

Feeding your horse for optimum health and performance

Horses evolved grazing low to medium quality forage constantly throughout the day. This should form the basis of feeding all horses. The human digestive system is designed for intermittent feeding. Therefore our stomachs only release stomach acid in response to chewing and saliva production. Horses don't have this response, and their stomachs release acid 24 hours a day. This means horses are designed to have food in their stomach at all times. If the stomach is empty, the acid erodes the upper stomach lining (which is not protected against the acid) and results in painful ulcers.

There are six nutrients horses require:

1. Water
2. Carbohydrates
3. Protein
4. Fats & Oils
5. Vitamins
6. Minerals

Water is an essential component of every horse's diet and assists with the transport of nutrients around the body, thermoregulation, metabolism, proper digestive function and to assist in excreting waste. Horses can lose up to twenty litres of fluid in one hour of sweating. Access to clean water is essential at all times.

Carbohydrates, Protein, Fats and Oils, Vitamins and Minerals can be combined to form a three part feeding program.

1. Forage – Pasture, Hay, Haylage
2. Supplements – Vitamins and Minerals
3. Hard feed – concentrates, straights, pellets, premixed feeds, coarse mixes

Forage/Roughage

This includes pasture, hay, haylage and chaff. Roughage contains carbohydrates, protein, vitamins, minerals and limited quantities of fats and oils. It is recommended to provide horses with adlib forage to ensure a healthy digestive system. In some circumstances, forage may need to be restricted due to obesity or risk of laminitis. In these circumstances, it is recommended to contact your local veterinarian for advice or alternatively you can contact us using the details on the back of this brochure.

The vast majority of horses will survive on a diet of water and ample good quality forage. Due to widespread mineral deficiencies, seasonal nutrient variations, workloads and medical conditions, a diet of this nature would not maintain horses in optimum health throughout the year.

Additional vitamin and mineral supplementation is likely, and for horses in work, a hard feed may also be required.

Supplements

Due to widespread deficiencies, seasonal nutrient variations and moderate to high workloads, we recommend the use of a supplement to top up mineral and vitamin levels and to also rebalance the minerals in the diet to achieve optimum health. Deficiencies will vary depending on soil type, pasture variety, pasture growth stage, current weather conditions, and the length of storage of hay.

Minerals are classified as either **Macro Minerals** or **Trace Minerals**.

Macro Minerals are required in grams per day and include: calcium, phosphorus, sodium, potassium, magnesium, sulphur and chloride.

Trace Minerals are required in milligrams per day and include: cobalt, copper, molybdenum, zinc, manganese, iron, fluoride, iodine, selenium and chromium. Some trace minerals, for example molybdenum and fluoride are found in sufficient levels in the environment. They can interfere with the absorption of other nutrients and therefore they don't need targeted supplementation. Other trace minerals, for example selenium, are often lacking in soils around the world and supplementation is required to top up low levels.

Vitamins are classified as either - **fat soluble** or **water soluble**.

Fat Soluble vitamins need some fat in the diet to be absorbed and to be transported in the blood. They are stored in the body and this reserve can be drawn upon when the diet is lacking. Fat soluble vitamins are Vitamins A, D, E and K. Vitamin D is obtained from exposure to direct sunlight or through sun cured forage. Vitamin K is manufactured in the horses gut and supplementation is not normally required. Vitamins A and E are found in green pasture and hay. Deficiencies can exist over dry periods when access to green pasture is not available.

Water Soluble vitamins dissolve easily in water and they are not stored in the body. Daily replenishment is therefore required. They are the B group vitamins (thiamin, riboflavin, niacin, biotin, folate) and Vitamin C. The horse synthesises Vitamin C in the liver and supplementation is generally only required when liver function is impaired. Horses synthesise the B group vitamins in their gut. Deficiencies of thiamin (B1) and folic acid can exist when

horses are in work and supplementation is recommended in these cases.

Feeding a broad spectrum supplement like Equilibrium (Aust/NZ) or Lexvet (UK, Europe, America) is recommended for all horses throughout the year. Equilibrium and Lexvet produce two broad spectrum supplements - Mineral Mix (the yellow bag) is recommended for all horses, and B1 Cool Mix (the blue bag) is recommended for fizzy, spooky, excitable or nervous horses. The Mineral Mix and B1 Cool Mix contain macro minerals, trace minerals and vitamins. The dosage varies according to the size of the horse and their workload. Detailed instructions are on the back of the packaging. Equilibrium and Lexvet supplements can be fed as a loose lick, mixed with a handful of chaff or added to the hard feed.

