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## **DNA analysis may soon be used to make better beef**

By ***Repps Hudson***

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OSAGE BEACH, Mo. — Livestock shows long have spotlighted improvements in farm animals by painstaking breeding over many years and generations.

Now an important shortcut is on the horizon, and Missouri's \$1.5 billion beef-cattle business could be positioned to use DNA analysis to get the most value from selecting, feeding and slaughtering animals for consumers.

"After we take the hide off, there are a lot of genetic differences in our cattle," said Sue DeNise, vice president of research and development at MMI Genomics Inc. of Davis, Calif. "The basic premise is that differences in DNA lead to differences in animals."

DNA analysis for livestock is nearing the commercial stage for beef cattle and, in a few years, can be used for other meat and dairy animals if farmers want to pay for the information.

Traditional breeding requires a mix of visual observations of an animal's characteristics, the breeder's experience and intuition, and an analysis of the its carcass after slaughter to improve meat-producing qualities in future generations.

Among the qualities cattle breeders want are fat marbling in muscle, tenderness, top grades like prime and choice and high average daily weight gain in feedlots.

DNA analysis, using blood samples from beef cattle and based on similar technology that interprets the human genome, will allow producers to understand how quickly an animal will gain weight or develop tenderness in its meat before it is killed.

"This is an industry has totally been based on visual observation," said Scott Brown, a beef and dairy analyst at the Food and Agricultural Policy Research Institute in Columbia, Mo. "But this kind of analysis will not be based on observation at all."

Such analysis of an beef animal's potential in the feedlot is reaching commercialization as the U.S. Department of Agriculture and animal-producing groups are starting to introduce a birth-to-slaughter identification system to reassure consumers of the origin and tracking of animal products they consume.

"All of this kind of technology tends to integrate markets, from producer to consumer," said Brown. "Consumers will benefit from having more information."

MMI has developed and patented a process to determine specific markers on an individual beef animal's DNA that will cause it to gain weight in feedlots more rapidly, have more tender meat and other qualities consumers want when they buy steaks, roasts and other cuts, DeNise told agricultural producers on Monday at the Missouri Governor's Conference on Agriculture at the Lake of the Ozarks.

A marker that shows a steer or heifer will not gain rapidly may mean it ends up going to slaughter more quickly than an animal whose DNA shows it has the potential for becoming a high-value carcass.

Producers can use the information to manage their breeding herds and cattle in feedlots more effectively, she said.

The DNA process will allow producers to add value to their cattle, for which consumers will pay more in supermarkets. It also will allow cattle producers to develop brand names around a breed or a state's name, such as Missouri.

Agricultural research, both public and private, is continually trying to find ways for farmers and other food producers to fine-tune their operations, which saves money and maximizes their investments.

DNA analysis of individual beef animals is one of the more current methods that could become commercially viable in a year or two, DeNise said. She said MMI has yet to set a price per animal for DNA analysis. The process has been tested in feedlots, she said.

With the second-largest number of cows and calves in the country, after Texas, Missouri beef producers could have a lot to gain if the MMI's process can be made commercially viable, said Brent Bryant, executive vice president of the Missouri Cattlemen's Association.

"I'm not aware of anyone doing DNA analysis now," Bryant said. "Whether they adopt it will depend on the cost. If it puts more dollars back into their farms, they will like it."

Missouri has 4.4 million head of beef cattle, with 2.1 million cows and calves. Illinois has 1.2 million beef cattle and a much smaller number of cow-calf operations.

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