



Research Update

► Summaries of current beef cattle research

Organizations combine efforts to meet industry needs

A combination of academic, industry and legislative efforts have created a premier research cattle feeding facility at the Texas AgriLife Research and U.S. Department of Agriculture (USDA) complex near Bushland. The \$450,000 facility was dedicated June 29.

Needs apparent

With the influx of distillers' grains into the cattle feeding industry and the regulatory push to monitor greenhouse gases (GHGs) and other air quality contaminants, it was necessary to build some new facilities that included a commodity barn and equipment that can measure gas production in cattle, said John Sweeten, AgriLife Research resident director in Amarillo.

"Projects like this don't just happen," Sweeten said, crediting the Cooperative Research, Education and Extension Team (CREET) for being the engine driving the effort.

CREET involves facilities, scientists and administrators of West Texas A&M University in Canyon; AgriLife Research, Amarillo; the Texas AgriLife Extension Service, Amarillo; Texas Veterinary Medical Diagnostic Laboratory, Amarillo; and USDA-Agricultural Research Service (ARS), Bushland.

Team leaders worked with local legislators — Reps. David Swinford, Warren Chisum and John Smithee, and Sen. Kel Seliger — to secure one-third of the funding through a state legislative initiative. The rest was internally and in-kind funded.

"This is a perfect example of what comes from collaborative efforts," said Ross Wilson, Texas Cattle Feeders Association president.

"There are more than a few billion dollars worth of feedstuffs purchased in this region," Wilson said. "The important research being done on ethanol byproducts will hopefully expand the options cattle feeders have for feedstuffs."

Research model

Tony Bryant, chairman of the cattle feeders research committee, said collaborations such as this ensure that research efforts are focused and timely without being duplicative.

"This research is helping us substantiate there is a difference between Texas and Nebraska and dry-rolled and steam-flaked corn being fed," Bryant said. "The research

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is looking at the different grains and protein sources and how to formulate the best diets."

Bryant challenged the group of researchers to continue to use this model to address questions in the areas of wet vs. dry distillers' grain, increased regulatory pressure and cellulosic technology.

Dan Upchurch of College Station, the USDA-ARS Southern Plains Area director, said this facility is one of only three in the nation of comparable capabilities.

"When the mixing facility is combined with the feeding pens and then the calorimeter facilities, it makes this the premier site in the nation," Upchurch said. "This facility will address some of the results that we need — some of which we needed answers to yesterday."

Efficiency a focus

The research conducted in the facility will improve efficiency in feeding the cattle because it offers researchers more accuracy in their studies, less labor and fewer opportunities for errors as the diets are formulated, he said.

It also reduces the cost of research, Upchurch said, because the covered, more efficient storage space reduces spoilage of the feed.

"This goes way beyond that one facility, however," he said. "I'm concerned about the quality of the science. This will allow more uniformity and credibility because they can add more replications in each study. That's critical to the credibility."

When designing and building the feed bins and commodity barn, the concept was to get everything out of the wind and other weather elements to keep from losing grain products to blowing, shrinkage or deterioration, said Jim MacDonald, AgriLife Research ruminant nutritionist.

MacDonald said he is responsible for evaluating the efficiency of various feed products and the effects they have on beef. His research may require feeding 15 to 20 individual diets for multiple studies, and that is only possible through the diversity of product storage offered by the new commodity barn.

"The primary measurement we look at is efficiency," MacDonald said. "We need to know the pounds of feed it takes to produce a pound of beef."

It may take from 5.5 pounds (lb.) to 7 lb. of the various grain combinations to produce a pound of beef, he said. By knowing what feed commodities provide what feed efficiency and at what cost, feedyard operators can make the most economical decision to produce the pound of beef.

"As feedstuffs change," MacDonald said, "we'll be able to adapt fairly quickly and that will result in the highest quality, low-cost beef possible for the consumer."

Andy Cole, USDA-ARS animal scientist, said the addition of respiration calorimetry chambers into the metabolism barn will allow the measurement of carbon dioxide and methane, as well as the consumption of oxygen, by the animals.

"Using those numbers, we can calculate the amount of heat the animal produces," Cole said. "From that, we can determine how efficiently the animal uses calories in the diet so that we can determine the net energy of the dietary ingredients."

Animal nutritionists can then use those numbers to help formulate the most productive diets, he said.

"At the same time, we get an idea of how much of the greenhouse gases — methane and carbon dioxide — are produced by the animals," Cole said. "Then we can look at how dietary changes can affect those losses."



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