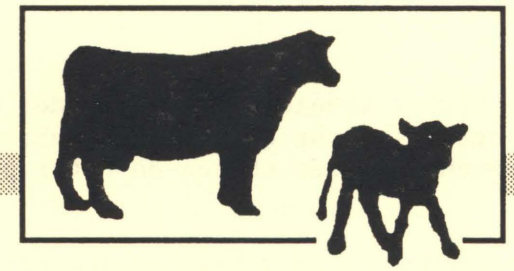
Virginia Cooperative Extension
Virginia Tech • Virginia State

REPRINTED 1992

Dairy

PUBLICATION 404-103



# Ionophores for Dairy Heifers

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Average age at first calving in Virginia is 29 months for DHI herds. This is well above the recommended age of 24 to 26 months considered to be optimal under most conditions. There are many reasons for this, but probably the main factor is reduced weight gains due to improper feeding. Generally, 1.4 to 1.8 lbs/day gain should be adequate for larger breeds and 1.0 to 1.4 lbs/day for smaller breeds.

There is no substitute for good feed and nutritional management when it comes to getting heifers to grow at a satisfactory rate. However, ionophores have been approved for use with dairy heifers that can improve weight gains by increasing utilization of dietary energy. These feed additives are monensin (marketed as Rumensin) and lasalocid (marketed as Bovatec), products initially used with beef cattle. Monensin has been approved for heifers 400 lbs and above, but lasalocid does not have this restriction. Neither are approved for lactating cows. Best results have been with forages of good to excellent quality. Ionophores will not promote acceptable gains on low-quality forages.

## *What are Ionophores?*

Both monensin and lasalocid are classified as carboxylic ionophore antibiotics. Ruminal effects of ionophores have been studied in detail in beef cattle. Basically what occurs is a shift in the rumen microbial population so that more propionic acid is produced relative to acetic acid. This shift results in an increase in the efficiency of energy used by the animal. Also, there is some information indicating there is protein-sparing effect in the rumen which results in more dietary protein reaching the lower intestine. Under normal conditions, this is a beneficial process. Other effects are control of coccidia (a source of infection) and bloat, and a reduction of face and horn fly larvae in feces. Since lasalocid does not have a minimum weight at which it can be used, control of coccidia in young calves is possible.

## *Precautions and Recommendations*

Ionophores should not be fed to lactating cows because the shift in the volatile fatty acids (acetic and propionic acids) will reduce fat test. It is possible to feed up to calving, but should be discontinued at this time. Also, do not feed ionophores to horses because they can be fatal.

A producer is not able to buy ionophores in pure form; it must be mixed with another material. Some of the products available containing ionophores are salt-mineral mixes, protein supplements, and grain mixes. Recommendations are to feed monensin at the rate of 50 to 200 milligrams per animal per day or 60 to 200 milligrams for

lasalocid. Generally, the higher levels are recommended when forages are good to excellent quality. If forages are poor quality, ionophores will not be as effective and lower amounts are recommended. Ionophores do not replace good feeds and management.

Toxicity studies have been conducted to determine the effects of large doses on growing animals. At levels above 1000 milligrams per day, some deaths may result. This is greater than five times the maximum recommended dose. Lasalocid does appear to be less toxic than monensin. When supplementing, it is best to include in at least one lb of feed. During the first five days, 100 milligrams should be fed to gradually adapt animals. After this time, 200 milligrams can be fed. Danger of toxicity is greatest immediately after first exposure. For reference, 1 gram equals 1000 milligrams and 454 grams equals a lb. Therefore, 200 milligrams equals 0.2 grams and equals 0.00044 lbs. To supply 200 milligrams in 1 lb of feed, 0.88 lbs/ton would be needed. To supply in 2 lbs of feed, only half this amount (0.44 lb/ton) would be needed. Make sure proper amounts are used because too little will be ineffective and too much can be toxic. Feeding every other day at 400 milligrams per feeding provides the same benefit as 200 milligrams fed every day.

Heifers reared in confinement usually have higher rates of gain, particularly if corn or small grain silage serves as the base of the ration. Indications are that heifers gaining more than two lb per day prior to 10 months of age may deposit excessive fat in the developing mammary gland. This can result in lower production during first and later lactations. Take care that heifers don't become too fat by monitoring growth and body condition. It may be necessary to reduce the amount of grain fed in certain instances to keep daily gain from being excessive, especially before puberty.

## *Costs and Returns*

The expense of supplementing ionophores is relatively small. Generally, it will cost one to two cents per heifer per day or 30 to 60 cents per month. The expected returns would be 0.1 to 0.2 lb per heifer per day increase in gain. As a result, heifers should cycle at a younger age (animals tend to reach puberty at a certain body weight rather than age) and, consequently, be younger at breeding and first calving. In one Pennsylvania trial with Holsteins, monensin reduced the age at puberty by 38 days. There are several ways to calculate the economic benefits, but the most obvious and easily figured is a reduction in feed costs based on the number of days heifers do not have to be maintained in an unproductive state. If age at first calving is reduced by 30 days and feed costs are one dollar per day, a savings of 30 dollars would be realized at a cost of 5 to 11 dollars (assuming 18 months of feeding). Added income from milk produced for those 30 days can also be credited to feeding ionophores to the heifers.

Ionophores are not a cure-all for poor heifer management, but can be used effectively as an aid in getting heifers bred at a younger age. The best way to supplement is to include in a concentrate mix, but free-choice salt-mineral mixes are available for animals on pasture and not receiving grain. When feeding in this way, periodic checks on supplement used are necessary to be sure cattle are consuming 200 milligrams per day.

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