

# What Can Breeders Do to Improve the Accuracy of EPDs?

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**Best contemporary group and data reporting practices to ensure the most accurate prediction from the genetic evaluation.**

You can't go to a cattle convention or a beef extension talk without hearing about how collecting whole contemporary group data will help you receive more accurate information from the national cattle evaluation. Typically, you encounter so much information, suggestions, and tips that you don't even know where to start implementing and improving your own data collection.

**It's overwhelming and you ask yourself, why bother?**

But at the end of the day, it's important to know where your cattle stand to make a profit. For producers looking to capitalize on genetic improvements, data collection and reporting is an important part of their herd management because more informative EPDs and Indexes help them select more profitable cattle.

Overall, there are a few factors to consider when submitting information to better predict your animal's genetic value:

- 1.) what data you're collecting,
- 2.) how you're collecting the phenotypic measurement, and
- 3.) how you're reporting the contemporary group records.

## What is a contemporary group?

To get a better understanding and prediction of how an animal will perform, there are three moving parts:

- **genetics**
- **phenotype (animal measurements)**
- **environment**

The phenotype (like birth weight, weaning weight, etc.) that you're collecting is a combination of the animal's environment and genetics, but to isolate the genetic portion of an animal's phenotype we need to eliminate as much environment as possible.

A contemporary group (CG) is the best way to set the environmental effects as equal as possible. Generally defined, CG is a set of calves that are the same age, same sex, managed alike and exposed to the same environment. **All the calves in a CG should be given an equal opportunity to perform.** Any calves that are treated differently, such as sick, fed or housed differently, twins, or

embryo transfer calves would contemporary differently than the rest of the calves.

The environment includes things like the herd, year and season the animal was born, pasture, the amount of milk provided by the calf's dam, the age of the dam, and the calf's sex. A CG looks at fair competition as an animal grows, and it's informed by management information that is reported such as pasture and feeding groups.

The initial CG for a set of calves is created at birth. At weaning time, the date of measurement and the management code break a CG down further, and will likely continue to get smaller as yearling data is reported.

As the calves get older, the CG will naturally get smaller due to culling, injury, sickness, death, or reassignment to a smaller group that reflects different management treatments. When a CG is reported appropriately, it improves the accuracy in EPDs and reduces environmental biases.

## Contemporary Group Tips

- **Know what your breed uses to define a group automatically — Herd/Year/Season, job number or work order, age window, previous CG assignments, management code or pasture group, etc.**
- **Focus on exceptions to your typical management**
  - show cattle, sick calves, ET, first-calf heifers
- **Ask yourself "Were they given equal opportunity to perform?"**
- **Once the CG is defined, report records on all calves in a CG**

## Report All the Data, All the Time

Reporting the whole calf crop (and CG) is important because genetic predictions improve when complete and accurate performance data is submitted on every calf born in your herd. Incomplete or inaccurate data reduces the reliability of each animal's EPDs. In addition to more accurate EPDs, the dam's production record will be current with the association when a calf is reported each year.

## Examples of Ideal Calf Record Reporting

- Report every calf in your herd.
- If a cow did not calve, report the reason.
- Every calf should be weighed at birth.
- Weigh and report the DEAD ones, too.
- Weigh all the calves at weaning.
- Weigh the ones you plan to CULL, too.

Reporting only the good calves does not identify the poor-producing animals in your operation. Oftentimes, breeders will only send in data on a portion (the top end) of their calf crop. When you don't report the calves on the bottom, it's more difficult to identify the bottom end of the genetics in your herd. Since the evaluation doesn't "know" about the calves that were on the bottom end in performance, your top calves don't get the credit they deserve.

In other words, if you're only reporting data on your top 20 calves, 10 of those calves will be below the average, even though you know that these 20 are top out of the 60 calves in the calf crop.

Put succinctly, **"The computer knows only what it knows. Data that doesn't make it into the association and into the evaluation for all intents and purposes does not exist. It doesn't count,"** shares Bob Weaber, Ph.D., Professor and Cow-calf Extension Specialist, Kansas State University.



