NEILL, G. (1978). Performance of Hereford and Crossbred Hereford Cattle in the Subtropics of New South Wales. Growth of first-cross calves to weaning. *Aust. J. Agric. Res., 1978* 29: 1313-24

COCKREM, F.R.M. and McINTOSH, J.T. (1976). Genetics of susceptibility to bloat in cattle. 1. An analysis of variation in degree of bloat in cows grazing red clover. *N.Z. J. Agric. Res.* 19: 177-83

COCKREM, F.R.M. and McINTOSH, J.T. (1978). An effect of pasture on the secretion of salivary proteins by the cow. *Proc. N.Z. Soc. Anim. Prod.* 38: 174 (Abstr.)

LIPPKE, H., REAVES, J.L. and JACOBSON, N.L. (1972). Rumen Pressures Associated with the Scores of a Bloat Severity Scale. *J. Anim. Sci.* 34: 171-175

NEW ZEALAND DAIRY BOARD (1961). Traits other than production - heritabilities. Unpublished data, N.Z. Dairy Board, P.O. Box 417, Wellington, New Zealand.

PIPER, L.R. (1973) in "Bloat". pp. 41-43 (Ed. R.A. Leng and J.R. McWilliam). *Reviews in Rural Science.* Univ. of New England, Armidale, N.S.W.

WOLF, E.C. and LAZENBY, A. (1972). Bloat incidence and liveweight gain in beef cattle on pastures containing different proportions of white clover. (Trifolium repens). *Aust. J. Exp. Agric. Anim. Husb.*, 12: 119-125.

* * * *