



Industry Perspectives Video: How Can We Better Use Feed Enzymes to Support Ruminants?

Host	<i>Ollie Theocharous, Head of Feedinfo Perspectives Content</i>
Guests	<i>Dawn Overby, Global Segment Manager, Danisco Animal Nutrition (IFF)</i>
	<i>Dr. Fred Owens, Emeritus Professor of Animal Science, Oklahoma State University</i>
Length	10min 59sec

Ollie Theocharous (0:12)

Hello and welcome to this video on how we can better utilise enzymes to support ruminants. I am Ollie Theocharous, Head of Perspective Content for Feedinfo.

Today in this Feedinfo video, which is supported by Danisco Animal Nutrition, we are speaking to two experts about this challenge. So, we have Dawn Overby, who is the Global Segment Manager from Danisco Animal Nutrition, which is now part of IFF. And Fred Owens, Emeritus Professor of Animal Science at Oklahoma State University and we're going to be talking about this interesting issue today.

We know that used effectively animal nutrition solutions can save producers a substantial amount of money. So today, we're going to learn more about the role ruminant enzyme products can play in this; that hopefully lead to some of those economic gains. So welcome, Dawn and Fred, thank you for joining me today. Can you both start by just telling us a bit about yourselves and your roles? Dawn, we'll start with you, please. Tell us a bit about yourself and your position?

Dawn Overby (1:19)

Absolutely. Thanks Ollie. My name is Dawn Overby, and I am the Global Segment Manager at Danisco Animal Nutrition, which is now part of IFF. And I have been working in the animal production industry for the last seven years, with the last several being focused specifically on ruminants. And my role is really to bring together the field experience with our science and technology in order to bring innovative solutions to some of the industry's toughest challenges.

Ollie Theocharous (1:48)

Fantastic. So, very well placed to offer your thoughts on this subject today. And Fred, can you just tell us a bit about yourself, please?



Dr. Fred Owens (1:56)

I'm a nutrition consultant who works with feedlot cattle. I'm a member of the Ruminant Advisory Board of Danisco Animal Nutrition. I conducted research with nutrition of feedlot cattle for over 30 years, first at the University of Illinois, and later at Oklahoma State, primarily with digestion of high concentrate, high starch diets fitted to feedlot cattle.

Ollie Theocharous (2:24)

So, we're going to now dive a bit deeper, and I really want to focus in on the challenge of starch digestion. Dawn, can you tell us why starch digestion is such an important issue for ruminant producers to be thinking about?

Dawn Overby (2:40)

Thank you. We know that cattle are not digesting all of the starch that they consume, even if you are steam flaking. And there is a large gap in the animal's ability to digest that starch between those that are steam flaking and those that are not steam flaking. Starch digestion is really a balancing act where there are several factors that could greatly impact the starch digestion of the animal, including the quality of that starch source, the way that it's processed, and particle size. Starch digestion in ruminants is a global issue and we really feel like it's something that needs to be addressed.

Dr. Fred Owens (3:20)

To increase the extent of starch digestion in the total tract from 90% to nearly 100% most large custom feedlots process their corn or sorghum grain by steam flaking. But steam flaking takes time and manpower, it requires costly equipment and the generation of steam for flaking takes fuel. If enzymes added to the diet can increase starch digestibility, the need for and cost of extensive steam flaking can be reduced.

Ollie Theocharous (3:55)

So, thank you for that overview. And, of course, there you mentioned enzymes. Now, in terms of enzymes, we do see a bit of a disparity in terms of the market. We see a huge market in terms of monogastric solutions, but a smaller demand for ruminants. So, Fred, can you tell us a bit about why this is the case?

Dr. Fred Owens (4:18)

Well, with non-ruminant animals, the enzymes that are fed pass directly to the stomach and intestines where they will remain active. In contrast, digestion in ruminant animals begins first in the rumen. There bacteria and protozoa will rapidly and extensively digest and inactivate most dietary proteins. And most enzymes, being proteins, then are inactivated. Hence, most dietary enzymes when fed to ruminants have limited value for the animal. So that's why it's important to select exactly the right enzymes that will remain active within the rumen. Dawn, do you have something to add?

