

Researchers studying link between climate change and cattle nutritional stress

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Kansas State University's Joseph Craine, research assistant professor in the Division of Biology, and KC Olson, associate professor in animal sciences and industry, have teamed up with some other scientists from across the United States to look into the possible effects of climate change on cattle nutrition.

Comparing grasslands and pastureland in different regions in the U.S., the study, published in [Global Change Biology](#), discusses data from more than 21,000 different fecal samples collected during a 14-year period and analyzed at the Texas A&M University Grazingland Animal Nutrition Lab for nutritional content.

"Owing to the complex interactions among climate, plants, [cattle](#) grazing and land management practices, the impacts of climate change on cattle have been hard to predict," said Craine, principal investigator for the project.

The lab measured the amount of crude protein and digestible organic matter retained by cattle in the different regions. The pattern of forage quality observed across regions suggests that a warmer climate would limit protein availability to grazing animals, Craine said.

"This study assumes nothing about patterns of future climate change; it's just a what if," Olson said. "What if there was significant atmosphere enrichment of carbon dioxide? What would it likely do to plant phenology? If there is atmospheric carbon dioxide enrichment, the

length of time between when a plant begins to grow and when it reaches physiological maturity may be condensed."

Currently, cattle obtain more than 80 percent of their energy from rangeland, pastureland and other sources of roughage. With projected scenarios of climate warming, plant protein concentrations will diminish in the future. If weight gain isn't to drop, ranchers are likely going to have to manage their herds differently or provide supplemental protein, Craine said.

Any future increases in precipitation would be unlikely to compensate for the declines in forage quality that accompany projected temperature increases. As a result, cattle are likely to experience greater nutritional stress in the future if these geographic patterns hold as a actual example of future climates, Craine said.

"The trickle-down to the average person is essentially thinking ahead of time of what the consequences are going to be for the [climate change](#) scenarios that we are looking at and how ranchers are going to change management practices," Craine said.

"In my opinion these are fully manageable changes," Olson said. "They are small, and being prepared just in case it does happen will allow us to adapt our management to what will essentially be a shorter window of high-quality grazing."

Source: Kansas State University ([news](#) : [web](#))

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