

Silage Analysis – Active Fibre

To maintain proper rumen function and optimise diet digestion and animal performance it is essential that ruminant rations contain sufficient long fibre to form a good floating raft in the rumen. It is this floating raft that governs the rate of passage of feed out of the rumen and helps maintain rumen pH by stimulating rumination and saliva production. But what do we mean by long fibre? By definition long fibre is any fibrous particle in the rumen that is longer than 3.2mm and therefore too large to pass out of the rumen into the omasum. Previous attempts to measure the quantity of long fibre in rations have been complicated by the fact that the quantity of long fibre available in the trough may be very different to the quantity of long fibre actually swallowed by the animal and therefore present in the rumen. This is because cows chew each mouthful until it is easily swallowed and it is therefore the structural strength of the long fibre as well as the quantity in the ration that determines how much long fibre will be present in the rumen.

To predict this availability of long fibre in the rumen, recent research looked at measuring the particle size of silages before and after being chopped in an electric blender to simulate chewing. The results showed that not only was the proportion of long fibre significantly reduced after 'chewing' but the quantity of chewed long fibre could be predicted from the Dry Matter (DM) and quantity of Neutral Detergent Fibre (NDF) and Acid Detergent Fibre (ADF) present in the silage.

The predicted availability of chewed long fibre is referred to as Active Fibre and can be found on all silage analysis from Bioparametrics. Although physically assessing the structure of the ration and the condition of the cows and their dung is essential in gauging whether sufficient long fibre is available in a ration, active fibre can be a useful guide to ration structure when formulating or amending diets.

When using Active Fibre in ration formulations, all non-forages are automatically given an active fibre of zero as it is assumed that they will contribute very little, if any, to the structure of the rumen raft. With this in mind, to ensure that the ration contains sufficient long fibre, the overall active fibre content of the ration should be at least 10%. As the active fibre content begins to drop below 10%, digestibility will decline and acidosis may start to become a problem. Conversely, if the active fibre of a ration is too high, say at 25%, then the rate of passage of feed through the rumen will be very slow, dry matter intakes (DMI) will be low and performance and/or body condition could be negatively affected, particularly in high yielding dairy cows.