Hard Feed

The hard feed can consist of one or more of the ingredients listed in Table 1.

The hard feed should only be used to top up the carbohydrate, protein and/or the fat & oil content of the diet. The ingredients in the hard feed are called concentrates because they are more energy and protein dense sources than roughage. An assessment of the condition of the horse needs to be made to ascertain the levels of each component in the hard feed. A fact sheet on condition scoring horses is available from the Equilibrium website www.equiaustralia.com.au or the Lexvet site www.lexvetsupplements.com. It is important to assess fat cover separately to muscling. To increase fat cover it is advised to increase the energy portion of the diet in the form of carbohydrate, fats and oils. To improve muscling and top line it is advised to increase or improve the quality of protein fed in the diet.

Energy in the form of carbohydrates, fats and oils can be provided in the form of cereal grains, cereal by-products, fibrous by-products, molasses, oil, chaff or chop, coarse mix, premixed feeds and or pellets.

Protein is obtained in the form of oil by-products, lucerne chaff or alfalfa products, coarse mix, premixed feeds and pellets. Table 1 summarises the important points of each of these products.

So what are your feeding options?

Table 1 has a list of many of the common horse feeds available. It provides a general grouping of the food, a brief summary of what it is, the advantages, the disadvantages and the recommended feeding levels. This table is designed to provide you with relevant information so that you can make an informed choice about what you feel is best for your horse.

Table 2 outlines the horse's nutritional requirements and the order of how each of these requirements are met in the diet. This provides a more detailed approach with different types of horses and their likely dietary requirements. When formulating a specific diet, you will need to refer back to table 1 when choosing which feed is most suited to your horse.

If you would like a specific feeding program for your horse or pony please email sales@equiaustralia.com.au with details of your horses breed, height, its current condition and feeding program and goals you would like to achieve (eg. improve muscling or save money). We can then customise a feeding program specific to your needs.

Definitions

Adlib means to feed as much and as often as needed.

Coarse Mix is a mix of straights often sold under a company brand name.

Concentrates are concentrated energy and protein components that are used to make up the hard feed.

Forage includes pasture, hay, chaff and haylage.

Hard Feed is a feed some horses require and is fed alongside the forage in the diet. The hard feed can include concentrates, supplements, straights, coarse mix, pellets and should always include forage in the form of chaff or an alfalfa pellet to slow digestion of concentrates.

Pellets are generally sold under a brand and product name, and are a blend of straights that are pelleted.

Straights are single components used to make a horse feed, For example cereal and by-products, fibrous by-products, Oils and its by-products are all classified as straights.

Topline is the outline of the top of the body of a horse, often referred to when assessing the muscling of a horse.

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TABLE 1 - Common Feeds Explained

