

Make Replacement Heifer Decisions with More Confidence

Evaluate potential replacement heifers at weaning for more than 15 economically important traits

Developing replacement heifers requires a significant investment. Recent estimates suggest the cost of developing a pregnant female from weaning to breeding is more than \$1,100.¹ And, research shows that a female may not break even until 6 years of age.² Perhaps just as important, the heifers chosen as replacements will help define the genetic direction and profitability of a herd for years to come. Dr. Kevin DeHaan, technical services director, IGENITY[®], says all of this adds up to one conclusion - producers can't afford to pick the wrong replacement females.

"Producers can help take some of the risk out of replacement heifer development by adding DNA technology to their existing selection and management protocols," he says. "By using a comprehensive DNA profile, producers can gain inside information about more than 15 economically important traits, many of which are difficult or even impossible to measure with traditional tools, but directly affect the profitability of replacement females."

Start early to help avoid unnecessary expenses

Replacement heifer selection often begins at weaning with an initial sort of the female calf crop. Dr. DeHaan says producers should collect DNA samples at this time and add the information from IGENITY to their existing selection protocols. By using the power of DNA to evaluate young females, producers can help avoid the initial expense of developing heifers that will be culled at breeding. He adds that each step of this process has been designed to work into existing routines, starting with a user-friendly tissue collection system.

"Gathering DNA samples can easily be worked into preconditioning or weaning routines with a tissue collection device that works just like applying an ear tag," Dr. DeHaan says. "Plus, IGENITY offers a combination radio frequency identification (RFID) tag and tissue collection device giving producers the option to take advantage of two technologies in one simple step."

After producers receive their results, the inside information can be sorted and managed based on their individual herd goals with the user-friendly IGENITY software. Dr. DeHaan says in the case of replacement heifers, producers can start with the custom sort software and focus on traits such as fertility, feed efficiency and growth.

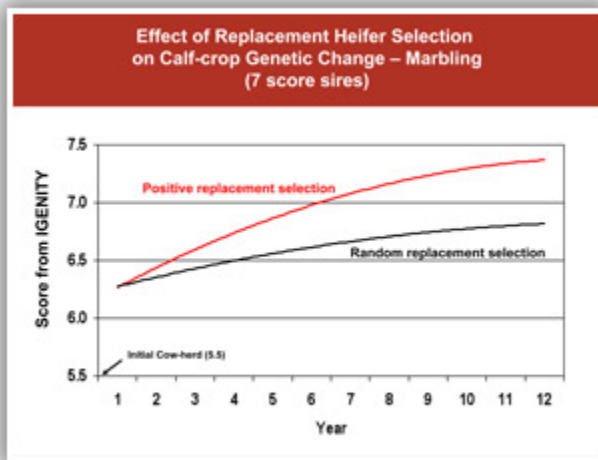
"A potential replacement heifer's initial success hinges on her ability to grow quickly and efficiently and breed on time," he explains. "If producers use the IGENITY profile and custom sort software to evaluate potential females for key traits at weaning, they can help avoid the cost of developing sub-par females that may not have the genetic potential to reach these first milestones."

Dr. DeHaan adds that DNA analyses for maternal and reproductive traits, as well as residual feed intake and average daily gain, give producers an option to evaluate cattle for important traits that have traditionally been difficult to measure in young cattle.

"We have some tools that help us predict fertility and growth in young cattle," he says. "But by using the inside information that is available from IGENITY to help evaluate these economically important traits, producers can gain a new level of confidence in selecting the right replacement heifers."

Positive selection vs. random selection

Selecting the right replacement heifers not only affects the profitability of the individual, but perhaps more important, it affects the profitability of the herd for years to come. To help illustrate how selection decisions affect a herd over time, Dr. Bob Weaber, state extension specialist, beef genetics, University of Missouri, developed a model for IGENITY that calculates the potential genetic outcome based on a given scenario. "The purpose of this model is to explore the effect over time of different selection protocols and strategies," Dr. Weaber says. "It is designed to illustrate the differences in genetic merit based on using the IGENITY profile to help select sires or replacement heifers, or the combination of both."



Graph 1 illustrates the change in genetic merit of progeny for marbling over time if producers use the IGENITY profile to help select superior replacement heifers. Marbling is used in this example; however, this same illustration can be applied to any trait available from IGENITY. In this example, the herd size remains the same for both groups. Both groups improve their genetic potential by using sires with a score of 7 for marbling. However, for the herd represented by the red line, the best 20 percent of the females are selected to return to the herd based on their scores from IGENITY. Random replacement selection is used in the herd represented by the black line. Using IGENITY for replacement heifer selection can help significantly improve a herd's genetic potential.

In this graph at Year 12, the additional lift that occurs from selecting the superior replacement heifers results in a 10 percent advantage compared with random selection. Dr. DeHaan says this demonstrates how the use of the IGENITY profile to help select replacement heifers can help producers make faster genetic progress and gain efficiencies.

"By using the inside information from IGENITY to help select replacement females, producers can help ensure they are pointing their herd in the right direction to make faster genetic progress and return dollars to their bottom line," he says. "A 10 percent difference over time can mean significant differences in profitability for traits, such as heifer pregnancy rate, feed efficiency or carcass traits if producers are selling calves on a grid."

IGENITY offers analyses for these traits and more with the most comprehensive DNA

profile available,³ which includes analyses for:

- Residual feed intake
- Average daily gain
- Tenderness
- Marbling
- Quality grade
- Yield grade
- Fat thickness
- Ribeye area
- Heifer pregnancy rate
- Stayability (longevity)
- Calving ease
- Docility
- Myostatin
- Coat color
- Breed-specific horned/polled
- Multisire parentage
- BVD-PI diagnostic test
- Arthrogyposis Multiplex (AM)
- Coat Color Dilutor (DL)
- Idiopathic Epilepsy (IE)
- Neuropathic Hydrocephalus (NH)
- Osteopetrosis (OS)
- Pulmonary Hypoplasia with Anasarca (PHA)
- Tibial Hemimelia (TH)

If producers are looking at short-term profitability of an individual female, or long-term genetic progress, Dr. DeHaan says they can't afford to select another heifer without the comprehensive IGENITY profile.

"Second to herd sires, young females have the greatest impact on a herd's short-and long-term success," he says. "Adding the comprehensive IGENITY profile to heifer selection protocols can help producers ensure decisions made today will result in a productive, efficient herd for years to come."

¹Hughes H. Heifer economics part 1. *BEEF* 2007:10-11.

²Red Angus Association of America. Heifer pregnancy and stayability. Performance update. Available at:

<http://old.redangus.org/newredsite/themagazine/julyaugust02/performanceupdate.html>

Accessed June 3, 2009.

³Data on file at Merial.