

## **Maternal Efficiency: Limousin's Best Kept Secret**

**By Dr. Lauren Hyde**

ENGLEWOOD, CO-When designing any profitable crossbreeding system, the first step is to identify the component breeds whose characteristics best suit the production environment and market target.

As a component on the terminal side, Limousin is unsurpassed in providing muscle growth efficiency. Limousin-influenced calves lead the beef industry in feed efficiency and red meat yield.

But what about the maternal side? Commercial producers typically discount the maternal characteristics of Continental breeds, including Limousin, in favor of British-based females. However, scientific evidence shows that Limousin females are biologically efficient and flexible enough to be used under many environmental conditions.

Results from the breed comparison study at Clay Center, Nebraska, show that Limousin females are of moderate height and weight and produce medium-sized calves with little calving difficulty (Table 1). In addition, the calves are vigorous at birth with a high proportion surviving until weaning.

Limousin cows also have a long life span. Based on culling information collected during NALF's Herd Total Inventory program, cows culled due to age were just over 12 years old on average. In France, it is not uncommon for herds to have cows in production at 15 to 17 years of age.

The NALF performance program has addressed cow longevity through its stayability EPD. The stayability EPD is a tool for predicting genetic differences in the likelihood of animals producing daughters that remain in production past age six. The prolonged, favorable genetic trend in stayability (Figure 1) likely results from years of culling open cows, fertility testing bulls, and requiring heifers to calve first at two rather than three years of age. The trend also shows that today's Limousin cattle are reproductively superior to their foundation ancestors.

In the past, Limousin yearling heifers have been perceived to be late maturing with low pregnancy rates after their first breeding season. To help improve age at puberty, NALF introduced scrotal circumference EPDs in 1994. As with stayability, scrotal circumference has shown an impressive genetic trend in the past 10 years (Figure 2).

In 1999, NALF worked with researchers at Colorado State University to develop prototype EPDs for heifer pregnancy, or the probability of a heifer conceiving and remaining pregnant until time of palpation given she was exposed at breeding. Results of this study showed that heritability of heifer pregnancy was about .20. Because heifer pregnancy appears to be heritable in Limousin cattle, this EPD could be used to genetically improve heifer fertility even further.

Milking ability is another trait in which Limousin females have gotten a bad rap. However, optimum is the key word to use when discussing milking ability. Problems are associated with both low and high levels of milk production. For example, cows with extremely high levels of milk have higher maintenance requirements, are harder to breed back on schedule, and may have a greater incidence of teat and udder problems.

Results from the Clay Center breed comparison study show that Limousin females produce intermediate levels of milk both 12 hours and 200 days following parturition and surpass straightbred Angus in both categories. Nevertheless, Limousin breeders have made great strides toward improving milking ability in

the last 10 years (Figure 2).

Then there is the temperament problem. Or is there? Genetic improvements in docility have been substantial over the years (Figure 2), indicating that breeders have aggressively culled animals with unacceptable dispositions. Nearly 85% of today's sires have a favorable docility EPD. These sires can be used in the mating process to build replacements that are less likely to be culled due to temperament problems. No other breed offers genetic information regarding temperament, yet all breeds have lines of cattle with temperament problems.

Perhaps the most compelling evidence of the strengths of the Limousin female stems from two studies designed to compare differences in efficiency among beef breeds. When compared to Simmental, Hereford, and Brahman cows, Limousin females ranked highest in the number of calves born per cow exposed and in the number of calves weaned per cow exposed (Comerford et al., JAS 64:65-76, 1987).

At Clay Center (Jenkins and Ferrell, JAS 72:2787-2797, 1994), mature cows were fed year round on one of four different levels of dry matter. Biological efficiency was defined as grams of calf weaned per kilogram of dry matter intake per cow exposed. At 3,500 and 7,000 kilograms of dry matter intake per cow per year, which represented low and high levels of feed intake, Limousin cows ranked second among six breeds in biological efficiency (Table 1). While British breeds tended to be more efficient when feed was limited and Continentals more efficient when feed intake was high, Limousin cows were highly efficient in either case. These results suggest that Limousin females are more flexible than females of other breeds, being able to adapt more readily to changing feed resources in changing environmental conditions.

Limousin genetics offer value not only on the terminal but also on the maternal side of a crossbreeding program. With their moderate size, long life span, optimum level of milk production, and biological efficiency, Limousin-cross cows are an excellent choice for commercial cattle producers under a wide variety of market targets and production environments.

