

Should the Lowline Gene Pool be Widened?

Under no circumstances, says geneticist Phil LaBrie....

According to Phil, a limited gene pool is not a bad thing and happens in Nature frequently. Exactly 150 years ago, 25 rabbits were released in Geelong, Victoria. They multiplied and spread through Australia like a Biblical plague. A little later, 200 brushtail possums were released in New Zealand and have increased to tens of millions becoming the country's worst vertebrate pest.

In neither case did the small original gene pool disadvantage the huge populations that followed. Instead these animals have endured and increased despite myxomatosis and calicivirus and 1040 poison and everything else humans could throw at them.

Our Lowlines, says Phil, have the distinction of coming from a particularly select gene pool. The NSW Department of Agriculture used line-breeding and careful selection at Trangie to form a consistent line of structurally sound prepotent bulls which dramatically lifted the quality of the Australian Angus herd.

"Because all Lowlines come from this stock, and because it is all recorded, we have been handed a unique and predictable group of animals. As breeders, we must preserve this genetic legacy by staunchly protecting the closed herd status of Lowlines."

So what actually happened at Trangie?

It was a project to improve the Australian Angus herd. The original imported foundation stock, bought in 1929, included two bulls, one cow and calf and 17 heifers from Canada. Others were imported later. The selection was heavily influenced by the bloodline of the famous Blackcap Revolution who had been Grand Champion at the Chicago Expo and was the son of Earl Marshal who had sired seven other Chicago Expo Grand Champions. It was a very special bloodline indeed.



Closed Herd Book advocate Phil LaBrie with US cattleman David Whitehead and Kobblevale Wilbeforce who has now gone to the US.

"A limited gene pool is not a bad thing," says LaBrie.

"We should guard our closed Herd Book well."

Trangie's two foundation bulls, Glencarnock Revolution and Brave Edward Glencarnock, were Blackcap Revolution's grandsons. Another grandson, Revolution of Page 28th, was later imported. Other animals amongst both the original and later imported stock, had Blackcap Revolution ancestry.

The Trangie Research Centre used line-breeding to produce pure, uniform cattle lines by establishing the genetic influence of Blackcap Revolution at up to 50%. The same relationship as a first cross. Looking at Trangie records, we can see that it was common to join half brother and sisters.

This mating is the foundation of **line breeding** and is regarded as the "Foundation cross." It builds prepotency, which is the ability of a parent to influence the appearance of his or her calves regardless of the mating. Great hybrid vigour is achieved when line-bred cow families are crossed or when line-bred bulls are used to out-cross with other cattle, even if they have diverse pedigrees. That is the reason that Lowline bulls father exceptional calves on other breeds of cattle.

The Trangie trials went on to measure other things, but for us the importance is that all Lowlines are the result of that skilful line-breeding without the introduction of other genes.

But Isn't that In-breeding?

No. The two are significantly different but those differences are often misunderstood, even in books.

In-breeding concentrates the genetic influence of an ancestor to a level that is **greater than 50%**. Because every animal receives half of its genes from each parent, it will then get some of them twice, and there is a high risk of "fixing" undesirable characteristics. In-breeding is an "incestuous relationship."

Line-breeding, on the other hand, increases the genetic influence of an exceptional individual to **no more than 50%**. The same genetic mix as a first cross.

Line-breeding produces pure uniform lines that give outstanding results when used in **out-crossing**.

This is how it is explained in Jim Lents book "**The Basis of Linebreeding**."

"Linebreeding never introduces more than 50% of the blood of any ancestor into a descendent regardless of the number of times the ancestor's name may appear in the pedigree of that descendent."

Our Australian Lowlines were line-bred to exceptional ancestors in a closed herd with hard culling resulting in a uniquely **clean** gene pool. Because our Lowline Herd Book is closed, this has continued for another 17 years. No other Angus cattle in the world have as pure a line.

Guard it well.