

# Cattle Heat-Stress App At Hand To Help Producers Reduce Weather-Related Livestock Losses

COLUMBIA, MO.

A new tool to help cattle producers reduce heat-related losses soon will be as close as the nearest smartphone.

Livestock researchers at the University of Missouri's College of Agriculture, Food and Natural Resources (CAFNR) are developing a smartphone app called ThermalAid enabling cattle producers to more conveniently and reliably monitor livestock conditions in relation to local temperature and humidity levels. Easy access to temperature/humidity index readings will help producers more quickly determine when their cattle are heat stressed, according to Don Spiers, professor of animal science at CAFNR and leader of the research team developing the app.

"ThermalAid is designed for use with beef or dairy cattle in pastures, feedlots or barns," says Spiers. "In addition to heat and humidity readings, this simple application will help producers more accurately calculate livestock respiration rates, which have a direct correlation to heat stress."

A stopwatch-like feature of ThermalAid allows producers to count the number of breaths for an animal over a short interval. The producer then records the number and the app calculates the breaths-per-minute. Normal respiration rate for cattle is around 40 bpm. Rates for cattle under heat stress can run as high as 160-180 bpm.

Heat-stressed cattle reduce their feed intake or stop eating completely, which lowers growth rates in beef cattle and reduces milk production in dairy cows. Also, heat stress can compromise cattle immune systems and jeopardize overall health. In the United States, heat-related losses in the beef and dairy industries can range into the hundreds of millions of dollars annually, says Spiers.

ThermalAid is tied to a website, ThermalNet (ThermalNet.missouri.edu), which the livestock research team has developed to offer extensive information on how to detect and reduce livestock heat stress. Recommendations to alleviate stress and reduce body temperatures include providing additional shade or installing mechanical cooling systems, such as fans or misters. Altering the animals' diet is another alternative.

"The beauty of the app is that over time we'll collect information from producers for a large database that will allow us to make even better predictions about how animals will respond to heat stress, not only in Missouri and the Mid-

west but all over the country," says Spiers.

Eventually a global network will be created between producers and heat-stress specialists to provide site-specific recommendations to alleviate the problem, and ultimately reduce costs to the producers and consumers.

"The science of determining heat stress from the environment has been in the literature for decades," Spiers notes. "Extension specialists have long talked about it with their cattle-producer clients. But ThermalAid can now place timely information immediately in their hands."

Record heat levels in Missouri this summer have allowed the researchers to collect additional data to improve the app's usefulness and predictive value. Additional testing is planned for the next two months. Spiers indicates the researchers hope to have ThermalAid available for use by cattle and dairy producers statewide, nationwide and worldwide by late fall.  $\Delta$



**ThermalAid screenshots.**

Photo credit: Jessica Salmond



**Don Spiers demonstrates the ThermalAid smartphone app.**

Photo credit: Jessica Salmond