

Breeding Value. Breeding value refers to the value of an animal in a breeding program for a particular trait. An animal's breeding value is estimated to be twice the expected performance of its progeny. The reason for doubling the expected progeny performance is that only half of the genes from the individual are transmitted to any offspring (with the remaining half coming from the other parent). The expected progeny performance is called transmitting ability and is, therefore, half of the breeding value. In other words, transmitting ability is the genetic advantage an individual transmits to its offspring.

Breeding values can be estimated based on the animal's own records and the performance of known relatives. These estimated breeding values divided by 2 may be used to predict the performance of future offspring and are termed **Predicted Transmitting Ability** or PTA. For example, the daughters of a bull with a PTA of 200 kg for milk yield would be expected to produce, on average, 50 kg more milk per mature lactation than the daughters of a bull with a PTA of 150 kg for milk yield if their dams have equal genetic merit. The actual difference will not be exact for comparing individual daughters because no two daughters would get exactly the same combination of genes or be exposed to exactly the same environment. Thus, daughters of the same sire may have widely varying performance.