

Glossary of Feeding and Nutrition Terms

There are a wide range of terms used when talking about feeding horses. Some cause confusion because they are simply very old and are superseded as our understanding evolves. Trends and fashions also have an impact and some ingredients end up in the spotlight with their reputations unfairly tarnished. The key to dispelling common and sometimes harmful myths is understanding. The good news is, you don't need to be an expert as this guide helps to explain the terms used in feeding and nutrition and dispels some of the myths about commonly used ingredients, all of which have been safely fed to horses for decades and provide a valuable source of nutrients when used appropriately. It is also important to note that ingredients have to be shown to be safe for feed companies to be able to use them and feeds and supplements are carefully formulated using a balance of ingredients appropriate for the type of horse/ pony they are intended for. So read on to find out more about ingredients and the nutrients they provide.

A

Additives: A legislative term to describe technical ingredients included in feeds and supplements to perform a specific function eg vitamins, yeast, antioxidants. Additives would also include substances included to stabilise or preserve the quality of feeds and supplements which have to be fully tested before being approved for use in animal feeds.

Alfalfa: A leguminous plant, also called lucerne. High in slow release energy and protein compared to other high fibre ingredients. Also abundant in calcium.

Amino Acids: The 'building blocks' of protein. They can be split into essential and non-essential amino acids. Essential amino acids cannot be produced by the horse and must be provided by the diet, for example lysine.

Analytical Constituents: The correct legal term for use in statutory statements (labels) on feed bags and supplements. Refers to all the nutrients that are legally required to be declared on the pack.

Antioxidants: Antioxidants help to prevent cell damage caused by free radicals. All living cells, including muscle cells, use oxygen leading to the production of molecules called free radicals. When production of free radicals exceeds antioxidant capacity (oxidative stress), cell damage can occur. Examples of dietary antioxidants include vitamin E, vitamin C and selenium.

Ash: A term used to indicate the total amount of minerals present within a food. Typically expressed as a percentage.

Ad lib: Providing as much as the horse/ pony will eat e.g., feeding hay ad lib.

B

Balancers: A term used to describe nutrient dense feeds (normally pellets), designed to provide a concentrated supply of vitamins, minerals and amino acids. Due to the low feeding rate – typically 500g per day for a 500kg horse – they contribute minimal calories, starch and sugar to the diet, making them ideal for good doers.

Bioavailable: The rate and degree of which a substance can be absorbed and used in the horse's body once it has been consumed.

Biotin: A B-vitamin (B7) that plays an important role in maintaining hoof health. It is also known as 'vitamin H', which comes from the German 'Haar and Haut' meaning hair and skin.

Bran: The fibrous husk from around a grain eg wheat bran, rice bran.

Branched Chain Amino Acids (BCAAs): Of all the essential amino acids, three (leucine, isoleucine and valine) are described as 'branched chain' due to their chemical structure. Branched chain amino acids are involved in protein and muscle synthesis.

Brewer's Yeast: A type of yeast and a good source of B-vitamins.

Body Condition Scoring: A practical method of assessing body fat by eye and by touch using a numerical grading system. The two most commonly used scales are 0-5 and 1-9 but which ever system owners choose use, the important thing is they apply it consistently.

Body Fat Scoring: An alternative name to Body Condition Scoring – used because it is a more accurate description of what is being assessed i.e. the horse's fat coverage.

C

Chaff: chopped fibre made from one or more of the following - straw, alfalfa, grass.

Chelated minerals: Minerals that are bound to another compound such as amino acids to help maximise absorption.

Choke: A condition in which the horse's oesophagus becomes blocked, usually by food.

Claim: A statement made by a company about their product that they have to be able to substantiate. No medicinal claims should be made in relation to feed and supplements which means they shouldn't treat, prevent or cure a disease such as laminitis.

Cobs: A format that is larger than pellets, usually contain fibrous ingredients that are either harder to mill into small enough particles to make pellets or where the producer is trying to maintain more of the fibrous structure.

Colic: A term used to describe signs of abdominal pain rather than a specific disease. Episodes of colic vary from mild cases that resolve with limited treatment to those that may be life threatening and/ or need surgery.

Complementary feed: A feed formulated to be fed alongside forage and water to provide additional calories and/or ensure the horse received a balanced diet.

Complete feed: A feed that can be fed as 100% of the diet. The term 'complete feed' is commonly mistaken to mean any feed containing the vitamins and minerals needed to balance forage.

Compound feed: A mixture of at least two or more feed materials. Also referred to as concentrate or hard feed

Corn: the term used in the USA for maize. See maize for more information.

