

# CANADIAN ETV PROGRAM VERIFIED

## Rumensin®

Technology Fact Sheet for Elanco, Division Eli Lilly Canada Inc.



### Performance Claim

The specific claims that have been verified are as follows:

- 1) When Rumensin® is administered to cattle at a level of 24 ppm, methane gas emissions are reduced by 20%.
- 2) When Rumensin® is administered to cattle at a level of 335 mg/day, fecal nitrogen levels are reduced by 20% in the post-calving (i.e., lactating) period.

### Performance Conditions

The nature of testing used to demonstrate the performance claims was of a non-standard nature (i.e., was conducted according to research and development experimental design). The cattle tested were maintained under research conditions typical for commercial dairy herd production. Researchers either orally administered the Rumensin® in controlled release capsules to cattle, or added the premix formulation of Rumensin® directly to the cattle feed.

### Technology Description

Rumensin® is used extensively in animal agriculture worldwide to improve feed efficiency and to control Coccidiosis (a parasitic intestinal infection). When administered orally to cattle, Rumensin improves feed efficiency by altering the digestive process. Specifically, Rumensin enhances the natural process of fermentation in the rumen. Rumensin acts on rumen microorganisms in a manner that enhances the production of propionic acid and reduces the production of methane, resulting in a higher recovery of dietary energy in a form usable to cattle. In addition, Rumensin reduces the microbial breakdown of dietary protein (nitrogen) and the resulting production of ammonia within the rumen. This increases the amount of dietary protein that reaches the intestine where it can be digested, absorbed and utilized by the animal. The net impact of these effects on rumen microorganisms is to increase the efficiency of feed utilization, thereby reducing production costs for farmers. In addition to its effects on rumen microorganisms, Rumensin is highly effective in the prevention of a disease-causing protozoa known as coccidia. These organisms cause intestinal infections in cattle that result in diarrhea, decreased productivity and death, particularly in young animals, and can therefore be responsible for significant economic losses to beef and dairy farmers.

### Technology Application

Rumensin® is administered to cattle in two forms: a feed additive premix, which is combined with feed, and a plastic controlled release capsule (Rumensin CRC), administered orally via a specialized administration tool.

Rumensin® premix is administered to beef cattle (steers and heifers) fed in confinement for slaughter at the rate of 33 g/tonne complete feed for improved feed efficiency, to cattle at 22 g/tonne complete feed for prevention of Coccidiosis, to growing cattle (slaughter, stocker and feeder cattle, and beef and dairy replacement heifers) greater than 180 kg at 200 mg/head/day as a medicated supplement for increased weight gain, to lactating dairy cows for reduction of milk fat percentage and for improving feed efficiency of milk protein production at 16 to 24 g/tonne, and to dry and lactating dairy cows for minimizing loss of body during lactation at 8 to 24 g/tonne.

# Environmental Technology Verification

## Technology Application - continued

The Rumensin® CRC contains 32 g/capsule of monensin and delivers approximately 270 mg per day for 120 days in pastured growing cattle and approximately 335 mg per day for 95 days in lactating dairy cattle. It is administered to growing cattle, weighing up to 350 kg, on pasture containing legumes for reducing the incidence of bloat and bloat associated mortality (i.e., excessive gas accumulation in the rumen), for the prevention of subclinical ketosis in lactating dairy cattle, and for the prevention of Coccidiosis in cattle weighing up to 350 kg. Both forms deliver the same active ingredient.

## Verification

The applicant selected a review of existing analytical data, as the basis for the verification. The effects of Rumensin® on rumen microorganisms are directly responsible for the beneficial impacts on the environment that form the basis for this verification: reduced production of methane gas and reduced fecal nitrogen excretion. This effect is well documented both in vivo and in vitro (Bagg, 1997; Schelling, 1984; Sauer et al., 1998). The verification was completed by ESG International Inc. (Guelph, Ontario) using the General Verification Protocol (March, 2000).

## Long Term Effects of Rumensin®

When the Rumensin® performance claim verification was completed the long-term effects of feeding Rumensin on methane reduction had not yet been fully investigated. A question has been posed whether the effect of Rumensin will be persistent in methane reduction. As a result, a study was conducted at the Elora Dairy Research Centre, University of Guelph (Guelph, ON, Canada). The objective of the study was to determine effect of six months of dietary supplementation of Rumensin (24 mg Rumensin Premix/kg of dry matter) on methane emissions from lactating Holstein dairy cows. The results suggested that methane reduction in lactating dairy cows was persistent up to six months, i.e. the duration of the study (Odongo et al. 2007). The study has been published in the Journal of Dairy Science Vol 90. No. 4, 2007.

## What is the Canadian ETV Program?

The Canadian Environmental Technology Verification (ETV) Program is delivered by GLOBE Performance Solutions under a license agreement from Environment Canada. The Canadian ETV Program is designed to support Canada's environment industry by providing credible and independent verification of technology performance claims.

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