



pictured: Francis Fluharty and Daral Jackwood

Genetic and Nutritional Factors Affecting Muscle Characteristics and Carcass Value of Beef Cattle

Francis Fluharty, Animal Sciences
Daral Jackwood, Food Animal Health Research Program
Duane Wulf, Animal Sciences

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Consistently tender, high-quality meat is very important to both consumers and the beef industry. This study looked at the effects of protein concentration and energy intake on cattle growth and how they were correlated with composition of grain and muscle tenderness. Potential meat tenderness in beef cattle was correlated with a genetic marker, and a diagnostic test for that marker was developed. After four years of studies, the test has proven to be more than 99 percent accurate. This technology may hold the key to eliminating tough beef from the marketplace within 10 years—if animals with this potential are managed correctly.

OBJECTIVES

- ▶ Determine meat tenderness and composition of the loin in beef cattle.
- ▶ Determine genetic profiles for beef cattle and examine the correlation of these profiles with meat tenderness.
- ▶ Determine the impact of nutrition on meat tenderness and carcass composition.

CHALLENGES

Some cattle have the potential to produce high-quality, tender beef; others do not. A way of determining the genetic profiles for identifying this potential and developing accurate predictive tests for muscle characteristics is desirable for both consumers and the beef cattle industry.

ACHIEVEMENTS

The genetic potential to produce high-quality beef was identified. A DNA test that determines this potential for meat tenderness was then developed and has been proven to be 99 percent accurate. Producers will be able to collect a blood sample and have it analyzed. The test results will provide them with the information they need to pen and feed calves according to their known carcass potential. This technology could save producers \$40 to \$50 per head in feed costs as dollars will not be wasted feeding animals that don't have tender meat potential.

THE FUTURE

Additional field trials are being carried out with \$225,000 funding from private industry. A U.S. patent has been filed and a notice of allowance has been received. This technology has also been licensed through the Office of Technology Licensing, and it is anticipated that the technology will be available to beef producers very soon.

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