IMPACT
University of Idaho Cooperative Extension System

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Ultrasound Technology Enhances Livestock Evaluation In Youth Shows

The Situation

Livestock projects make up a large percentage of the total 4-H youth projects taken in the state of Idaho. The evaluation of market animals has progressed beyond a simple visual appraisal. Today's market animal show includes evaluation of the performance of the animal based on growth rate, expected carcass yield, and suitability for today's consumer demands. In today's information age, people want and need pertinent information quickly and accurately. The ability to quickly and accurately evaluate the market readiness of animals is critical from an economic point of view as profit margins have dropped to all time lows. The ability to provide a product of high quality and consistency is key to profitability. Youth shows where meat animals are exhibited provide excellent opportunities to demonstrate new technologies to producers and to consumers. Producers need to select breeding stock that will produce offspring that will provide the types of meat animals that will produce the products desired by consumers.

The Response

Ultrasound technology provides an opportunity to evaluate the fat, muscling and intra-muscular fat on live animals. Show judges traditionally gave their best estimates of the grade of the animal based on their observation of muscling and fat. In many cases, after the show, animals were evaluated in the cooler to determine the cutability and actual grade of the animals. This evaluation often pointed out the weakness of the judges' abilities to accurately estimate the cutability of the animal. In many cases the opportunity to evaluate animals in the cooler is no longer a possibility due to regulations and the need to protect trade secrets within processing plants. Many of the beef cattle are slaughtered in non-inspected plants, which means that USDA quality grade and cutability information is not available on those animals that are retained locally for consumption by the buyer. Therefore, the University of Idaho began to incorporate the use of ultrasound technology to evaluate the amount of muscling and fat of each exhibited animal. Ultrasound technology has been demonstrated to have an accuracy rate as high as 90% when compared to measurements of animals after slaughter. Additionally, the ultrasound technology is capable of providing grade information on those animals for which data would otherwise be unavailable.

The University of Idaho Cooperative Extension System responded by purchasing three ultrasound machines to be used in animal evaluation of livestock show animals, as well as breeding stock evaluation. The equipment has been used extensively for evaluation at the county fairs and with an increasing number of livestock breeding stock producers.

Ultrasound technology is beneficial in evaluating the market animals in youth shows, but the real value

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lies in the evaluation of breeding animals to aid producers in the selection of stock that will produce the most desirable carcass quality. Through use in youth shows, producers have been exposed to the technology and many, particularly swine producers, have adopted the technology as a regular part of their animal selection process.

Ultrasound technology has been demonstrated at the regional beef symposium held in 1997 to show its value in breeding animal selection. In 1999, the technology was used in the evaluation of feedlot cattle in an Oregon State University research program to determine the proper shipping dates. In 2000, the technology was used to evaluate muscling and intramuscular fat in prospective crossbred bulls on a local ranch.

Achievements

Over the past five years, the use of ultrasound technology has been incorporated in the evaluation of 4-H market animals in more than 65% of the counties in the state. Seminars for producers and youth have been held in these counties to explain the technology and how it is used in the evaluation of both market and breeding animals. After 5 years of ultrasound use, the number of US Number 3 pigs exhibited in 1999 was reduced from over 10% to less than 1%. During the same period, total fat on the pigs was reduced by more than 0.4 inches, and loin eye area, which is an indicator of muscling, increased by over 1.0 square inches.

Additional demands for educational programs have come from Utah and Oregon. Programs have been given for county 4-H programs in neighboring states. The technology has been used in research projects and for a senior-level beef production practicum program at Oregon State University.

A local feedlot operator has incorporated the use of the technology by using ultrasound to evaluate the quality grade of cattle prior to shipping. This evaluation allows the producer to market the animals when they are at the yield and quality grade that will maximize profits.

The Future

As ultrasound technology becomes more advanced, feedlot operators, packers, seed stock breeders and the 4-H youth program will realize increased benefits. The ability to predict the fat, muscling and quality grade accurately and quickly will have far-reaching benefits in the livestock industry. This technology will help producers increase beneficial genetic traits, produce more uniform animals and increase total production efficiency. As new developments in the technology occur, Extension educators will help to adapt the technology to both youth programs and production agriculture.

For More Information

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