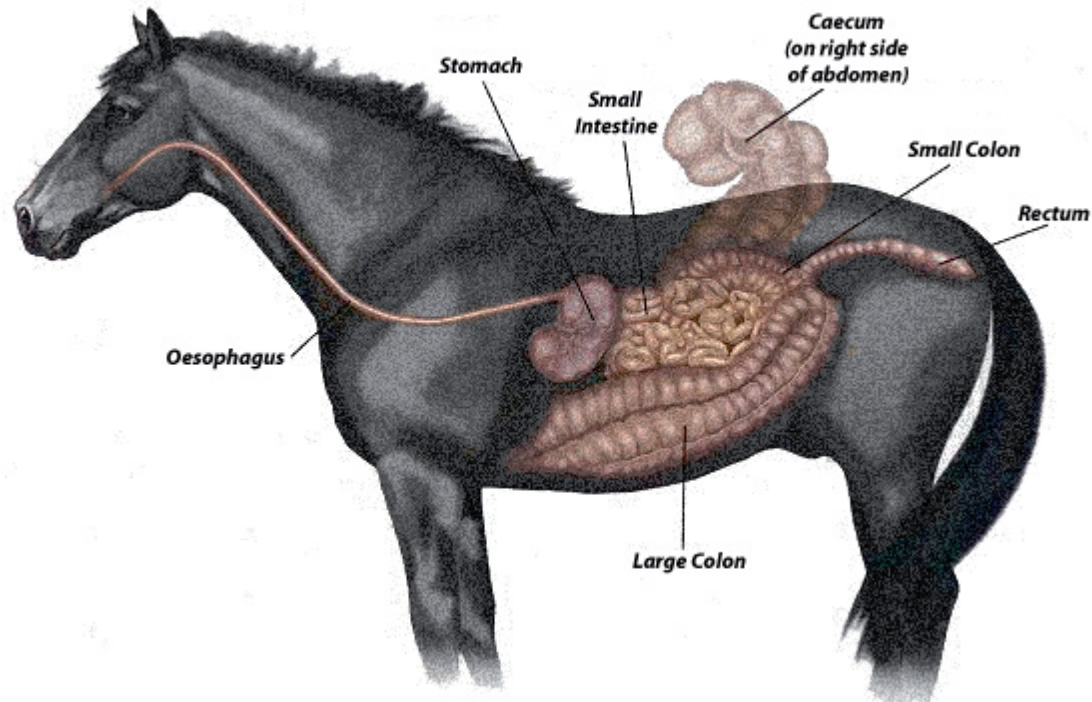


Basic Equine Nutrition Horses. Ponies. Donkeys.

Horses are herbivores. They evolved to graze grasses, legumes & flowering plants for 16-20 hours per day. They have top & bottom teeth, a small stomach and large hindgut.



Small stomach (5-15L, j-shaped, gastric) – feed is mixed in here before being released into the small intestine. Digestion of protein also starts in the stomach

Small intestine (40-50L) – oil and protein is digested and absorbed here. This is also the main site of starch digestion and absorption, but if starch is fed to excess, or supplied in a form that is hard to digest, starch by-passes the SI and overloads into the hindgut.

Hindgut (90-110L) – the caecum, colon, small colon and rectum are collectively termed the hindgut. Basically a big fermentation vat where good bacteria breakdown the fiber and provide the horse with energy (in the form of volatile fatty acids).

For more information or to order CoolStance/PowerStance, please
call 803-647-1200 or e-mail Claudia@stanceglobal.com

NUTRIENTS

Protein

Important for maintenance, repair and growth of body tissues, e.g. for muscling, but also enzymes.

Proteins are made up of amino acids. There are 10 particular amino acids which are essential (i.e. the horse must get them from its diet, as it cannot make them) – called ‘essential amino acids’. It is important that the protein in feeds (often just referred to as a Crude Protein %) is also good quality protein (i.e. contains good levels of the essential amino acids).

Vitamins & Minerals

Horses have specific vitamin needs. Mineral deficiencies are widespread in Australia, and must be corrected if the horse is to thrive. The supplements required, will depend on the soil-mineral status of where the horse is grazed.

Energy

Energy is derived from three main sources:

Protein,
Carbohydrates – structural (fiber) & non-structural (sugars & starches), and
Oils (fats).

Protein

Protein can supply energy (e.g. Gluconeogenic amino acids – these are amino acids that can be broken down to glucose for energy), but this is financially and metabolically expensive.

Fiber

The single most important element of horse diet – horses need to eat at least 1% of their bodyweight in fiber each day. Fiber is an important energy source, but it’s also needed for transit of digesta through the digestive tract and for its water-holding capacity in the hindgut. Horses have a requirement for long fiber (i.e. grass/hay). Fiber is fermented by bacteria in the hindgut and provides the horse with energy.

Sugars

From lush grasses, alfalfa hays, molasses – very rapidly digested and absorbed in the stomach and small intestine – for ready energy. Don’t want too much in the diet.