Dawn Overby (5:05)

Yeah, thanks Fred. As an industry we need to make the case for using enzymes in ruminants. And as experts in enzyme technology, we really feel that enzymes do have a role to play in ruminant nutrition.

Ollie Theocharous (5:20)

So, Fred, I want to come to you again. Now, can you share with us what sort of problems that enzymes can solve in ruminants that those watching may not be aware of and, also share with us how important a role they can play in livestock farming for ruminants?

Dr. Fred Owens (5:38)

Well, unless the grain is extensively processed prior to feeding, starch digestion from corn or sorghum grain is incomplete. And all the undigested starch is simply excreted and lost. That then will reduce the amount of energy available from the starch, both for ruminal microbes, as well as for the host animal as well. Dawn, do you have something further?

Dawn Overby (6:04)

Yeah, thanks, Fred. Enzymes really help to unlock more energy out of that feed, especially feed that is of poor quality and/or with poorly processed ingredients. And then, as Fred mentioned, more ruminant microbes will allow protein supply to increase for that animal leading to a more favourable nutraceutical state of that animal.

Ollie Theocharous (6:29)



In that case, I want to come back to the issue of starch digestion. What role can enzymes play in addressing this challenge? Fred, will you offer some thoughts on this?

Dr. Fred Owens (6:42)

Well, for complete starch digestion in the rumen, first of all, sugar or starch digesting enzymes are needed. One of these enzymes is called *glucoamylase*. And that appears to be in short supply for ruminal starch digestion. So, if this, and this particular enzyme is added to the diet, and if it survives ruminal attack, it can increase starch digestibility. This then in turn will increase the amount of net energy available from the grain to the host animal and increase the efficiency at which the feed is being used by them.

Ollie Theocharous (7:21)

Dawn, I want to come to you on this next question. I know you work for Danisco Animal Nutrition and I'm aware you have a growing portfolio of ruminant animal nutrition products. So, what are the next steps for your work in the field of ruminant nutrition?

Dawn Overby (7:39)

When we made this strategic decision to focus on ruminants, we really wanted to leverage our science and technology to look at specific solutions for that market. We are committed to investing in ruminants over the long term, and we already have an innovative pipeline of solutions that we're looking forward to help ruminant producers globally. As you know, Ollie, we expanded our global reach with our Omni-Bos line of probiotics recently, and we're looking to continue to expand with our current offerings, as well as to launch new innovative solutions into the market. And now we are excited to bring forward one of these innovative solutions, which is called Bovizyme GA, which allows us to bring our over 40 years of enzyme expertise along with our disciplined scientific approach to help improve starch digestion in beef cattle that are being fed with non-steam flaked starch source.

Ollie Theocharous (8:41)

Let's talk a little bit more about Bovizyme GA, which I know is being launched. Dawn, can you share a bit more about how the product works, and why it's useful in offering a solution to the problem of starch digestion?



Dawn Overby (8:54)

Yeah, Bovizyme GA is a *glucoamylase* enzyme that was selected out of hundreds of candidates because of its ability to work well in the rumen. Dr. Owens, can you describe some of the experiments?

Dr. Fred Owens (9:09)

Well, really the experiments conducted with ruminants to date have indicated that the addition of this Bovizyme GA to the diet will increase starch digestibility and decrease the amount of feed needed for the growth of growing finishing cattle. Thus, this product appears to be active in the digestive tract, increasing the availability of energy from corn grain, and potentially should reduce the need for, and the cost of, extensive processing of the corn grain by steam flaking.

Dawn Overby (9:47)

Yeah, and we are planning to launch first in the US later this year with non-steam flakers and we have been partnering with several beef nutritionist consultants in our target launch area to help bring our science and technology around Bovizyme GA with their specific real world, farm experience. And that's a partnership that we're looking to expand as we go forward because we believe that it's critical in helping to improve starch digestibility in ruminants.

Ollie Theocharous (10:19)

Fantastic. Thank you for giving us that overview. I think this is clearly an issue that needs some attention. And it's great to hear, there are solutions out there. And I hope those watching now have a better understanding of where enzymes can really play a role in supporting some of these challenges that we do face in ruminant animal husbandry. So, thank you very much to Dawn and to Fred for your insights today into this exciting area. And thank you to everyone for watching. We hope you join us for future videos from Feedinfo.

----- END -----