



# Driving Genetic Change — One Heifer Crop at a Time

**A cow herd contributes 50% of genetic potential.**

by **Leoma Wells**

*“Make measurable progress in reasonable time.”  
— Jim Rohm*

The sun sets on another spring bull sale season, and it’s time to focus on the females. While bulls can be selected more frequently or as needed, cow families serve as the foundation of any seedstock operation. Measurable progress can be achieved through choosing the right replacements. The future rests on making the best decisions — after all, the female contributes 50% of the genetics.

## **The engine of your operation**

If we relate breeding cows to rebuilding an engine, we create an interesting analogy. Some producers may share with you that it’s enough if their pickup turns over and starts, which would be equivalent to a cow having a live calf each year. These producers would mostly likely be commercial operations relying on their mechanic (seedstock provider) to keep the vehicle on the road. Others may add/remove/adjust the engine to run as efficiently as possible or add after-market parts to enhance performance — these would be your genetic providers.

In the beef industry, it takes patience to make progress, and like rebuilding an engine, it does not happen overnight. The good news is we’re at a point where genomics can serve as a diagnostic

tool, providing insight into the functionality of the engine (cow), so you don’t end up ordering the wrong parts (bulls) that can be quite expensive and potentially unnecessary.

First, determine what parts are working well in the engine. Then, figure out what needs to be improved. Once a benchmark has been established, you can order the specific parts needed to optimize performance (just like targeted breeding decisions) and create a more desirable finished product (progeny). Whether your goal is to add horsepower (growth) or for the engine to run another 100,000 miles (sustained cow fertility), the parts you select are imperative to building the engine you not only want but need to fit your environment.

At the end of the day, the objectives of each operation may be vastly different. However, the core mechanism to get you there — the driving force — is the female “engine” and selecting the

right bull “custom parts.” This ultimately moves the trait needles and impacts your bottom line.

If we are honest with ourselves, some of us can’t afford to do a complete overhaul at one time by testing the whole cow herd. But, if we can make the smaller investments, such as starting with genomic testing replacement heifers, in five years most of the cowherd will have genomic data on file.

**“More rapid genetic progress is possible because of taking into account the genetic merit of the dam. After all, the female represents 50% of the total genetic opportunity in each calf.”**

— **Leoma Wells**

## Testing genetic potential

Breed leaders consistently work on their cow herds — fine tuning matings to try to create the next legacy Hereford animal. Through benchmarking, data analysis and added genomic information, you, too, can strategically map out your next calf crop.

Sometimes the beef industry neglects to DNA test females — essentially ignoring 50% of genetic potential. The industry has made progress by



using high-caliber sires, but it is crucial to submit phenotypes and genotypes on all replacement females to fairly represent the bottom side of the pedigree in genetic evaluations — especially maternal traits. By only submitting genomic testing on the “best” females, it can unintentionally create bias in the genomic predictions.

Females with genomic-enhanced expected progeny differences (GE-EPDs) offer producers deeper insights into the true genetic ability a certain female has to pass along genes to her progeny. This makes it possible for purebred breeders to take a more targeted approach to key breeding decisions, which mitigates the risk of a mating setback. Using bulls which complement your females leads to

faster genetic progress and trait improvements in areas important to your operation.

It's true, GE-EPDs are not perfect, but they are an excellent, impartial tool, which allows producers to evaluate how their animals rank against one another and the Hereford population. Monitoring the percentile rankings and maintaining selection decisions, with breed averages in mind, can move the median of your herd and ensure continual progress in those areas of emphasis. In addition to bolstering the genetic evaluation and your females being well represented in the population, genomic testing includes parent verification, which helps clear up any pedigree errors and results in better EPD predictions for your herd and the breed.

What inspires confidence in GE-EPDs and their genetic trait predictions? Remember, EPDs are a prediction of the breeding values of an animal that are calculated using the actual information reported, in addition to pedigree or known relatives and progeny information once it's available. If you wish to have the greatest level of confidence when analyzing the young heifers for the replacement pen, you need to take it one step further and run a genomic test to increase the accuracy of their EPDs. GE-EPDs provide an accuracy level

for traits — including ones that can take years to collect via traditional methods — that females could historically only achieve after having about six calves, depending on the trait.

Simply put, GE-EPDs add a layer of confidence, via the accuracy, and as more and more Hereford breeders embrace genomic testing, especially on young females, greater progress can be made in less time. The more rapid genetic progress is possible because of taking into account the genetic merit of the dam. After all, the female represents 50% of the total genetic opportunity in each calf. **HW**

**Editor's Note:** Leoma Wells is a strategic account manager for NEOGEN Genomics.