

Produce Beef, Not Methane!

By Pete Greuel, Ph.D.

Ruminants such as beef and dairy cattle contain a large number of microorganisms within their rumen that perform various functions. These “bugs” have evolved over time and some have formed a symbiotic relationship with the host. Others, however, exist as a detriment to the host animal. For example, most protozoa can be thought of as parasitic. They consume beneficial bacteria and nutrients and provide nothing of value in return. Additionally, some protozoa work with other bugs in the rumen (methanogens) to produce methane.

Methane that is produced in the rumen is typically eructated out and escapes into the atmosphere. This is non-desirable for two main reasons. First, methane produced in the rumen is a direct loss of feed to the animal and this costs the feeder dearly (poor feed efficiency). The second reason is that methane is considered one of the worst greenhouse gases as it is quite effective in trapping heat in the atmosphere; it is roughly 30 times greater in this ability than carbon dioxide.

On average there is about 27% methane in the rumen gas of an animal. This is a large percentage and second only to carbon dioxide (approx. 65%). When methane is produced, since it is a gas, it can also contribute to bloating and high sidedness in beef and dairy cattle.



Less Methane



More Beef



So what can a feeder do to reduce the amount of methane being produced by cattle? One way to accomplish this is to reduce the number of protozoa in the host animal. A recent review paper (of over 170 independently published research papers) by Charles Newbold, et. al. looked at this and concluded that for feeding beef and dairy cattle “Elimination of the ciliate protozoa increases microbial protein supply by up to 30% and reduces methane production by up to 11%”.

Since protozoa are involved in the production of a large amount of the methane produced in the rumen, reducing the number of protozoa causes the amount of methane produced to go down. The bottom line is that if you reduce protozoa, you reduce methane, if you reduce methane the animal will perform better.

With reducing protozoa in the animal being the goal, how can this be accomplished? Saponins and other compounds that are incorporated into

SarTec’s SarStart products have been shown to kill protozoa. Numerous researchers have documented the effects of specific saponins on protozoa. It is thought that these compounds form irreversible complexes with the cell walls of protozoa and tear them apart (lysis), causing the protozoa to die.

A ruminant functions well without any protozoa, in fact they are born without protozoa and only acquire them later in life, similar to environmental infections and parasites. Reducing protozoa in the host animal has other benefits on top of methane reduction and improved feed efficiency, including: improved rumen bacteria quality and quantity, a more desirable VFA profile, decreased hosting of pathogens by protozoa, reduced digestive issues, improved starch digestion and less fecal starch.

SarTec’s most recent patent, titled Compositions and Methods for Mitigating Methanogenesis in Animals, has been approved and is set to

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issue soon. This patent protects an invention **SarTec** developed for feeding additives to animals to reduce methane production and thereby increase feed efficiency.

In order to meet the needs of different feedlots and dairies, we have developed a group of **SarStart Liquid (LSC)** and **SarStart dry (DSC)** feed additives. Please feel free to contact your local representative or our main office (support@sartec.com or 800-472-7832) to determine which product is right for you.

SarStart products can be added in a number of ways to the ration, through a micro machine or supplement; or through our new **SarBatch TMR** system which has been developed to automatically add any **SarStart** liquid product, including **SarStart** drench products, directly to your mixer, feed truck or batch box. With a **SarBatch TMR** system you can also: automatically add water to the TMR if desired for inventory gain and ration consistency; start the system remotely with a simple push button or fully control and program each ration from a tablet, PC or from the unit's touchscreen; and control all operational data and view it on any handheld device or PC through the **SarTec App**.



References:

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- *Methanogens: Methane Producers of the Rumen and Mitigation Strategies*, Sarah Hook et. al., *Archaea*, Volume 2010, Article ID 945785, <http://dx.doi.org/10.1155/2010/945785>
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- *Actual and Potential Applications of Yucca Schidigera and Quillaja Saponaria Saponins in Human and Animal Nutrition*, Peter R. Cheeke, *Journal of Animal Science* 200, 77:1-10. <http://www.journalofanimalscience.org/content/77/E-Suppl/1.9>

SarTec Featured Employee: Nadine Garcia

This issue's featured employee is Nadine Garcia. Nadine obtained her degree in Computer Engineering from the University of Minnesota and has been working at **SarTec Corporation** for almost three years.

Nadine is a Computer Specialist at **SarTec Corporation** and some of her accomplishments here include the development of **SarTec's** iPhone, Adroid and PC Apps. The development and refining of **SarTec's SarBatch TMR** hardware and software, and the development of **SarTec's SarTime** equipment for measuring the residence time of grain in a steam chest.

Nadine enjoys spending time with her parents and two sisters and is an avid runner competing in road races and training throughout the year. Nadine also enjoys working on logic puzzles, particularly jigsaw puzzles, reading and listening to podcasts.

Thank you Nadine for all you do for SarTec!



SarTec® Corporation is a family owned and operated business located in Anoka, MN. Established in 1983, our mission is to provide high quality, natural products and service to the agricultural industry. From our equipment to our products to our personnel, we have a number of ways to help you best reach your goals. **SarTec** now offers different types of **SarStart Dry (DSC)** and **SarStart Liquid (LSC)** additives. These products are customized to fit your feeding needs and allow you to pay for only what you need. Please visit us on the web at sartec.com or call 800-472-7832 or email support@sartec.com for additional information.

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