Cushing's Syndrome: See PPID

D

Digestible Energy (DE): Generally expressed in 'megajoules per kilogram' (MJ/kg), DE is an estimate of the amount of energy or 'calories' available to the horse after the nutrients in feed/ forage have been digested.

Dry Matter (DM): All feeds and forages contain water, the term 'dry matter' is used to describe remaining portion and includes fibre, protein, starches and sugars, fats/ oils, vitamins and minerals. The dry matter content of forage is particularly important, especially for horses and ponies on restricted rations as the water doesn't count towards the horse/ pony's intake. For every kilo of hay weighed out, 100-150g will be water, but haylage may contain up to 50% water!

Diastemas: Abnormal gaps between the teeth in which food can become lodged.

E

Electrolytes: A scientific term for minerals that carry an electrical charge. Electrolytes are involved in many essential processes including the transmission of nerve impulses, muscle contractions (including those that make the heartbeat!), controlling the movement of water around the body and maintaining the body's pH (acidity level). The main electrolytes lost in sweat are sodium, potassium and chloride.

Essential Fatty Acids: Fats the body cannot make and therefore must be provided in the diet. There are two groups, omega-3 and omega-6 fatty acids, both of which are essential to good health.

Equine Metabolic Syndrome (EMS): A collection of risk factors for endocrinopathic (hormone related) laminitis. The key central and consistent feature of EMS is insulin dysregulation (ID). It is now recognised that not all horses and ponies with EMS are obese or overweight.

Equine Gastric Ulcer Syndrome (EGUS): An umbrella term used to describe diseases affecting the stomach lining. It includes both squamous or 'non-glandular' and glandular ulcers.

Equine Squamous Gastric Disease (ESGD): A term used to describe lesions in the squamous region of the stomach. These lesions are commonly referred to as 'non-glandular ulcers'

Equine Glandular Gastric Disease (EGGD): A term used to describe lesions in the glandular region of the stomach. These lesions are commonly described as 'glandular ulcers'

Exertional Rhabdomyolysis Syndrome (ERS): ERS, also known as 'tying up' is an umbrella term for several different conditions affecting the horse's muscles. Horses prone to tying up

can broadly be categorised as one two types: those where susceptibility is linked to an underlying muscle condition such as PSSM1, PSSM2, MFM and RER, and those who do not have an underlying muscle condition. The best feed and management strategies will depend on which condition the owner is dealing with and in some cases, the horse/ pony's breed.

ECS (External Contaminant Substances) -includes substances that are not naturally occurring but are either used as additives for other species or used by humans that could contaminate feed if suitable feed safety practices are not in place e.g. Zilpaterol, Clenbuterol. All are excluded.

Extruded: A form of cooking where the feed ingredients are ground and then injected with steam. Afterwards they are passed through a die which makes them into a crunchy nugget. Extrusion also improves digestibility and will help to limit the risk of digestive upsets.

F

Fast Release Energy - Generally considered as those feeds that are high in cereals, which are digested very quickly in the horse's small intestine.

Fatty Acids: The building blocks of fats and oils. Certain fatty acids are very important for the horse's health and also help promote good skin and coat condition.

FAMOS (Feed Additives, Materials and Other Substances) - Intentionally included ingredients present in feeds, some of which may be screened for by regulatory bodies due to misuse by end users. Low levels of inclusion are either not sufficient to be detected or are accepted not to be examples of misuse.

Fibre: The term fibre describes a group of nutrients called structural carbohydrates. Fibre is broken down into volatile fatty acids (by microbes in the large intestine) which are absorbed into the bloodstream and utilised as a source of energy or 'calories'.

Fibre Blocks: A highly compressed form of fibre which may include other ingredients. The horse has to bite the block to break off pieces of fibre.

Fizzy: A term used to describe a horse or pony prone to excitable behaviour.

Flaxseed: see Linseed.

Forage: A term used to describe fibrous feeds such as grass, hay and haylage. Forage is an essential component of the horse's diet.

Forage Replacer: Feeds that can be fed as a full or partial replacement for grass, hay and haylage. Forage replacers are often described as 'hay replacers'.

Fructan: The 'storage form' of sugar in the majority of UK grasses and in turn, hay and haylage.

Fructo-Oligosaccharides (FOS): A prebiotic derived from vegetable foodstuffs e.g. onions and wheat.

Fully Balanced: A concentrate feed that is formulated to provide all the essential vitamins and minerals a horse needs.

G

Gastric Ulcers: An umbrella term used to describe lesions affecting the stomach lining. See EGUS, ESGD and EGGD for more information.

Gelatinisation: This occurs when cereals are cooked. The heat ruptures the starch molecules, altering the molecular structure and chain length, which increases the surface area thereby increasing the digestibility of the starch.

