

# USDA nutritionists put beef under glass

BELTSVILLE, Md. — Cattle inside glass isolation chambers are providing new information about how beef cattle of different body types utilize their food, said Gordon Haaland, a research nutritionist with USDA's Agricultural Research Service.

At the recent meeting of the American Society of Animal Science, Haaland reported on four Angus and four Holstein steers kept in air-conditioned chambers for up to fourteen days. Their body functions are electronically measured and their feed rations strictly monitored.

Haaland fed Angus and Holstein steers, weighing 992-1,257 pounds, diets containing either 12 or 15 percent crude protein. He found Angus steers retained more energy in the form of body tissue than Holstein steers. The requirement for maintenance of body weight by Angus steers was lower than that for Holstein steers. Most of the difference was due to increased fat retention by Angus steers.

Digestibility of the feed and its ability to be metabolized, or

converted into useful energy, were not affected by the breed of steers consuming it. However, steers on the higher protein diet converted less calories to body tissue and had increased calorie loss through the urine. The digestibility of the feed and the percent of feed metabolized decreased as the animals ate more feed, Haaland said.

Haaland explained the steers were fed a cracked-corn-based concentrate and corn silage supplemented with soybean meal to bring the protein content to either 12 or 15 percent. These rations were fed at body maintenance (amount of energy intake to maintain body weight) or free choice.

These animals had previously been studied at an earlier stage of maturity, weighing 496-771 pounds, using the same feeding regimen. At that time the digestibility of the feed was increased among Holstein steers when protein content was increased from 12 to 15 percent. By contrast, among Angus steers, increasing the

protein content by the same amount did not increase its digestibility.

However, in the present study, digestibility did not increase for either breed as the protein content of the feed was increased. Haaland attributes this to the fact that at this later maturity level the Holstein steers did not convert their energy intake to lean meat as they had done earlier. He commented this further demonstrates the need to relate feeding schedules to conformation and maturity of beef cattle.

Haaland said that, in these experiments, the steer is considered as a factory that both uses and stores energy. Food (energy) is the raw material used by this factory to produce protein or fat (both represent tissue energy). Excretion in various forms — respiratory products, urine, feces, methane gas, and heat produced by steers — are all forms of energy which are the waste products of this factory.

He said measurement of energy utilized, lost and retained is an

efficient way of determining how a steer utilizes its energy intake. It is far more reliable, he said, than measuring weight gain, which does not differentiate between meat, bone, and liquid weight.

Henry Tyrrell, a colleague of Haaland at the Ruminant Nutrition Laboratory in Beltsville, Md., said the information gained in these experiments will help cattle producers formulate more economical feeding schedules to produce cattle of a desired weight and grade.

## Conservationist urges cover cropping

LEBANON — A mid-August seeding of winter rye will reduce soil loss from cornfields over winter, says Clair Gerberich, manager, Lebanon County Conservation District.

Winter rye grain aerial seeded over standing corn during middle to late August should produce a nearly solid green cover within a

few weeks. This will help retain topsoil over winter and give good support to harvesting equipment. In addition this winter rye produces a large fibrous root system that will improve soil tilth. Next spring the rye can be controlled with herbicide and corn can be no-till planted into this cover.

Without a good cover crop on the bare soil over winter severe erosion can occur, notes Gerberich. Annual topsoil losses of 10 to 12 tons per acre are common. Conservationists estimate the value of this top soil loss which includes fertilizer, lime, herbicides, and pesticides can run as high as \$75 per acre per year.

12  
7 1/2

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