



FORAGE LAB AUSTRALIA

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FAECAL STARCH ANALYSIS

Faecal starch NIR analysis demonstrates the amount of starch passed through the digestive tract into the faeces without being digested. It is measured as starch % in dung. This value is highly correlated to Total Tract Starch Digestibility (TTSD). Faecal starch helps indicate efficiency of starch utilisation in the diet.

APPLICATION

Faecal Analysis allows you to measure the waste proportion of your diet, measuring what you can't see that is passed on in the manure and to determine how much of the starch is being utilised or, conversely, wasted.

Different factors such as stage in lactation, production, feed base and starch source will all influence overall digestion, and within that starch digestion. Creating a rumen environment for optimal starch fermentation will reduce starch losses. By understanding starch utilisation, we can work to improve the processing and quality of a high cost feed stuff to get the most out of it in a time of rising grain prices where it is critical to focus on efficiencies.

Processing will have an impact on microbial activity from available surface area, of which there are upper and lower limits for different feeds.

Fig 1. Corn silage is a high merit, high cost food source, the corn silage processing score (CSPS) and moisture have a major impact on the digestibility depending on chopping, ensiling and processing. Adjusting rumen passage rate with fibre or adjusting grain processed particle size to allow of adequate fermentation will increase VFA potential.

Faecal starch can range from 3 to 20 percent, where the ideal remaining starch should be below 5 percent and ideally under 3.

Faecal Starch, % DM	Interpretation
< 3 %	Starch digestion is good and there is no need to investigate starch sources.
3 -5 %	TTSD is 93% or better. May have some opportunity to adjust rations or management practices.
> 5 %	Starch digestibility can be improved, individual sources of starch should be investigated.

When grain costs are high the temptation may be to simply reduce starch in diets. Nutritional experience suggests however that simply reducing starch in the diet will not necessarily be a sound economic decision if it costs milk yield. Crucially when grain/starch is expensive we must be extra careful of our processing and starch digestibility to maximise capture of starch and minimise faecal losses.

Nutritionists typically feed between 15 to 26 percent total starch in the DM ration, depending on fermentable carbohydrate type and rate of degradation and stage of lactation.

By improving the utilisation of dietary starch, through diet balancing and identifying the wasted amount, we can gain better and more reliable marginal responses to incremental starch changes either up or downwards. From this we can make more confident and profitable decisions around diet starch levels.

SAMPLING PROCEDURE

Getting the sampling process correct is key to getting quality information back. The samples should be representative of the entire material sampled and the class of stock to be assessed.

1. Collect small amounts of manure in a clean bucket, representative of the herd or group
2. Mix samples thoroughly
3. In a 250ml screw top plastic jar (can be ordered from FLA) take a sample from the bucket, leaving a pocket of air space at the top.
4. Freeze the sample for 24hrs or until frozen solid
5. Place jar in a Ziploc bag and the submission form into an express post bag
6. Express post manure samples on a Monday or Tuesday to ensure it arrives within the week.