

## Limousin Breeders Tackle Temperament

### – Genetic trend shows power of selection

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All breeds have bloodlines known to be nervous. There is no doubt that calmer cattle are more desirable than nervous ones are. They are easier to handle, and it is safer to be around them. They also are associated with higher gains in the feedyard and more desirable meat quality.

No other breed association made greater strides toward improving docility than the North American Limousin Foundation (NALF). Thanks to the diligence of Limousin breeders across the country, not only do Limousin cattle have superior muscle and unmatched yield and efficiency, but they also are calmer now than ever.

At the Limousin Directions Breeders Symposium in 1991, Limousin breeders identified improving disposition as the No. 1 breed priority. Limousin breeders took seriously their mission to improve the trait. First, NALF developed a temperament-scoring system, which the Beef Improvement Federation (BIF) later adopted. The breed then developed the industry's first docility (DOC) expected progeny difference (EPD).

Using docility EPDs to drive selection and to cull problem animals, Limousin breeders put strong selection pressure on disposition and made remarkable gains to improve docility. Rapid genetic progress was possible given the strong heritability of 0.40 estimated for the Limousin breed.

Limousin breeders have collected docility scores for nearly 200,000 animals. Scores range from 1 to 6 – where 1 represents the calmest, most docile temperament, and 6 represents the most aggressive. Table 1 explains the scoring system in more detail and gives the distribution of scores throughout the breed. Further analysis of the Limousin docility database shows a marked increase in the proportion of calm animals (scored as 1 or 2) – from 80 percent in 1996 to 95 percent in 2008.

NALF uses the docility scores to compute docility EPDs, which indicate genetic differences in the likelihood offspring will inherit genes for calm, acceptable behavior. The higher the EPD, the greater the opportunity of producing calm progeny. On the flip side, the lower the EPD, the more nervous the expected behavior.

As an example, consider the following two sires of comparable accuracy and their docility EPDs.

	<b>Docility (DOC) EPD</b>
<b>Sire A</b>	+25%
<b>Sire B</b>	+5%
<b>Difference (A – B)</b>	+20%

When Sire A and Sire B are mated to similar sets of females, you would expect Sire A to have a 20 percent (the difference between +25 percent and +5 percent) greater chance of producing calm progeny than Sire B has. Said a little differently, you would expect 20 percent more of Sire A's progeny to be calm than Sire B's progeny.

Just like EPDs for other traits, you can use docility EPDs to rank animals. Table 2 gives some information about where animals rank genetically in the Limousin breed according to their docility EPD.

In the spring 2007 Limousin genetic evaluation, docility EPDs ranged from -23 to +43, with +13 representing the average of active sires.

Accuracy values associated with docility EPDs range from “P,” which indicates a pedigree estimate (calculated by averaging the parents’ EPDs) to a high accuracy of 0.99. The higher the accuracy, the more individual or progeny data gathered, and the greater the EPD’s reliability. Commercial cattle producers should check the accuracy values for the docility EPDs of the sires of young bulls they purchase to assure the prospective sire is from a proven pedigree for calm behavior. All EPD and pedigree information is available free of charge through the Limousin animal lookup on the NALF Web site ([www.nalf.org](http://www.nalf.org)).

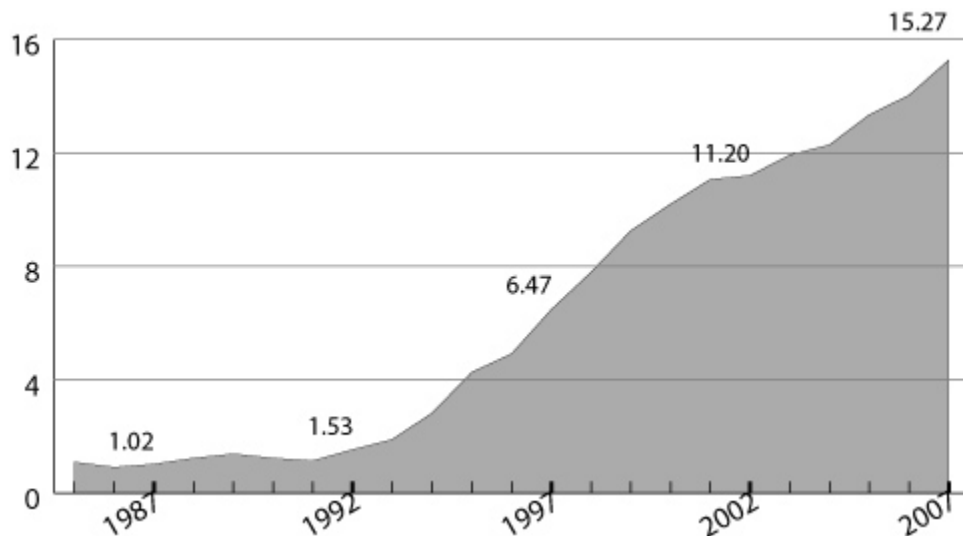
Limousin breeders have been using docility EPDs since 1998, when NALF published the first genetic evaluation for docility. By placing a strong emphasis on selection for calmer cattle in their breeding programs, they have improved the temperament of Limousin cattle dramatically.

The figure shows the genetic trend in docility as measured by the average docility EPD for Limousin cattle born from 1985 through 2007. The graph shows cattle born in 1990 had an average docility EPD of about +1, and those born in 2007 averaged +15. That is a 14-point increase in 17 years, which is quite remarkable considering tools for genetically improving temperament have been around since only 1998.

Even with that success, Limousin breeders continue to collect docility scores and select even more stringently for calm, acceptable behavior. They are committed to providing quality genetics for the commercial users of Limousin cattle.

### Figure. Genetic Trend for Docility in Limousin Cattle

*Average Docility EPDs by Birth Year (1985–2007)*



**Table 1. Docility Score Definitions, Descriptions**

<b>Docility Score</b>	<b>Percent of scores</b>	<b>Definition</b>	<b>Description</b>
1	56	Docile	Mild disposition, gentle, easily handled, stands and moves slowly during processing, undisturbed, settled, somewhat dull, does not pull on the headgate when in the chute, exits the chute calmly
2	29	Restless	Quieter than average but slightly restless, might be stubborn during processing, might try to back from the chute, pulls back on the headgate, some tail flicking, exits the chute promptly
3	13	Nervous	Typical temperament; manageable but nervous and impatient; a moderate amount of struggling, movement and tail flicking; repeated pushing and pulling on the headgate; exits the chute briskly
4	1.6	Flighty	Jumpy and out-of-control, quivers and struggles violently, might bellow and froth at the mouth, continuous tail flicking, defecates and urinates during processing, frantically runs the fence line and might jump when penned individually, exhibits long flight distance, and exits the chute nervously
5	< 1	Aggressive	Might be similar to Score 4 but with added aggressive behavior, fearful, extreme agitation, continuous movement that might include jumping and bellowing while in the chute, exits the chute frantically and might exhibit attack behavior when handled alone
6	< 1	Very Aggressive	Extremely aggressive temperament, pronounced attack behavior

**Table 2. Percentile Breakdown of Docility EPDs for Sires of 2006–2008-Born Calves**

<b>Percentile ranking</b>	<b>Docility EPD (in %)</b>
Most docile (top 20%)	$\geq +21$
Average docility (50%)	+14
More nervous (bottom 20%)	$\leq +7$