

The Australian Limousin Breeder's Society Ltd

The Carcase Breed

Charaterizing the Limousin Breed in the USA

The Limousin breed is being compared with six other breeds at the Meat Animal Research Centre in Nebraska, USA.

Preliminary results for the first calf drop were published in the June 2001 issue of the Journal of Animal Science.

The breeds being compared are Angus, Red Angus, Hereford, Charolais, Simmental, Gelbvieh and Limousin. All of these breeds except Red Angus were originally compared at MARC in 1970-74.

In the current comparison, about 20 sires from each breed are being used, of which about half are sires in the top 50 sires for progeny registrations and the remainder were young unproven sires.

In the 1970 evaluation of Limousin all sires were French Pure but in the current evaluation most of the sires were North American Pure sires.

From the preliminary results Limousin still ranks the highest for dressing percentage and retail yield percentage. Limousin X cattle produced 3.5% more retail product than Hereford, 4.2% more retail product than Angus and 5.3% more retail product than Red Angus. The Limousin crosses produced about one per cent more retail product than the other breeds. The Angus breeds have maintained a clear dominance over Hereford and the European breeds for marbling.

Table 1 Sire Breed Least Squares Means for Estimated Retail Product, Fat Trim, Bone Yields and Shear Force of F1 Steers in Cycle VII of the GPE Program ^{a,b} (1999 Calf Crop, 448 days)

Breed	N	Retail product		Fat trim		Bone	
		%	lb	%	lb	%	lb
Hereford	39	59.5	486	27.7	228	13.8	113
Angus	45	58.8	491	28.7	242	13.3	111
Red Angus	40	57.7	477	29.7	248	13.3	110
Simmental	41	62.1	530	24.8	212	13.9	119
Gelbvieh	40	62.3	515	24.2	200	14.4	119
Limousin	43	63.0	510	24.4	199	13.8	112
Charolais	43	62.2	526	24.9	212	13.9	118
LSD.05		1.8	24	2.1	23	0.6	6

^a Wheeler et al.

^b Estimates from wholesale rib dissection prediction equations (Shackelford et al., 1995).

For meat tenderness and sensory characteristics the Limousin breed has lost nothing. Measured by the mechanical shear test Limousin had similar tenderness to the British breeds and Simmental but were clearly ahead of Charolais and Gelbvieh. The sensory taste test panel also ranked Limousin similar to the British breeds and Simmental but clearly superior to Gelbvieh and Charolais for tenderness.

Similar rankings applied for flavour and juiciness. (one more bit of research which shows the minimal effect of marbling on eating quality).

Table 2 Sire Breed Least Squares Means for Meat Tenderness and Sensory Characteristics of Rib Steaks aged 14 days (adjusted to average age at slaughter, 448 days, 1999 Calf Crop)

Sire Breed	No	WB Shear force^a lb	Tenderness Score	Sensory panel Flavour Score	Juiciness Score
Hereford	39	8.9	5.63	5.18	5.47
Angus	45	8.4	5.80	5.15	5.42
Red Angus	41	9.1	5.66	5.13	5.43
Simmental	41	8.8	5.83	5.17	5.34
Gelbvieh	40	9.8	5.30	5.02	5.32
Limousin	43	9.0	5.75	5.11	5.38
Charolais	43	9.4	5.23	4.89	5.20
LSD.05		0.9	0.44	0.21	0.21

^a Lower shear values reflect greater tenderness.

^b Sensory scores: 1 = extremely tough, bland or dry through 8 = extremely tender, intense or juicy.

Whereas the British breeds have lifted their growth rates to be similar to current European breeds, the European breeds have considerably improved calving ease and fertility.

Although based on only the 1999 calf drop the percentage of Limousin cross females reaching puberty by 18 months of age was much higher than in 1970 although still slightly lower than the other breeds. The pregnancy rate when mated as yearlings was also much better than in 1970 and very close to that of the Angus breeds.

Table 3 Sire Breed Least Squares Means for Growth and Puberty Traits of Heifers in Cycle VII of the GPE Program (1999 Calf Crop)

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Sire breed of female	No	400-d wt lb	18 month		Frame score ^b sc	Puberty expressed %	Puberty wt lb	Age at puberty ^c		Preg. rate %
			wt	ht				Act. d	Adj. d	
			lb	cm						
Hereford	46	829	958	128.8	5.6	93.5	715	337	342	96
Angus	47	877	956	127.3	5.3	100.7	728	324	324	86
Red Angus	50	872	973	126.2	5.1	100.6	724	325	325	87
Simmental	56	848	975	130.4	6.0	99.6	742	327	328	91
Gelbvieh	62	812	938	129.3	5.7	92.4	700	317	322	78
Limousin	51	835	964	130.6	6.0	84.0	779	352	362	83
Charolais	53	830	964	129.9	5.9	89.0	728	337	344	94
LSD.05		44	48	2.3	0.5	15.8	47	19	20	20

^a Estimates for Hereford, Angus and Red Angus were adjusted to the level of heterosis expected in 3-way F1 crosses (estimates of 23.9 lb was added for 400-d weight, and 15.0 lb was added for 550-d weight) to provide for unbiased comparisons to 3-way F1 crosses by Continental sire breeds.

^b Frame scores were calculated from height using the equation recommended in Guidelines for Uniform Beef Improvement, Beef Improvement Federation (BIF, 1996).

^c Actual age at puberty (ranging from 84 to 100%) and adjusted age at puberty, adjusted to remove bias due to differences in percentage expressing first oestrus when observation of oestrus was discontinued in early May by adding $i(s)$ where i is the expected negative deviation from the true mean in standard deviation (s) units.

These preliminary results suggest that the Limousin breed in the USA has made significant progress in fertility traits while losing very little, if anything, in carcass yield and dressing percentage over the last 30 years.

A copy of the complete paper is available from alex@limousin.com.au