

Estimate Progeny Differences (EPD) and ARI

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Overview

EPDs are a powerful statistical tool based on quantitative genetics used by livestock breeders for decades to aid in sire selection and dam/progeny evaluation. The technology takes measurable, quantitative (and in some cases qualitative) data and applies a set of equations designed to discount the contribution of all inputs to a specific trait except the genetics of the individual animal of interest to predict the outcome "on the average" of matings of that animal to a set of females of similar quality.

An example of a trait for which most livestock industries develop an EPD is birth weight - bigger babies, whether they be crias or calves, increase the chance of birthing difficulties. Most livestock industries consider it important for a sire to contribute to smaller or at least not bigger babies, on average. Birthing difficulties bring significant costs in terms of animal loss, time, and money. Therefore, a consideration along with improvement of economic traits of importance, is a neutral to negative impact on birth weight.

EPDs can also be used to help evaluate traits of economic importance such as fiber fineness. Using this technology will help breeders to select sires that help to produce finer fleeced herds. This trait may be evaluated in conjunction with other production traits such as yearling and/or two year old weight as breeding for fineness tends to produce smaller and smaller animals over just a few generations.

How can the typical alpaca breeder take advantage of EPDs?

1. Develop goals for your herd
2. Collect data and contribute to the ARI EPD program
3. Keep careful records - the more accurate the data input the more useful the EPDs values
4. Contribute data on all animals - not just the 'best' animals and on both males and females

Why is ARI working on development of an EPD program?

1. To provide access to the tool for all alpaca breeders of ARI registered animals
2. To provide a secure environment for all submitted data
3. To insure the integrity of the data and calculations
4. To provide users with herd summaries of collected data
5. To generate the most extensive and accurate set of data on alpaca productivity in the world
6. To provide ARI members with access to a carefully developed, "third-party" algorithm for use in making breeding selections and evaluating breeding outcomes

ARI is pursuing the development of this quantitative genetics tool with input from its members on traits of importance to individual breeders and the industry as a whole. The tool will be as valuable as YOU make it - by contributing data and utilizing the breeding prediction values to meet your individual herd goals you will drive the development of the North American alpaca industry.

How will data accuracy be maintained?

Because the methods are statistical in nature small discrepancies in reported data will not negatively impact the prediction capability of the tool. There is no advantage to reporting data only from the "best" animals because the methods "discount" or ignore the contribution of the environment and the mate animal focusing, rather, on the average genetic contribution to a specific trait by an individual.

What if everyone does not participate?

Good predictions can be generated from a few hundreds of individuals so usable EPDs can come from the initially submitted data. EPD values will have an accompanying 'prediction error' value which will allow a breeder to assess the strength of the current value. As more data is submitted the prediction error becomes smaller and the EPD more accurate.

What if inaccurate or false data is reported?

The impact of a few inaccurate data will not greatly impact the EPD values, but will contribute to larger prediction errors. The submission of false data is fairly quickly identified by the checks and balances of the system. In many, if not most, livestock EPD programs there are guidelines that stipulate penalties for false data reporting.

EPDs have been used for many many years with great success in the cattle (both meat and dairy) and fiber industries in the US and other developed countries. The use of EPDs can help breeders make steps towards their herd goals when they are coupled with other important tools - the impact of market demand, the results of show adjudication by qualified and knowledgeable judges, as well as the 'hands on' evaluation of the experienced, knowledgeable and dedicated herdsman/businessman.

Start collecting data, if you are not already doing so, and make certain it is carefully and accurately recorded and annotated with animal name, ARI registration number, date of birth, date of sample collection.

Please direct questions or comments to - Shauna R. Brummet, Ph.D. - ARI's Vice President, Chief Scientist, and EPD Development Committee Chair at hfh@hobbyhorsefarm.com.