

## UNDERSTANDING YOUR FEEDTEST REPORT

Your FeedTest report will contain some or all of the following terms:

**DRY MATTER (DM)** is the amount of feed remaining after the water has been removed. Because the water content of feeds can vary considerably, all analyses are expressed on a dry matter basis.

**MOISTURE** is the amount of water in the feed, varying from about 10% for grains to over 80% for fresh pasture.

**CRUDE PROTEIN (CP)** is the amount of true protein (composed of amino acids) & non-protein nitrogen in the feed. Whilst it is desirable to have a high CP, it can be misleading to use as the sole measure of feed quality.

**DRY MATTER DIGESTIBILITY (DMD)** is the percentage of the dry matter of a feed that can be digested by animals. High quality feeds have a DMD of over 65%, whilst feeds below 55% DMD are of poor quality and will not maintain live weight even if stock have free access to it.

**DRY ORGANIC MATTER DIGESTIBILITY (DOMD)** is the percentage of organic matter in the dry matter of a feed that can be digested by animals. ME is calculated from this value.

**METABOLISABLE ENERGY (ME)** is the feed energy actually used by the animal, calculated from DOMD & expressed as mega joules per kilogram of dry matter (MJ/kg DM). ME is the most important figure on the report. It is used to calculate whether stock are receiving adequate energy for maintenance or production.

**ACID DETERGENT FIBRE (ADF)** estimates the cellulose & lignin content of a feed. It is the least digestible form of fibre in a feed. The lower the ADF, the higher the DMD (and ME).

**NEUTRAL DETERGENT FIBRE (NDF)** estimates the total cell wall content in a feed which is essentially the total fibre content of a feed. This includes hemicellulose, cellulose & lignin. This is the most useful measure of fibre content currently available. Normally the lower the NDF, the more the animal will eat.

**FAT** also termed ether extract, is the amount of fat & fat-soluble components in a feed.

**ASH** is a measure of total inorganic content of a feed. Ash is not digestible by animals.

**WATER SOLUBLE CARBOHYDRATES (WSC)** is a measure of the total soluble sugars which are present in forage. These sugars include glucose, fructose, sucrose & fructans & are almost completely digestible. For export hay, WSC >20% is recommended. For hay intended for horses, WSC < 10% is recommended.

**SUGAR** expressed as total free sugars are typically sweet-tasting carbohydrates found in living tissues. It is the amount of glucose, fructose, lactose, sucrose & maltose present.

**STARCH** is an alpha-linked glucose carbohydrate that is preferentially digested in the small intestine. If starch escapes digestion in the small intestine (which occurs when large amounts of starches are fed at once), it passes through the digestive tract & is fermented in the hind gut. This can lead to lactic acid production & the negative factors associated with it. I.E. Acidosis. Starch is generally low or no existent in leafy forages like hay but high in grains such as wheat, barley, triticale & oats.

**CRUDE FIBRE (CF)** is in the insoluble carbohydrate remaining in the feed. CF is the poorly digested component of a feed. It is made up of cellulose, hemicellulose & some lignin.

**LIGNIN** is indigestible & has no known nutritive value other than to up bulk feed. It is a protective coating on the cellulose-hemicellulose structure of a feed & assists to strengthen cell walls.

**ETHANOL SOLUBLE CARBOHYDRATES (ESC)** is a measure of the simple sugars glucose, fructose, sucrose & a small fraction of fructans. The difference between ESC & WSC is the measure of fructans. Fructans are not soluble in ethanol.

**NON SOLUBLE CARBOHYDRATES (NSC)** is a measure of the available sugar & starches.  $NSC = \text{Starch} + \text{WSC}$ .

**NON FIBRE CARBOHYDRATES (NFC)** is made up of starch, simple sugars & soluble fibre.  $NFC = 100 - (\text{CP} + \text{FAT} + \text{ASH} + \text{NDF})$ .

**NITROGEN FREE EXTRACTS (NFE)** is a calculated value & is made up of primarily readily available carbohydrates such as sugars & starches.  $NFE = 100 - (\text{CP} + \text{FAT} + \text{ASH} + \text{CF})$ . This can also be known simply as carbohydrates.

**RELATIVE FEED VALUE (RFV)** is a prediction of feeding value that combines estimated intake (NDF) & estimated digestibility (ADF) into a single index. RFV is used to evaluate legume hay & often a benchmark of quality when buying or selling lucerne hay.

**TOTAL DIGESTIBLE NUTRIENTS (TDN)** is simply a figure, which indicates the relative energy value of a feed to animals. It is calculated using the known DMD of a product.

**MAFF METABOLISABLE ENERGY (ME)** is another formula for predicting ruminant energy with analysis for this conducting using wet chemistry methods. It was developed by the Ministry of Fisheries & Forestry in England.

**AUSMEAT METABOLISABLE ENERGY (ME)** is another ruminant energy formulation designed specifically for supply into the EU. Directed at feed lot rations, these must meet minimum levels of ME when tested with this particular method.

**ATWATER METABOLISABLE ENERGY (ME)** is a formula used to predict ME for monogastric animals such as dogs, cats & fish. Monogastric animals have a limited ability to digest fibre & non protein nitrogen sources. Dietary starch and amino acids are essential.

## CONVERTING RESULTS FROM "DRY MATTER BASIS (DMB)" TO AN "AS FED" BASIS

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All FeedTest analyses are expressed on a dry matter basis (dmb). This is largely due to the fact that samples are dried out in the lab for accurate analysis. The moisture loss in this process is captured and used to calculate the dry total dry matter & moisture. However, in the paddock, you can't & don't do this, so you will need to calculate the amount of feed supplement to use on an "as fed" basis. AS long as you know the dry matter (DM) value, you can do this quick calculation.

For example, if a sample of oats has an ME of 11 MJ/kg DM, a CP of 9% DMB and a DM content of 90%, the "as fed" values will be:

$$ME = 11 \times 90\% = 10 \text{ MJ/kg as fed}$$

$$CP = 9 \times 90\% = 8\% \text{ CP as fed}$$