Bob Weaber, Ph.D., Professor and Cow-calf Extension Specialist, Kansas State University

### Breaking Down Data Collecting and Reporting

"Data is important because that's what really drives the EPD calculation process," shares Ryan Boldt, Director of Breed Improvement for the Red Angus Association of America. Collecting as many phenotypes as possible, including rare traits like dry matter intake and carcass data, is understandably important, but sometimes difficult to do, or do consistently.

Ryan Boldt, Director of Breed Improvement for the Red Angus Association of America



When your data is reported to the association, there are best practices for collecting it and how you're reporting it to the association.

Table 1 provides a quick summary of what data cattle producers can collect and what age windows are best.

Table 1. Time windows for various phenotypes on cattle.

Calving (first 24 hours of birth)	Weaning (160-250 days of age)*	Post Weaning/Yearling (330-440 days of age)*
Calf Birth Weight	Weaning Weight	Yearling Weight
Calf Calving Ease	Dam Weight	Ultrasound Measurements
Dam Teat and UdderScore	Dam Body Condition Score	Feet and Leg scores
	Dam Hip Height	Dry Matter Intake
	Feet and Leg Score of Mature Females	Hip Height
	Docility Scores	Breeding Soundness Exam
		Reproductive Tract Scores/ Pelvis Measurements
		Docility Scores
		Carcass Records

\*Age windows based on the American Simmental Association guidelines – these may differ between different breed associations.

For example, one of the most impactful ways to improve the data you're reporting is to make sure you're taking the measurement at the right time. "When we calculate EPDs or even show things in the databases we adjust a lot of those measurements to a consistent age. Being able to have animals within the correct age window definitely increases our ability to accurately adjust those weights to a constant day of age," Boldt says.

Another factor when you're taking weight measurements is to ensure that your scale is calibrated, cleaned periodically, and animals are weighed on the same day if possible.

Weaber says, "There are standard errors in what we do, working systematically to eliminate as much of that as we can, can be really, really important to reduce bias in data recording, and make the genetic evaluation as informed as possible."

### Best Practices for Taking Weight Measurements

- Calibrate scale before weighing
- Clean scale periodically during the day
- Take empty body weights
- Take a measurements multiple times and average the numbers
- Weigh as many animals as you can on one day

Weight measurements are more empirical because they don't require interpretation from the person recording the trait. On the other hand, measurements like dam udder score, body condition score, or feet and leg scores require the person doing the scoring to make a judgement. The best way to remove subjectivity from collecting data is to score using a rubric, be consistent on who collects the score, train, and retrain.

