

EPDs: What They Predict and What They Don't

by Larry Keenan, RAAA Director of Breed Improvement

Expected Progeny Differences – or EPDs – has become a heavily used term among cattle producers and rightfully so. EPDs are the best tool to use in making selection decisions for specific traits. As with most frequently used terms, caution should be made such that EPDs are correctly used and understood. In our minds, we don't want EPDs to morph into something that they are not designed to be. Thus, we need to fully grasp what EPDs do predict, as well as what they don't predict.

The basic explanation of EPD is contained in its name: Expected Progeny Differences. EPDs predict differences that we would expect to see in the progeny of parent animals. A classic example of EPDs is this: If Sire A has a Weaning Weight EPD of +70 and Sire B has a Weaning Weight EPD of +30, then we would expect the average weaning weight of Sire A's progeny to weigh 40 lbs ($70 - 30 = 40$ lbs) more than the average weaning weight of Sire B's progeny.

As producers become more familiar with the Red Angus breed and what genetic changes they need to make in their herds, the use of EPDs can expand beyond the basic example above. For example, if a producer determines that he wants to increase the level of marbling in his herd, then selecting a bull with a high Marbling EPD is warranted.

EPD percent ranks, which gauge the 'rank' of the animal as compared to other Red Angus animals, can be used to determine if the prospective animal

has a Marb EPD in the top 1%, top 10%, top 25%, etc. of the population.

While EPDs are ideal for estimating relative differences in progeny performance, it should be understood that EPDs don't predict actual performance. All phenotypes (birth weight, weaning weight, marbling, etc.) are a result of genetics plus environmental influences. EPDs predict differences in phenotypes resulting from the genetic component. Differences in the environmental component, which can greatly impact phenotypes, are not accounted for in the EPDs. Therefore, you can't predict the actual performance of future progeny based on the EPDs alone, because nutritional levels and many other environmental factors change from year to year.

One of the greatest advantages of EPDs is the ability to compare the genetics of animals across the entire breed. However, producers must realize that EPDs published by different breed associations should not be directly compared to assess the genetic

merit of animals or determine genetic differences in breeds of cattle. This is due to the fact that different breed associations calculate EPDs using slightly different parameters and vastly different base populations. Therefore, producers should not compare Red Angus Association of America-published EPDs versus American Hereford Association EPDs, American Angus Association EPDs, etc.

Producers wanting to assess the differences in breeds across a variety of traits can access USMARC's Germplasm Evaluation Program, Progress Report No. 22 at www.ars.usda.gov/SP2UserFiles/Place/30400000/GPE/GPE22.pdf

EPDs are one of the most powerful tools producers have easy and inexpensive access to, and when used correctly can assist producers in attaining desired genetic improvement. To learn more about Red Angus EPDs, access our 'Rancher's Guide to EPDs' brochure at redangus.org/genetics/ranchers-guide-to-epds.