Limousin is the largest Continental breed registry in the United States. Limousin is the leader in Muscle Growth Efficiency and is the ideal complement to British cross cows. For more information, contact [www.nalf.org](http://www.nalf.org).

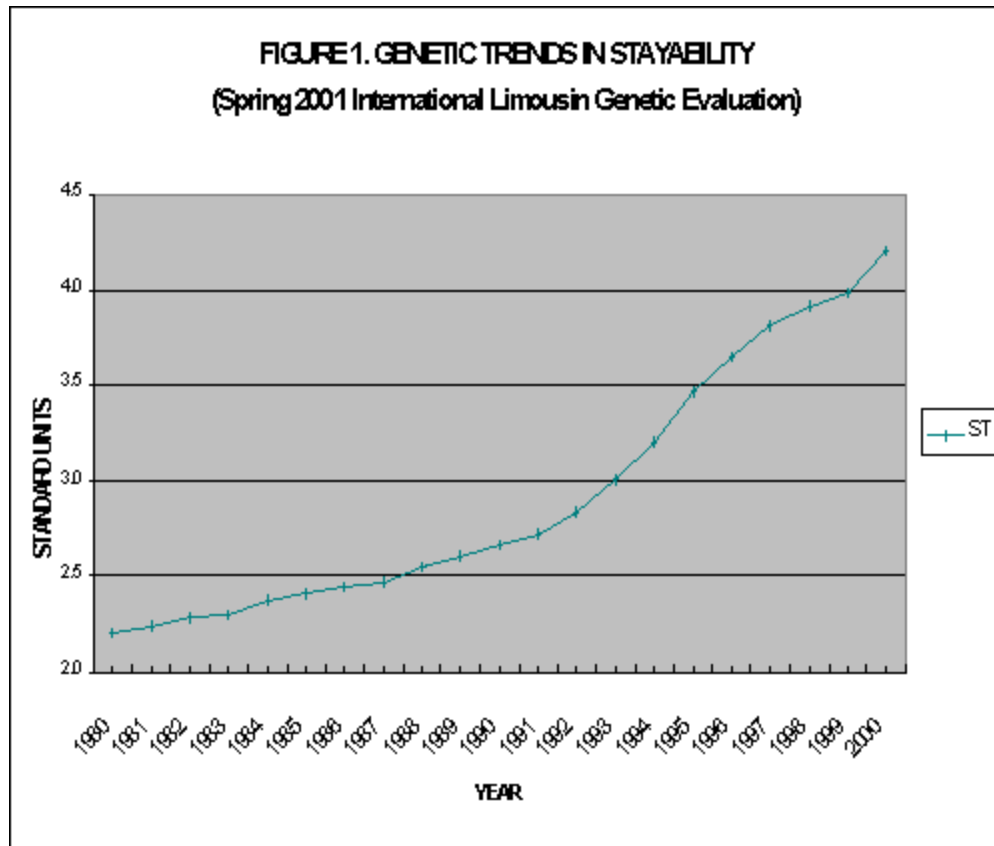
Table 1. Breed Differences in Maternal Efficiency Traits

Breed	Cow Weight (lb)	Cow Hip Height (in)	Calf Birth Weight (lb)	Calving Difficulty (%)	12-hr Milk Yield (lb)	Biological Efficiency* At 3,500 DMI	Biological Efficiency* At 7,000 DMI
Limousin	1,213	52.4	86.4	15.7	10.2	33	42
Angus	1,094	49.6	74.7	8.8	9.3	39	17
Hereford	1,091	50.0	79.4	16.5	6.7	30	13
Gelbvieh	1,266	53.9	95.2	21.5	12.7	29	36
Simmental	1,272	54.3	94.2	23.9	13.1	26	42
Charolais	1,349	53.9	98.1	19.5	10.5	27	45

\* Grams of calf weaned per kilogram of dry matter intake per cow exposed

Sources: USDA-ARS Technical Bulletin, 1999 and Jenkins and Ferrell, JAS 72:2787, 1994

**Figure 1.** Genetic Trends in Stayability



**Figure 2.** Genetic Trends in Milking Ability, Scrotal Circumference, and Docility

FIGURE 2. GENETIC TRENDS IN MLKINGABILITY,  
SCROTAL CIRCUMFERENCE, AND DOCLITY  
(Spring 2001 International Limousin Genetic Evaluation)

