RELATIONSHIP BETWEEN SCANNED MEASUREMENTS AND LIVEWEIGHT IN SIMMENTALS

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13th November, 1996

Introduction

The industry validation research conducted by AGBU assessed 981 Simmentals in nine herds. The data has the potential to provide some very useful benchmarks for Simmental breeders for bulls and females. Regrettably, not enough data on steers was available to draw any conclusions.

1. Eye Muscle Area vs Liveweight

AGBU's regression equation for bulls is: EMA = 30.34 + 0.097 x LWt

whilst the equation for females is: EMA = 22.946 + 0.097 x LWt

If these equations are applied to various liveweight categories, the following eye muscle areas are derived:

LWt (kg)	Bulls EMA (sq.cm.)	Females EMA (sq.cm.)
300	59.4	52.0
350	64.3	56.9
400	69.1	61.7
450	74.0	66.6
500	78.8	71.4
550	83.7	76.3
600	88.5	81.1
650	93.4	86.0
700	98.2	90.8
750	103.1	95.7
800	107.9	100.5

The eye muscle areas of heifers range from 8% (650kg liveweight) up to 12% (350kg liveweight) lower than those for bulls and exactly 10% lower at 450kg liveweight.

2. Fat versus Liveweight

The regression equations are:

Bulls Rib fat depth = 1.289 + 0.001 x LWt

Bulls P8 fat depth = 1.157 + 0.002 x LWt

Females Rib fat depth = -1.235 + 0.01 x LWt

Females P8 fat depth = -2.995 + 0.016 x LWt

LWt (kg)	FAT DEPTH (mm)			
	BULLS		FEMALES	
	Rib	P8	Rib	P8
300	1.59	1.76	1.77	1.8
350	1.64	1.86	2.27	2.6
400	1.69	1.96	2.77	3.4
450	1.74	2.06	3.27	4.2
500	1.79	2.16	3.77	5.0
550	1.84	2.26	4.27	5.8
600	1.89	2.36	4.77	6.6
650	1.94	2.46	5.27	7.4
700	1.99	2.56	5.77	8.2
750	2.04	2.66	6.27	9.0
800	2.09	2.76	6.77	9.8

This data reveals:

1. a dichotomy between the ability of bulls and females to lay down fat. Bulls even at high liveweights, are extremely lean

2. the differences between rib and P8 fat are not constant but increase with liveweight.

Implications

Association members have indicated that they wish to increase rib eye area and improve the finishing capabilities or "softness" of their cattle.

These objectives can be achieved by selecting sires and females which have high EBVs for both eye muscle area and fat (Rib and P8),

Frequently, EBVs are not available. There is however, an increasing trend toward displaying phenotypic measurements on cattle at shows and field days as a result of scanning.

The Association would be providing its members with a service, if it could establish some easy to remember benchmarks for bulls, females and steers.

Since data is not yet available on steers, perhaps some interim benchmarks could be established which are based on bull and female averages for EMA with market requirements applying to fat depths.

Recommendations

Bulls

A minimum 2 mm (rib) and 2 mm (rump) for bulls 400 kg liveweight or heavier.

A minimum eye muscle area of 70 sq cm for bulls weighing 400 kg liveweight increasing by 1sq cm for every 10kg liveweight (e.g. 90 sq cm at 600 kg liveweight).

Females

A minimum of 3 mm fat (PS) at 400 kg liveweight, increasing by 1 mm for every 50kg liveweight increase.

(e.g. 7 mm at 600kg liveweight).

A minimum EMA of 60 sq cm at 400 kg liveweight, increasing by 1sq cm per 10 kg liveweight

(e.g. 80 sq cm EMA at 600 kg).

Steers

A minimum EMA of 65 sq cm at 400 kg liveweight, increasing by 1sq cm per 10 kg liveweight

(e.g. 85 sq cm EMA at 600 kg).

BENCHMARK SUMMARY

EYE MUSCLE AREA

EYE MUSCLE AREA (sq cm)

LWT (kg)	Bulls	Females	Steers
400	70	60	65
450	75	65	70
500	80	70	75
550	85	75	80
600	90	80	85

Fat

Bulls - minimum 2mm at Rib and Rump for all liveweights.

Females - minimum 3mm fat (P8) increasing by 1mm for every 50kg increase in liveweight

n.b. these fat recommendations are based on unsupplemented cattle