Product		General Information	Advantages	Disadvantages	Maximum dosage
Chopped/Refined Forage	Lucerne (Alfalfa) Products	<ul style="list-style-type: none"> Commonly available as a hay or chaff in Australia Available as alfalfa pellets or chop in Europe 	<ul style="list-style-type: none"> High fibre High protein Good quality protein 	<ul style="list-style-type: none"> Excess causes white sweat and can reduce performance. Reports of behaviour issues in some horses 	<ul style="list-style-type: none"> Mix at least 2 parts chaff to 1 part concentrate. White chaff not necessary when adequate levels of lucerne/alfalfa chaff are added to hard fed. If ammonia smelling urine or has thick white lathery sweat reduce lucerne/alfalfa and add/increase white chaff
	Oaten Chaff	<ul style="list-style-type: none"> Also known as white chaff Bulks the hard feed to slow digestion of nutrients 	<ul style="list-style-type: none"> Around 35% fibre Bulk hard feed when lucerne/alfalfa unsuitable 	<ul style="list-style-type: none"> Variable nutritional content 	
	Wheaten Chaff	<ul style="list-style-type: none"> Also known as white chaff Bulks the hard feed to slow digestion of nutrients 	<ul style="list-style-type: none"> Around 38% fibre Bulk hard feed when lucerne/alfalfa unsuitable 	<ul style="list-style-type: none"> Variable nutritional content 	
Cereal Grains	Oats	<ul style="list-style-type: none"> 40% starch, fibre in hull Can be fed whole or soaked prior to feeding Most palatable of all grains 	<ul style="list-style-type: none"> Does not require treatment to improve digestibility Energy dense and consistent nutritive value 	<ul style="list-style-type: none"> Excessive intake causes LI disturbance resulting in tying up, colic, acidosis or laminitis Poor Ca:P ratio Phytates bind Ca absorption Untreated maize and barley have naturally poor SI digestibility. 	<ul style="list-style-type: none"> 500kg horse fed no other cereal grain, coarse mix or pellet. Feed up to 1kg p/day. If feeding more than 500g of Barley or Maize (Corn) per day then split into at least two feeds.
	Barley	<ul style="list-style-type: none"> 55% starch To increase SI digestibility to 90% feed extruded 	<ul style="list-style-type: none"> Higher energy than oats Energy dense and consistent nutritive value 		
	Maize (Corn)	<ul style="list-style-type: none"> 70% starch To increase SI digestibility to 95% feed micronised 	<ul style="list-style-type: none"> Higher energy than oats and barley Energy dense and consistent nutritive value 		
Cereal by-product Bran		<ul style="list-style-type: none"> Low nutritive value 	<ul style="list-style-type: none"> Appetite stimulant Administering medicine to fussy eaters 	<ul style="list-style-type: none"> Very poor Ca:P ratio Excess can cause bighead or 'bran' disease 	<ul style="list-style-type: none"> 1kg p/day. Feed with supplement containing good Ca:P ratio
Fibrous by-product Sugar beet pulp		<ul style="list-style-type: none"> Product left after the extraction of sucrose Available as molassed or unmolassed Very low risk of LI digestive disturbance 	<ul style="list-style-type: none"> High fibre 85% digestible Good Ca:P ratio Excellent carbohydrate source to top up energy levels without the fizz 	<ul style="list-style-type: none"> Can cause choke and stomach distension if not properly soaked prior to feeding <i>Expensive compared to cereal grains (Australia/NZ)</i> 	<ul style="list-style-type: none"> Follow manufacturers directions. Use to top up energy in ration, do not use as forage
Molasses		<ul style="list-style-type: none"> Residue following sugar extraction 	<ul style="list-style-type: none"> Palatable 	<ul style="list-style-type: none"> Unsuitable for laminitics, EMS, PSSM & sugar sensitive horses 	<ul style="list-style-type: none"> Feed to increase palatability or as a treat
Oil By-product Soybean Meal		<ul style="list-style-type: none"> By-product from extraction of oil from soybean 	<ul style="list-style-type: none"> High percentage & quality protein Small quantity required Can improve topline 	<ul style="list-style-type: none"> Excess can reduce performance. Some horses are allergic 	<ul style="list-style-type: none"> 1-2 cups p/day lactating mares, growing horses and horses lacking topline
Oil	Vegetable Eg. Corn, Soy, Sunflower, Rapeseed, Linseed	<ul style="list-style-type: none"> Corn oil most palatable Canola best omegas of vegetable oils Palm, coconut & extra virgin olive oil are mechanically extracted 	<ul style="list-style-type: none"> 2.25 x more energy than carbohydrates, excellent way to increase energy content Low GI, good digestibility Energy without fizz 	<ul style="list-style-type: none"> Palatability - introduce slowly to find maximum horse will tolerate. Poor Omega 3:6 ratio Most extracted using chemicals 	<ul style="list-style-type: none"> Total oil content up to 1 cup per day Underweight horses can have oil gradually increased up to 2 cups per day.
	Fish	<ul style="list-style-type: none"> Human research indicates benefit of high omega 3 and low omega 6 content Pasture has good omega ratio, issues arise when concentrates are added to the diet. 	<ul style="list-style-type: none"> 2.25 x more energy than carbohydrates, excellent way to increase energy content Low GI, good digestibility Energy without fizz Good Omega 3 : 6 ratio 		
Coarse Mix & Pellets		<ul style="list-style-type: none"> Mixture of cereal grains and by-products, oils and oil by-products, molasses and/or fibrous by-products. 	<ul style="list-style-type: none"> Convenient Contain carbohydrates, oil, protein, vitamins and minerals. 	<ul style="list-style-type: none"> Doesn't account for individual need To meet 100% energy needs there is an over/under supply of protein, minerals, vitamins. Costly compared to straights 	<ul style="list-style-type: none"> Feed according to protein or energy requirements (whichever is less). If feeding less than recommended top up with broad spectrum supplement or straights to meet needs.

