



Beef Logic

by Bob Long

Ionophores improve feed conversion

A group of antibiotics known as ionophores are widely used in beef cattle diets to improve feed efficiency. This beneficial effect must be considered one of the most important discoveries in ruminant nutrition.

Monogastric or single stomached animals, such as humans and swine, digest soluble carbohydrates in the small intestine and absorb them as simple sugars (glucose). Ruminants, animals with four-compartment stomachs such as cattle, sheep and deer, digest fiber and soluble carbohydrates by bacterial fermentation producing the volatile fatty acids acetic, propionic and butyric. Of these three acids propionic is more efficiently metabolized. Therefore, any increase in the amount of propionic acid as compared to acetic and butyric makes more energy available for growth and/or fattening.

Fortunately, the addition of ionophores to the diet of cattle causes an increase in the proportion of propionic acid produced, thereby saving energy and improving feed conversion.

Cattle respond differently to these drugs depending upon the type of feed being consumed. When ionophores are fed to cattle on a high energy, concentrate diet, feed consumption goes down but rate of gain remains essentially the same resulting in improved efficiency. However, when ionophores are added to diets containing a high percentage of roughage (whether pasture, hay or silage) the cattle continue to consume the same amount of feed but show an increase in rate of gain which also results in improved efficiency. This difference in response is explained as follows:

Cattle can handle only a certain amount of energy per day, depending upon size and rate of metabolism. This amount is termed the "energy ceiling" and cattle eat until reaching this energy ceiling or until the digestive tract is full—whichever comes first. Steers receiving a full feed of a high energy diet will reduce consumption when ionophores are added because the drug

releases more energy per unit of feed, but they will continue to gain at the same rate.

Cattle on a high roughage diet, which is low in energy, reach capacity before the energy ceiling. When an ionophore is added the cattle continue to eat to capacity, but more energy is released and the rate of gain goes up. In either case, feed efficiency is improved.

Ionophores most commonly used are monensin (trade name Rumensin) and lasalocid (trade name Bovdtec). These materials are almost universally used throughout the cattle feeding industry where feed conversion is so important. Feeders expect an increase in feed efficiency of 8 to 10 percent.

In feedyard situations it is a simple matter to add ionophores to the complete mixed diets, thereby guaranteeing the proper daily intake of the drug. However, stocker programs using primarily pasture and hay can use these feed additives only by incorporating them into a grain or protein supplement which means extra labor and expense. Cattle on these high roughage diets would be expected to gain 8 to 10 percent faster when receiving an ionophore.

Ionophores were first used in the poultry industry to control coccidiosis. It's no surprise that Rumensin and Bovatec not only improve feed conversion but also control coccidiosis in feedlot cattle.

A further advantage of Rumensin and Bovatec is the reduction in the production of lactic acid in cattle being started on high concentrate diets. This protection against lactic acidosis allows cattle to be brought on full feed more quickly, thereby shortening the feeding period slightly.

There are necessary precautions in the use of ionophores. As is the case with all feed additives, it's important that the manufacturer's recommendations be followed carefully and that the drug be uniformly mixed throughout the feed in both complete diets and supplements.

Rumensin and Bovatec are toxic to both horses and swine, so great care must be taken to ensure feed intended for horses and pigs is not contaminated by these drugs or death can result.



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Our Beef Improvement section has been expanded to include more information for today's performance-minded breeder. Both "Beef Logic" by Bob Long and the "What's Your Beef?" columns serve as a forum for Angus breeders and industry experts to express their opinions on current issues and topics of breed improvement and performance programs.

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WHAT'S YOUR BEEF?

