



MSU Ag Comm Library

Livestock research touches all areas of the state

By Bob Ratliff

Mississippi farms, according to the Mississippi Agricultural Statistics Service, are home to more than one million beef and dairy cattle and almost 300,000 hogs, as well as several thousand sheep, goats, horses and other livestock.

MAFES research in support of the state's livestock industries includes projects with nutrition and other management practices, animal health and waste management, all with the goal of helping Mississippi producers to be more productive and profitable.

The work of almost every MAFES branch station and unit has a livestock component. Dairy research is a significant part of the work of the North Mississippi Branch in Holly Springs, the Brown Loam Branch near Raymond and the Coastal Plain Branch in Newton, as well as the Bearden Dairy Research Center near the main campus in Oktibbeha County.

Beef cattle research is conducted at the main campus and is a primary focus of the Prairie Research Unit in Monroe County, the Brown Loam Branch and the White Sand Unit in Pearl River County.

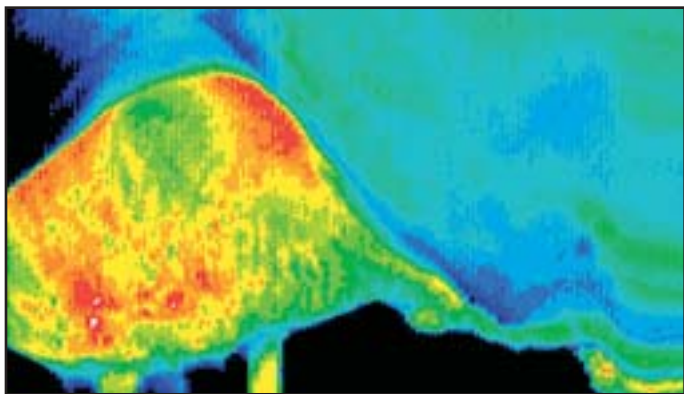
Lab applies new technology to animal health research

New technology is helping MAFES and College of Veterinary Medicine scientists look at animal health issues in a new light.

Established in 2001, the Facility for Organismal and Cellular Imaging, or FOCI, is using biophotonics imaging technology to look at livestock from the single-cell level all the way up to the entire animal. Biophotonics is the science of generating and harnessing light to image, detect and manipulate biological materials.

While the technology is sophisticated, it is being used to address such basic problems for the livestock industry as Salmonella in hogs.

"Salmonella costs the nation's pork producers an estimated \$100 million each year in lost animals and veterinary costs," said MAFES animal scientist Scott Willard. "The application of biophotonics imaging technology to study Salmonella in swine will greatly enhance our understanding of how best to control the contamination of animals with this organism and reduce or eradicate the risk of food-borne Salmonella infection in humans."



Udder of a dairy cow taken using Digital Infrared Thermal Imaging (DITI) to capture the changes in skin surface temperature. The hotter region (lower-left corner of the figure) indicates an intramammary infection (mastitis) within one quarter of the udder. This technology has the potential to detect infections early in their development, allowing earlier treatment and fewer losses in milk production.

The FOCI laboratory was established with funds from the National Science Foundation -Experimental Program to Stimulate Competitive Research (EPSCOR). Current support includes funding from the National Institutes of Health-Center for Biomedical Research Excellence program and the U.S. Department of Agriculture/Agricultural Research Service.

Tunnel ventilation may help dairy cows breathe a little easier

Mississippi's hot, humid summers can have a negative impact on dairy cattle's milk production. One possible solution is housing lactating cows in ventilated barns, but air quality in such facilities is a concern.

MAFES dairy scientist Angelica Chapa is studying the effects of housing dairy cows in an enclosed free-stall barn with tunnel ventilation at the North Mississippi Dairy Housing and Environmental Quality Research Facility at Holly Springs.

"Even with fans and sprinklers installed, dairy cows housed in free-stall barns in the South often suffer from heat stress during the summer," she said.

Tunnel ventilation can be used to cool barns by moving large amounts of air over water-soaked cells. Air quality, however, is a concern because of the potential for the buildup of ammonia and dust particles in the air in enclosed facilities housing animals.

Data collected at the North Mississippi facility from 40 mature, lactating Holstein cows during the winter of 2002 showed there were no differences in the amount of ammonia and other gases in the blood of animals housed inside with tunnel ventilation or those housed in an open free-stall barn.

The same comparison during a 70-day period during the summer of 2003 also showed no increases of gases in the blood of cows housed in the tunnel ventilation facility.

Milk production data from both groups is still under analysis and that, Chappa said, will determine whether or not tunnel ventilation can be an important tool for dairy producers in the South.

"Cows housed in a tunnel-ventilated facility will have to perform at a level that justifies the added cost," she said.



Jim Lytle

Biophotonics imaging technology is used by animal scientists Scott Willard, seated, and Peter Ryan in animal health research at the FOCI lab.



Jim Lytle