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Genomic Testing for Heifer Selection

Media is abuzz with proposed actions of the current administration in relation to cattle production, in particular beef supplies and heifer retention incentivization. I'm a free-market supporter but I will not get into politics in this space! What is as important, maybe much as now as ever, is working to develop the best possible replacement heifer for the next generation of the nation's cowherd. Having recently collected DNA from my own replacement heifer pool, genomic testing is a topic front of mind.

As the spring born calf crop arrives in weaning lots, one big decision that needs to be made is which heifers are destined for a replacement pen, and which will be moved into the feeding sector. Heifer retention is big decision producers are faced with as they work to maintain and build the breeding herd. Lots of factors go into this decision including pedigree, performance, phenotypic traits, genotypic merit, feed resources, net present value, development cost, to name a few.

All these factors at play, there is still no great way to know how the weaned heifer calf might perform with her first calf. Heifer development is a long-term investment, so it only makes sense to invest in those individuals who genetically have a favorable predisposition to having the traits desired in a productive cow. One tool that can help investigate this potential is genomic testing. Like any tool, it is not a complete answer but can help with making a clearer selection decision.

Genomic testing is conducted on a small ear tissue, hair follicle or blood sample. The DNA held within this sample is compared to proven genetics and can provide more accuracy to predicted progeny data. This testing can be conducted at any point in the animal's life. Results from the genomic test can provide producers with data-driven markers of genetic potential in several production factors. There are numerous companies offering genomic testing, with various testing options available.

A common question is whether genomic testing is a better predictor than EPD's. Depending on who you talk to, you might get a different answer! One benefit of genomic testing is the replacement of multiple progeny tests, based on the use of gene markers that are compared to animals within very large databases. Additionally, labs are offering tests for commercial cattle selection, extending the technology to more producers in the beef industry. While thousands of markers are typically tested, it is still only a snapshot of the complete genetic package found within the DNA.

Another important question is what is the cost, and will I get a return on investment? The cost of genomic testing can range from tens of dollars to hundreds, depending on how detailed the test are. Genomically testing the entire heifer crop can be an expensive investment but can pay dividends when selecting genetically superior heifers that produce higher quality calves. Keeping a low performing heifer can end up costing the operation more in the long run due to lower performance.

Operations that develop replacements may want to consider investment in this technology. Cost savings from selling low performing heifers and keeping the ones that will have potential to produce a higher value calf will pay for testing. This is a one-time cost that will provide the information needed to make informed keep/cull decisions. By testing and keeping replacement heifers, eventually the entire herd will be genomically tested which should move the needle on genetic progress.

Just like each of the other tools found in the beef producers' toolbox, cost of tools need to be evaluated and the total picture looked at. K-State's AgManager website has some great tools to look at the cost of putting heifers into the herd. Visit the following website and look for the "KSU Beef Replacement" spreadsheet tool. <https://agmanager.info/livestock-meat/production-economics>