Starches

Starch is essentially a long chain of glucose (sugar) molecules linked together. Found in seeds and roots. Naturally there is some starch in the diet, but too much can cause problems.

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Oils

Oils are highly energy dense – contain > 2.5 times more energy than starches. Whilst the horse's natural diet contains only about 2% oil, horses are very quickly able to adapt to higher levels of oil in their diet. Various benefits are associated with feeding oil to horses:

Enhances coat condition.

Easy way to put weight on lean horses.

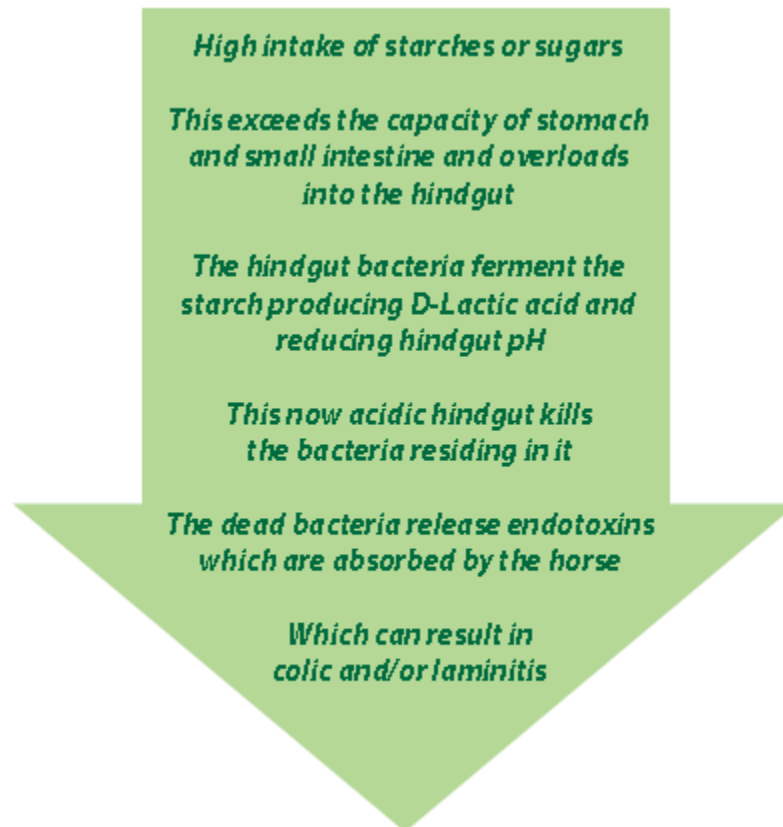
Oil feeding is associated with a sparing effect on muscle glycogen stores during submaximal work, and increased glycogen utilization during high intensity work.

Less heat when digested than starches, fibers and proteins. This has benefits for horses in hot climates.

It is a 'safer' and 'cooler' energy source than high starch feeds.

Starch not digested in the foregut overloads into the hindgut where it is fermented by bacteria. This is a problem.

The hindgut bacteria are designed to ferment fiber – not starch – and essentially have a bit of a party with starch. The bacteria produce D-Lactic acid, which lowers the pH of the hindgut, making it acidic. This has been linked with laminitis, tying up (RER & EPSM), various types of colic, and excitable (also called 'fizzy' or 'hot') behavior.



Laminitis

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This is the term for swelling and inflammation around the hoof laminae. About 80% of cases are due to the excess or sudden intake of soluble carbohydrates (sugars and starches).

Colic

This is broad term for numerous gastro-intestinal disorders in horses. Grain overload causes the reactions outlined above and can cause displacement and dilation colic in the horse.

Tying Up

Tying up (Equine Rhabdomyolysis) is also a broad term – it describes various muscle disorders including Recurrent Exertional Rhabdomyolysis (**RER**) and Equine Polysaccharide Storage Myopathy(**EPSM**).

RER is most common in young, nervous horses (especially fillies). Starch feeding and hot/excitable behavior are often implicated as triggers for RER episodes.

EPSM is more common in heavy horses, Warmbloods and quarter horses, and relates to their dysfunctional carbohydrate metabolisms. Essentially EPSM prevents the horses from storing muscle glycogen properly. Instead they store strange aggregates of glycogen in their muscles, which cannot be broken down for use as energy during exercise – thus essentially ‘starving’ their muscle of energy. Low carbohydrate, high oil, high roughage diets have helped reduce clinical signs of EPSM in these horses.

Fizziness/ Hot Behavior

Diet can greatly affect the temperament of many horses. Fizziness, nervy and excitable behavior have all been related to D-lactic acid from high grain diets. Grain, which can result in the production of D-lactic acid, should be partially or totally replaced by a ‘cool’ non-starch energy source in the ration, such as oil. **CoolStance** can provide a ‘cool’ alternative to high starch/high grain diets.



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