

BEEF CATTLE DEVELOPMENTS

Research continues to support the beef industry which is now worth over \$900 million in North Dakota. Research includes Feedlot trials, bedding and feedlot performance, the development of a Radio Frequency Identification (RFID) system and continuing input into the Beef Center of Excellence. This research will further enhance and increase beef production in North Dakota.

Feedlot nutrition trials



Continuing research into different feedlot regimes and supplementation include:

- **The use of pulse grains, (field pea, chick pea and lentil) in receiving diets of calves.** Cattle fed pulse grain-based diets in a 40 day receiving trial gained an average of 9.2 percent more (0.38lbs per day) than cattle fed corn-canola based diets. Pulse-fed cattle continued to have increased gains for up to 7 weeks after the termination of the pulse diet.
- **Conventional versus natural feeding regimes for finishing cattle.** With today's emphasis on natural products, trials are exploring differences in finishing cattle with using conventional management versus a non-conventional/natural approach which uses yeast and enzyme products replace ionophores and antibiotics. Feeding calves using these natural products can result in equal animal performance and carcass quality.
- **The effect of degradable versus non-degradable protein.** Precise levels of rumen degradable and non-degradable protein improve efficiency and animal performance. Barley based diets provide adequate rumen degradable protein but new research with non-degradable protein supplemented in the form of distillers grains improved animal performance and carcass traits.
- **Investigating alternatives or co-product feeds in feedlot diets.** Various additives such as soybean hulls, barley malt and cocoa cake are being researched as alternative sources of proteins and minerals in feedlot diets. Other research includes the effect of processing and the particle size of field pea in the digestive process and its effect on performance.
- **Breed evaluation.** The breed, or combination of breeds have a significant impact on the efficiency and profitability of the beef herd; therefore, selecting appropriate breeds is an important decision for beef cattle producers. Research continues to monitor breed performance and to increase producer understanding of genetic and carcass quality.

Feedlot environment research

An integral part of research in feedlot management addresses animal comfort and mitigating environmental stress. Two management practices investigated provide substantial advantages in increased animal performance and well being and have the potential to decrease fertilizer input and reduce pollution.

Research has shown that Flyash integrated in the surface material of calf pens may stabilize soil and prevent muddy conditions. Pens dried faster during spring thaw and animals gained .25lb more per day during the feeding period of late winter to early summer. An estimated gain of **\$10.5 million** would result if all calf pens were impregnated with flyash. Another outcome from this research is that amount of feed required is reduced due to less wastage if flyash is used.

The use of straw as bedding material has a two-fold benefit. Firstly, feedlot gains improved at a minimum of 0.7lbs per day and feed efficiency improved by approximately 20 percent resulting in an advantage of \$71 per head if bedding is used. Secondly, it can reduce the amount of ammonia released into the atmosphere, lowering pollution. More nitrogen was retained in the manure/straw mix which added to the fertility value of the compost with a potential realized value of **\$3.4 million**.



Radio Frequency Identification (RFID)



With the threat of Mad Cow Disease hovering, the new identification system RFID (Radio Frequency Identification), a pilot project being researched at NDAES, will play an important role in keeping track on the nation's cattle. The technology allows extensive data about the animal to be maintained, including breeding, age, weight and medical history and it is an effective way of locating where the animal came from should it be diseased. This is an important step in US agro-security programs.

An added benefit is that the ear tag allows animals to be 'scanned' from up to 2 yards away. This technology eliminates the need for individual handling of animals and saves producers and the meat industry time.

In addition, it ensures better identification of animals and will provide producers with data analysis regarding their herd's performance.

The research has been a collaborative effort between NDAES, Electrical and Computer Engineering, the Center for Nanoscale Science and Engineering, ND Stockman's Association, ND State Veterinarian and Vet Corp., ND Livestock Marketing Organizations and ND Beef Cattle Improvement Association. Commercial release is expected in several years.