

Range cow weight loss linked to seasonal diabetes

NEW MEXICO STATE UNIVERSITY

LAS CRUCES — An estimated 16 million Americans have type 2 diabetes, and about 6 million of them don't even know it. Now, New Mexico State University scientists have unexpectedly found that range cows can become seasonally diabetic too.

Instead of putting themselves at risk with unhealthy diets and little exercise, these cattle develop symptoms during the early spring when there's little to eat but cracking dry, dormant grasses.

As the summer range greens up, the seasonal effect fades along with the cow's diabetes symptoms, which include weight loss and delays in conceiving calves. To head off this pricey diabetic tendency, NMSU researchers have developed and patented a new feed supplement packed with protein and a beneficial, high-calorie chemical additive called calcium propionate.

Calcium propionate is already widely used in the dairy industry to treat ketosis, a condition that causes the cows to burn a large amount of fat in response to milk production after calving. Calcium propionate is also used in breads as a preservative, since it slows mold growth.

"We now know that calcium propionate enhances energy

metabolism," said Mark Petersen, a range animal nutritionist with NMSU's animal science department. "It will make cows more efficient when grazing dormant winter forage."

The new supplement should allow affected cows, primarily 2- and 3-year-olds, to start the reproductive cycle sooner, get pregnant on time and avoid having to leave the herd because they can't conceive, he said.

"In regard to our environment, we expect a lot of these cows here in New Mexico," Petersen said. "They have met our production goal, which ideally is having a calf every year on the same day each year."

Ranchers have only a short period to get a cow ready to be rebred, said Richard Waterman, who recently completed his animal science doctorate at NMSU and did much of the study's fieldwork. "After cows calve, we need to have them begin reproductive cycling in 60 days to get them pregnant on time," he said. "By supplying calcium propionate, we were able to reduce that 60 day interval by about nine days."

That nine-day reduction is critical for range cows, Waterman said. The sooner producers can get them to breed back after calving, the better they can insure their productivity and longevity within the herd.



New Mexico State University graduate student Richard Waterman, left, and range animal nutritionist Mark Petersen examine a recently developed and patented cattle supplement loaded with protein and a high-calorie ingredient called calcium propionate. NMSU's new range cubes will provide a boost for cows grazing dry winter forage.

One drawback with the calcium propionate fortified supplement is the added cost of \$10 per cow. NMSU researchers are studying ways to reduce the expense, looking at different levels of calcium propionate to determine whether it's neces-

sary to increase the amount to get a substantial benefit or whether a smaller amount will suffice.

Young cows often have difficulties in the spring because they're grazing dormant vegetation, while under stress of

calving and lactation. During most of the grazing year they're eating dry, brown feed that's low in protein and nutrients, he said.

As the drop-off in feed quality occurs, diabetic characteristics appear, said Rachel Endecott,

another NMSU graduate student working on the project. Just as in humans, type 2 diabetes blocks ability to use insulin which in turn slows the cow energy metabolism. The calcium propionate supplement increases glucose uptake at metabolism.

"As the glucose supply increased, the cows are able gain weight sooner," Endecott said. "If they gain weight fast they'll breed back sooner."

Portions of the research were funded by the New Mexico Agricultural Experiment Station and grants from the U.S. Egg and Poultry Association in Georgia and Iowa-based Kemin Industries, a food, pet food and livestock feed manufacturer.

NMSU's supplement studies using calcium propionate began in 1998, and were conducted on the university's 27,000-acre Corona Range and Livestock Research Center. The working ranch laboratory is located near the center of the state, just east of the village of Corona.

"Many other universities do their research in metabolis buildings. We do it in the field," Petersen said. "These cows live in a situation that is as normal as possible for a grazing range animal in a research setting. This gives us quality data, even if it means having a lot of rain time. And when we get done we can directly apply our results to those people out there trying to make a living."



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