Glucosamine: A naturally occurring compound found in healthy cartilage. It is often added to the horse's diet to support joint health.

Glycemic Response: The effect that food has on blood sugar (glucose) levels after consumption.

Good doer: a term used to describe horses and ponies that gain or maintain weight easily.

Grain Free: Does not include grains such as oats, barley or maize. Co-products from cereals do not include the whole grains themselves so could be included in feeds that are grain free.

H

Hard Feed: See concentrate feed.

Hay: grass that has been mown and left to dry in the field before being baled and stored for use as animal feed.

Haylage: a fermented forage made when forages are mown, left to wilt for a short period and then baled and wrapped in several layers of plastic. Most commonly contain grass but other forage crops such as alfalfa can be used.

Hay replacer: See Forage Replacer

Heating: a colloquial term used to describe ingredients more likely to cause fizzy or over-excitabile behaviour in horses as opposed to an ingredient that would warm a horse.

Hindgut: A term used to describe the large intestine which is made of three parts: the caecum, large colon and small colon.

I

Insulin: A hormone produced by the pancreas. The release of insulin from the pancreas signals cells, mainly in the muscle and liver, to absorb glucose from the blood.

Insulin Dysregulation (ID): Insulin dysregulation (ID) is an umbrella term used to describe one or more of the following:

- High basal insulin or 'hyperinsulinemia'
- Tissue insulin resistance which is the failure of cells to respond to insulin.
- An exaggerated insulin response to consuming starch and/ or sugar

L

Laminae: the tissues that attach the pedal bone to the hoof wall.

Laminitis: damage or failure to the laminae resulting in pain and lameness.

Legumes: plants that fix nitrogen from the atmosphere and turn it into protein. Includes soya, peas, beans and alfalfa.

Legume hay: hay made from leguminous plants such as alfalfa/ lucerne

Lysine: An essential amino acid which plays a key role in supporting growth, muscle development and topline. Lysine is considered 'the first limiting' amino acid which means it is the one most likely to be deficient in the diet. See *Essential Amino Acids* for more information.

M

Macro-minerals: Minerals that are needed in larger amounts (grams per day). Examples include calcium, phosphorus, magnesium and potassium.

Maize: Also known as corn in the USA. Maize grows best in warmer conditions so is largely sourced from Europe. It is a high starch cereal that is most commonly used at low inclusion levels in higher energy feeds.

Mannan-oligosaccharide (MOS): A prebiotic derived from yeast cell walls.

Metabolism: Chemical processes within the body, examples include producing energy.

Methyl Sulfonyl Methane (MSM): A naturally occurring source of sulphur, which helps maintain healthy cartilage and overall joint health.

Micro minerals: Minerals that are needed in smaller amounts (milligrams per day). Examples include copper, zinc and selenium.

Micro-nutrients: Essential vitamins and minerals that are needed by the body in small amounts.

Molasses: a viscous substance resulting from refining sugarcane or sugar beets into sugar. It helps to ensure consistency of the product and with vitamin and mineral dispersion. It also helps to reduce fine particles and is very palatable to horses.

Mycotoxins: Toxic compounds that are naturally produced by certain types of moulds.

N

Non-Structural Carbohydrate (NSC): Water soluble carbohydrates (WSC) plus starch.

Non-glandular Ulcers: See EGGD

Non-heating: A feed that is less likely to produce an excitability when fed at the recommended amount. Cereal starch is the most common cause of *feed related* excitability. However, it is important to remember that diet is just one of many factors that can affect behaviour.

NOS (Naturally Occurring Substances) - substances that occur naturally in plants that may enter the food and feed supply chain but are prohibited or restricted in competing equines e.g. Caffeine, Morphine. These are divided into NOS or herbal NOS and bear a status of excluded or sensitive.

NOPS (Natural and other prohibited substances): This refers to things that occur naturally in the environment such as wild flowers; external contaminants that can find their way into feeds and ingredients intentionally added but which may be screened for by regulatory bodies due to misuse by end users.

Nutritionally Improved Straw: Straw that has been altered either chemically or through cooking

O

Oatfeed: a cereal co-product, the fibrous husk from around the oat grain. Much lower in starch than the grain itself.

Oil: A source of energy (calories) and essential fatty acids. Gram for gram, oil is approximately 2.5 times higher in energy compared to cereal grains but starch and sugar free.

Oats: A cereal grain. Due to the size and composition of oats they aren't typically cooked before feeding. They may be bruised, rolled or crushed to increase the surface area and help the horse digest them more efficiently.

Omega 3 Fatty Acids: see essential fatty acids

Omega 6 Fatty Acids: see essential fatty acids

P

Protein: Proteins are essential nutrients made up of a chain of amino acids. Depending on the type, proteins have many functions, including playing a key role in growth and the development of muscle and topline.

