

## What is Coancestry? Why is it important?

Coancestry describes how much individuals in a breeding program are related and impacts upon the effectiveness of the selection program.

### Coancestry and why diversity is important

**Coancestry describes how much “relatedness” there is in a breeding population.** High coancestry means more individuals are more related to each other, while no or low coancestry means the individuals are not related at all or very much.

**Coancestry is a population-level measure** so the number of animals included in the data being analysed, and the depth of pedigree included, impact upon the estimate of coancestry.

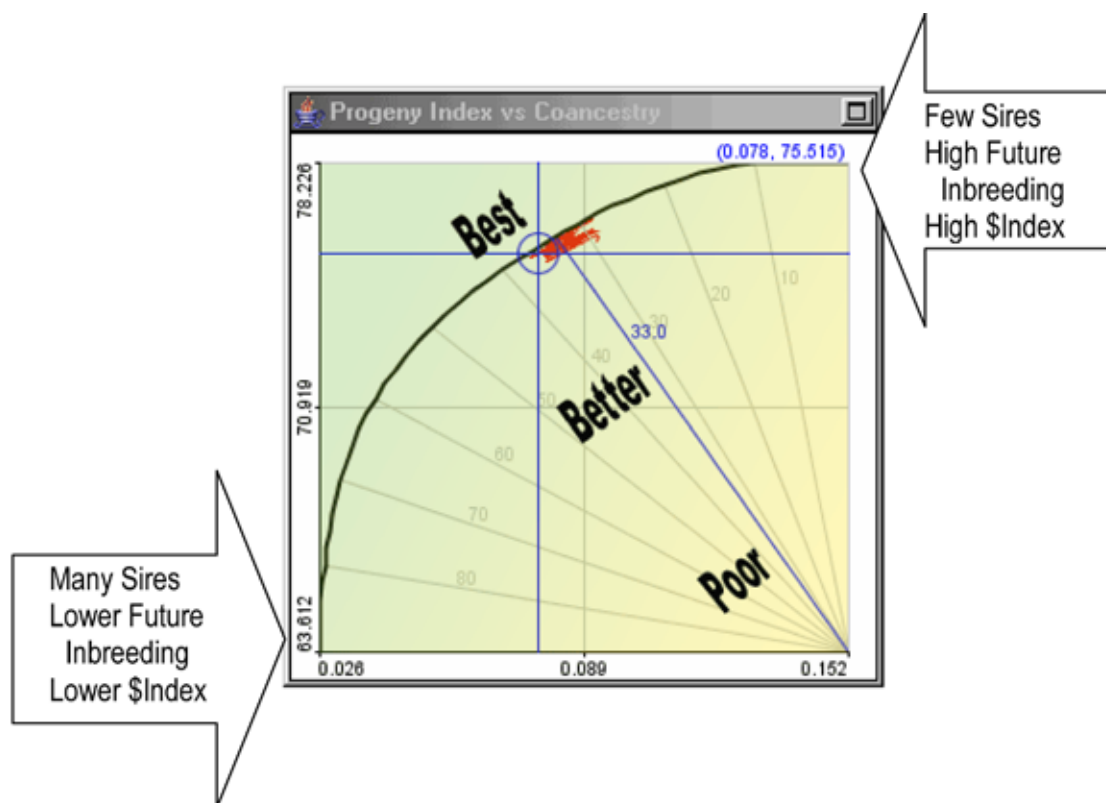
**The corollary of coancestry is diversity.** High coancestry means low diversity, and low diversity means we have less ability to select better animals. All selection is based upon differentiating between better and poorer individuals where the difference is due to genetics. If we have high coancestry, there is less difference between individuals because they are more alike, in fact so alike that we can no longer see differences between them and can no longer select among them.

**We need to manage coancestry** so that we can ensure that we have genetic diversity for selection. We can do this by taking advantage of Optimal Contributions Theory, outlined in the fact-sheet entitled “The Genetic Trade-off”. TGRM® can show you the range of possibilities so you can choose an appropriate balance between achieving high genetic gain and managing coancestry at a level that results in more sustainable genetic gain.

### What level of coancestry is acceptable?

The level of coancestry you choose should reflect your policy on buying in un-related males, the number of breeding females you have (more females means lower coancestry), how quickly you turn your females and males over, and your time frame or future outlook (looking further into the future means keeping a closer eye on coancestry, while a shorter-term outlook would accept higher levels of coancestry).





We generally recommend a maximum level of coancestry of around 1% per year, so if your generation interval (the frequency of turning your stock over) is 3 years, you can accept up to 3% on this mating. If your generation interval is longer, say 5 years, then you can accept up to 5%. This is a general rule of thumb and you should discuss this aspect more with your genetic advisor or TGRM® consultant when proceeding with your TGRM® analysis.