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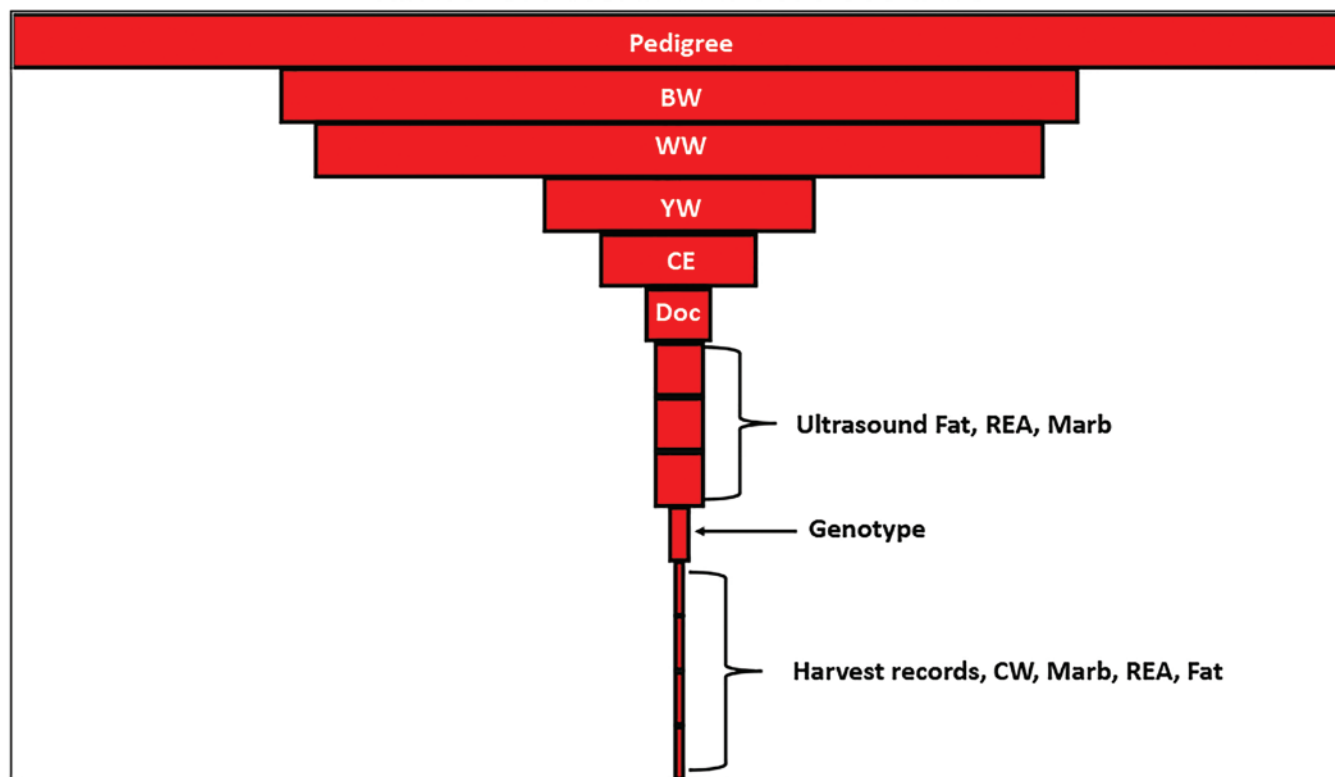
Boldt emphasizes that paying attention to the differences in observations is critical, “As long as we are consistent in how we score differences in a contemporary group, those differences are really more important than the absolute value you assign that individual animal.”

Several phenotypes influence not only the prediction of that trait but other related traits (correlated traits). For instance, birth weight records not only influence birth weight (BW) EPDs but also, calving ease, weaning weight,

average daily gain, and yearling weight. Improving data collection and reporting for birth weight not only improves the accuracy of the BW EPD but several other economically-relevant traits to a year of age.

Post-weaning data also has a large impact on economically-relevant traits yet a fraction of the cattle in the evaluation have post-weaning records. The chart below illustrates how few post-weaning traits are submitted to the genetic evaluation.

**Number of Records in the IGS Database**



*This graph illustrates the amount of each type of data in the IGS database with pedigree as the largest followed by birth weight (BW), weaning weight (WW), yearling weight (YW), calving ease scores (CE), docility scores (Doc), ultrasound backfat (Fat), ribeye area (REA), and marbling (Marb), genomics, and carcass traits.*

## Help Paint the Picture of the Genetics in Your Herd!

While the science behind beef cattle genetic evaluation is constantly advancing, breeders play a pivotal role in the quality of the records entering the evaluation. Submitting accurate contemporary groups and reporting records on the entire group (even the dead ones) improves the genetic predictions of the cattle. Breeders who have access to cattle after weaning should make an effort to collect post-weaning records like yearling weights, ultrasound, fet/leg scores, etc. Committing to expensive and hard-to-collect records like feed intake and carcass data shows commitment to improving the

genetic awareness in these critical economic traits. The evaluation only “knows” the information fed into it. Help paint the most complete picture of your cattle by submitting the most complete records from your herd.

**To learn more, watch the August 2020 IGS Bull Session webinar at [internationalgeneticsolutions.com](http://internationalgeneticsolutions.com)**