

# Genetic Evaluation & Selection

Lost opportunities for improving profit do exist in the beef industry.

Story & photos by **Troy Smith**, field editor

There is no denying that dramatic progress in the development of tools for genetic selection has occurred, but Colorado State University geneticist Mark Enns says the beef industry can't afford to miss additional opportunities for advancement. During the 2013 Beef Improvement Federation Research Symposium and Convention in Oklahoma City, Enns spoke to the Live Animal, Carcass and End Product Committee, saying such opportunities do exist.

Citing examples of technology that is available now, Enns said feed utilization is measurable in the feedlot environment, and general relationships with other traits have been increasingly well-estimated. There is potential to select for animals that improve profitability in the feedlot sector.



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"The technology needs to be implemented and used in a multiple-trait setting. There is potential for considerably more data collection. We need to test more cattle and get more data," stated Enns. "Granted, we need more work on the cow side of feed utilization."

Regarding cow fertility and longevity, Enns noted how most breed associations have whole-herd reporting systems, but aggressive use of available data often is lacking. As an example, he said

improvements are needed in evaluations for cow stayability. Enns said the failure to credit cows lasting past 6 years of age is representative of a conflict of perspectives between commercial producers who value the long-producing cow and purebred breeders seeking younger cows with the "best" genetics.

According to Enns, bull fertility is rarely evaluated other than on the basis of scrotal circumference. DNA technology is available for parentage verification in commercial producers' multi-sire pastures. Enns noted a California study revealing the significant differences among natural-service sires, regarding the number of progeny they produce, and their different impacts to ranch profitability.

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## Future technologies

Considering the rate of world population growth and the growing global demand for animal protein, it is estimated that by 2050 worldwide beef production must increase by some 60%. Meeting the expected growth in demand for beef will require advanced technologies and a willingness to use them, said North Dakota State University animal scientist David Buchanan.

"There is a sizable investment being made in agricultural research, which should result in new technologies, but it takes time for development and adoption, and then for the benefits to be realized. Historically, it takes about 30 years. We don't have 30 years," warned Buchanan.

Recounting advancements in genetics and management of crops and food animals, Buchanan said modern agricultural technologies have prevented population growth from outpacing food production. He noted how pounds of beef carcass produced per cow in the United States grew from 450 pounds (lb.) in 1980 to approximately 630 lb. in 2005. Citing the influence of genetic selection, Buchanan said further advancement in productivity will depend on wise use of selection resources.

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increased calving ease, weaning weight, yearling weight, marbling and ribeye area illustrate industry emphasis on selection for increased efficiency of the calf from birth to harvest. Market signals have not exerted as much pressure on reproduction, relative to production. Buchanan said addressing the life-cycle cost of producing a pound of edible meat protein will have to include consideration of cow-side factors such as replacement rate, feed for maintenance, gestation and lactation.

The kinds of tools that have aided selection so far — a broad array of expected progeny differences (EPDs), selection indices and genomic enhanced EPDs — are reasons why Buchanan is optimistic about the future.

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