TABLE 2 - Feeding for workload

	Required for optimal health	Likely to be required	May be required for some horses
Workload	Carbohydrates, Fats & Oils <i>Fat Cover</i>	Protein <i>Muscle & Topline</i>	Vitamins & Minerals
Broodmare In Foal	1. Adlib Roughage →	→	2. Equilibrium and LexveT supplements take into account the higher mineral and vitamin demands of broodmares in foal which is reflected in higher dosage compared to horses at rest.
	<i>To maintain a score 3, some mares may require additional fat or protein in their diet, see 2</i>		
	2. Lucerne Chaff or Alfalfa Product →	→	
	<i>Broodmares in foal should be in the score 3 range, score 4 or above can result in bent legs in foals, below score 3 can result in insufficient reserves to draw on during lactation</i>	<i>Older mares and mares in the last trimester can lose topline, to avoid large setbacks during lactation it is advised to supplement the diet with protein</i>	
	3. Sugar beet pulp, cereal grains and/or oil	3. Full Fat Soybean Meal	
	OR		
	3. Coarse mix or pellet fed at a rate to achieve optimum condition score		
Broodmare Lactating	1. Adlib Roughage →	→	2. Mineral and vitamin supplement. eg. Equilibrium and LexveT broodmare dosage takes into account the demands of broodmares lactating
	<i>Go to 2 below if extra fat cover is required</i>		
	2. Lucerne/alfalfa AND Sugar beet pulp, cereal grains and/or oil	2. Lucerne/Alfalfa and Soybean Meal	
	OR		
	2. Coarse mix or pellet fed at a rate to achieve optimum condition score		
Growing Weanling Yearling 6 months to 3 years	1. Adlib Roughage →	→	2. Mineral and vitamin supplement. eg. Equilibrium and LexveT supplements account for demands of growing horses
	<i>The condition of young horses fluctuates, it builds up and is used during periods of increased growth. Most don't require an energy dense hard feed, if extra fat cover is required see 2 below.</i>		
	2. Lucerne/Alfalfa and Soybean Meal	2. Lucerne/Alfalfa and Soybean Meal	
	2. Sugar beet pulp, cereal grains and/or oil		
	OR		
	2. Coarse mix or pellet fed at a rate to achieve optimum condition score		
Light Work Resting Retired	1. Adlib Roughage →	→	2. Mineral and vitamin supplement. eg. Equilibrium and LexveT supplements take into account normal maintenance requirements for horses in light work, resting and veterans.
	<i>It is unlikely a hard feed is required, if an increase in condition is desired then go to 2 below.</i>		
	2. Lucerne / Alfalfa and Sugar beet pulp, cereal grains and/or oil.	→	
		<i>Sufficient protein is provided in lucerne/alfalfa. If topline is lacking then go to 3</i>	
	OR		
	2. Coarse mix or pellet fed at a rate to achieve optimum condition score		
Moderate Work Dressage Showjumping Showing Campdrafting Cutting	1. Adlib Roughage →	→	2. Mineral and vitamin supplement. eg. Equilibrium/LexveT supplements take into account the additional vitamin and mineral demands of horses in work.
	<i>It is likely a horse in moderate work will require a hard feed, go to 2 below.</i>		
	2. Lucerne / Alfalfa and Sugar beet pulp, cereal grains and/or oil.	→	
		<i>Mature horses should receive sufficient protein through lucerne/alfalfa in their diet. If topline is lacking then go to 3 below.</i>	
		3. Full Fat Soybean Meal	
	OR		
	2. Coarse mix or pellet fed at a rate to achieve optimum condition score		
Hard Work Racehorses Endurance Eventing Hunting Polo	1. Adlib Roughage →	→	2. Mineral and vitamin supplement. eg. Equilibrium/LexveT supplements take into account the additional vitamin and mineral demands of horses in hard work.
	2. Lucerne / Alfalfa and Sugar beet pulp, cereal grains or oil.	→	
		<i>Occasionally protein requirements exceed what is provided through lucerne or alfalfa. If additional muscling is required go to 3.</i>	
		3. Full Fat Soybean Meal	
	OR		
	2. Coarse mix or pellet fed at a rate to achieve optimum condition score		