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"Forages and Farm Feeds For the Future"

Protein in Alka Products

In recent times there have been a number of questions about how the protein in Home n' Dry pellets is made up and used. There is obviously confusion, and in some cases misinformation and untruths, out at farm level. The purpose of this paper is to answer these issues.

What are the pellets made of?

At the outset extensive trial work was undertaken to establish the best method of releasing the required amount of ammonia from the smallest amount of raw material. The solution worked out at a bit less than 50% Urea a bit more than 50% Whole Soya Bean. There is a very small percentage of other feed ingredients to stabilise the pellet.

So Urea preserves the crop?

Not exactly. When using Home n' Dry the urea is ENTIRELY broken down to ammonia, which is the preservative, by enzyme action. Ammonia destroys microbes, particularly moulds, and mycotoxins and, in effect, sterilises the crop. The ammonia also reacts with lignin in plant cell walls to enhance digestibility. The ammonia is Alkaline giving the high pH to counter acidity in the rumen after feeding. Eventually further reaction with water occurs leaving behind ammonium salts, mainly Ammonium Bicarbonate.

THERE IS NEVER ANY UREA IN A CLAMP OF ALKALAGE OR ALKAGRAIN.

(In fact urea whole crop and urea moist grain treatment relies on fermentation to produce acid to breakdown the urea. There is OFTEN residual urea left in these materials and urea application rate is much higher.)

So how can the pellets be 146% protein?

All feeds and forages are reported on the basis of Crude Protein as this can be analysed at low cost. Crude Protein is simply the Nitrogen content of a material multiplied by 6.25. (6.25 represents the average proportion of nitrogen in amino acids, the building blocks of protein). All feed materials contain a mix of true protein (made up of amino acids) and nitrogen components.

Nevertheless for ruminant animals – cattle and sheep – this none protein nitrogen can be utilised in the rumen by the microbes as they grow to produce microbial protein on which the animal exists. That is why they can live on grass and pigs and chickens can't. In fact the majority of protein in grass and grass silage is in the form of none protein nitrogen as well. Alkalage is often LOWER in none protein nitrogen than grass silage.

How do ruminants utilise this protein then?

Given a properly functioning rumen the microbial protein from rumen bacteria provides between 60% and 90% of the animals protein. In fact much true protein is broken down to none protein nitrogen and ammonia before being captured by the rumen microbes. It is possible to reduce rumen function by not providing enough rumen available protein.

The ammonium salts in the Alkalage and Alkagrain only balance the shortage of rumen degradable protein in the crop itself. In many low grass diets additional urea is often fed



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to balance the rest of the diet. Improving rumen function when feeding Alkalage, through the buffering effect and improved forage intake, **INCREASES** the requirement for rumen degradable protein.

Your telling me that Alkalage has **BETTER** balanced protein than Grass Silage?

In a way, yes, this is true! A Grass Silage at 15% protein is likely to be about 50% True Protein and about 30% By Pass Protein. Alkalage at 15% protein is likely to be made up of 5 % protein from Home n' Dry (Remember some of this is Soya) and 10% protein from the mature cereals, which are very high % True Protein so that the Alkalage will be about 60% True Protein and about 35% By Pass Protein.

Of course in Grazed Grass the Protein level might be 23% of which as little as 35% could be True Protein with minimal levels of By Pass Protein. Alkalage and Alkagrain are excellent supplements to grazed grass.

Similarly when we look at Alkagrain made from mature grain the background Protein in the grain is actually of low solubility and high in by pass protein. Therefore the Ammonium salts balance that with the animals requirements giving protein balance similar to, say, distillers dark grains.

But there are horror stories about feeding urea alongside grass and grass silage!

Remember in Alkalage and Alkagrain you will **NEVER** feed urea because it is all converted to Ammonia. Urea alone may unbalance the diet and produce excess levels of Degradable protein. However in Alkalage and Alkagrain the ammonium salts only serve to balance the **HIGH** quality protein in the cereal crop itself.

So how much Alkalage and Alkagrain can I safely feed?

That depends on the other ration components. Alkalage and Alkagrain are very safe feeds and can represent up to 100% of the diet depending on performance levels etc. Ideally for high production and younger animals high feed rates are best suited to diets that contain good levels of sugar (Molasses, lactose, fodder beet, sugar beet, grazed grass etc)

Typical effective feed rates for dairy cows are 5 to 10 kg of Alkalage and 2 to 6 kg of Alkagrain.

*One final point is that when analysing Alkalage and Alkagrain it is vital to ensure that the laboratory uses a wet chemistry or direct measurement technique for protein **NOT** rapid test grain analysis or NIR. For more details contacts us.*

We are dedicated to helping customers achieve healthy and effective diets. You or your nutritionist can get help on these matters by contacting our nutrition specialists as follows.

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