Pituitary Pars Intermedia Dysfunction (PPID): PPID, also known as 'Cushing's syndrome', is a common endocrine (hormone) condition involving the pituitary gland. In affected horses and ponies, the pars intermedia or 'middle lobe' of the pituitary gland becomes enlarged and produces large amounts of several hormones including adrenocorticotrophic hormone or 'ACTH'.

Poor doer: A term used to describe horses and ponies prone to weight loss.

Postbiotic: Bioactive compounds the microbiota produce when they consume prebiotics. Postbiotics include Volatile Fatty Acids, B Vitamins and peptides, amongst other fermentation products.

Prebiotic: A non-digestible food ingredient that beneficially affects the horse by stimulating the growth and activity of the beneficial microbiota in the digestive system.

Probiotics: A live microbial feed supplement, which beneficially affects the horse by improving the balance of microbes in the digestive system. In horses the only legal probiotic is a live yeast, *Saccharomyces cerevisiae*.

Q

Quality protein: A term used to describe protein sources that supply an appropriate balance of amino acids, especially essential amino acids that can't be produced by the horse and must be provided by the diet.

Quidding: Dropping food from the mouth while chewing, generally the sign of a dental issue.

Quick Release Energy: Starch and sugar are sometimes described as sources of 'quick release energy'. However, it's important to remember that the process of converting nutrients in food into energy is highly complex and horses don't utilise the energy derived from their last meal for the next bout of exercise.

R

Roughage: another name for fibre or materials that are high in fibre.

S

Salt: Usually refers to standard 'table salt', or sodium chloride. Table salt is not recommended for use in working horses, as although it does provide key electrolyte, sodium, it is missing some of the important electrolytes, particularly potassium. see Electrolytes as a broad spectrum alternative.

Slow Release Energy: Fibre and oil are often described as sources of 'slow release energy' due to the relative speed at which they are digested and utilised by the body.

Soya: Soya is an oilseed predominantly grown in South America and the USA. It is used as a source of protein if the meal or the whole bean is used or for it's oil which is rich in omega 6 essential fatty acids

Starch: A non-structural carbohydrate utilised by the body as a source of energy. Whole cereal grains such as barley, oats and maize are the largest source of starch in the diet.

Straights: A collective term for cereals such as oats and barley and other single ingredients such as sugar beet pulp in processed or unprocessed forms.

Straw: The dried, yellow stems of crops such as wheat, used as food or as bedding material.

Supplement: commonly used colloquial term to describe mixtures of feed materials and /or additives for oral feeding in horses, typically given in small amounts (5-200g daily) and intended for specific benefits.

Sugar: A non-structural carbohydrate utilised by the body as a source of energy.

Simple sugars: There are many different types of sugar. The term 'simple sugars' is used to describe those made up of just one or two 'sugar units' including sucrose, glucose and fructose. UK grazing may contain up to 15% simple sugars, the majority of which is sucrose – the same sugar that goes in tea and the main form of sugar in molasses!

T

Topline: A combination of correct exercise and high quality protein in the diet helps to build good muscle tone and thus topline. Topline refers to the muscles along the neck, withers, back and croup of the horse.

Trace elements: See Micro Minerals

Trickle feeding: This is how we describe the fact that horses and ponies are designed to eat little and often.

Tying up: See ERS

V

Vitamins: Organic compounds essential for many aspects of health and well-being. Vitamins are divided into two categories: fat-soluble vitamins (A, D, E & K) and water-soluble vitamins (B-vitamins and vitamin C).

Volatile Fatty Acids (VFAs): Fibre is broken down into volatile fatty acids by microbes in the large intestine. These VFAs are then absorbed into the bloodstream and utilised by the body as a source of energy.

W

Water Soluble Carbohydrates (WSC): commonly described as 'sugar', water soluble carbohydrates are predominantly made up of simple sugars such as sucrose and fructan. Fructan is the 'storage form' of sugar in the majority of UK grasses and in turn, hay and haylage.

Wheat: a cereal grain that supplies starch which is a quick release energy source.

Wheat feed: The outer fibrous husk of wheat.

Wholegrain: The whole cereal grain, including the outer fibrous coating and the inner starchy grain for example, whole oats.

Wrapped hay: a forage that has been wrapped in plastic but is too dry to ferment to create a true haylage. Therefore the nutritional value including pH (acidity) level is comparable to hay.

X,Y,Z

Xanthophylls: A sub-group of yellow pigments that are carotenoids. They perform antioxidant functions in the body.

Yeast: An ingredient which helps enhance fibre digestion by stimulating cellulose-digesting bacteria.