

PART 1: A Practical Guide to Feeding and supplementing the Performance Horse.

# FEEDING & SUPPLEMENTS

## Feeding and Base Nutrition

With so many feeding options available to horse owners now, and so much marketing around them, it is very confusing to know what is the best approach for your horse.

It pays to remember that the horse's digestive system is designed to process large amounts of bland fibre. This originates from when they used to roam grassy prairies and eat enormous amounts of low protein high fibre grasses with a low nutritional value. This system needs respect, and if you don't feed taking this into consideration, you risk colic. The modern sport horse has had demands put on him that wild horses never did and their diet has had to adapt to deliver the extra energy required. However, their digestive system has remained unchanged and so this has to be taken into consideration. Horses digest largely by fermentation, and they struggle with the rich feeds or high protein grasses designed for the dairy industry.

From a practical aspect, there are 3 main areas to pay attention to when feeding horses. Feed values, such as the protein level and calcium/phosphorus ratio, calories or energy, and nutrition/mineral levels. The key is to keep it SIMPLE, and if you pay attention to getting the nutrition and feed values correct in your horses diet, not just calories, you go a long way to getting it right.

By paying attention to your feed and base nutrition, and getting this correct, you can minimise potential problems and the solutions needed to control them. If you do have behavioural, condition or health issues with your horse, this could be the first area that needs addressing.

When making a decision on what to feed your horse you need to take into consideration the total feed consumption, which includes both grass and hay. But especially grass intake. In NZ the majority of horses have access to high protein grass and this significantly impacts what you should feed.

By far the most common mistakes made by horse owners are feeding too much protein, not feeding enough fibre (hay) to stabled or yarded horses, not having a correct calcium/phosphorus ratio which can lead to bone abnormalities, not feeding the correct amount of calories, and not satisfying mineral requirements or base nutrition.

## Protein

Unfortunately feeding excess protein seems to be the latest fad. Grass has an average protein level of 20-30% depending on the time of the year. Horses need 9% for maintenance, 12% when in work (the increase is for muscle building, function and repair), around 14% for young stock and 16% for broodmares in foal.

If your horse is out to grass, even just during the day or night, he/she is already getting more protein than they can use. The only exceptions to this are in very cold climates where the grass stops growing and they might run out of grass, or in a drought.

Contrary to popular belief feeding protein in excess of what they need does not lead to extra muscle. Excess protein is not utilised by the horse but excreted, and the kidneys have to work pretty hard to do it. Often you will see increased urination around the time of a grass flush of growth as the horse tries to get rid of the excess protein. Feeding high protein to a horse at grass is both a waste of money and detrimental to your horse's health.

Older horses often have impaired kidney function and so high protein diets should never be fed to aged horses. Excess protein can also interfere with energy conversion in the muscle and can be a factor in tying-up and stiffness.

Having said that, adding small amounts of protein is really important if the horse is not at grass, to raise the overall protein level to the required percentages.

## Calcium/Phosphorus Connection

This may sound scientific and unnecessary but it is really important for horse health. Horses require a Calcium/phosphorus ratio of around 1.5-2.1 : 1. They can tolerate up to 5:1 but less than 1.1:1 puts them in danger of developing serious bone abnormalities over time. Roughly this means they need a balance of around twice the amount of calcium than phosphorus.

Again, total feed must be considered. Grains are high in phosphorus and low in calcium, as is pollard, meadow hay and most grasses (although they do vary). So if you feed a perfectly balanced premixed feed then your horse could still be lower in calcium if on grass. Feeds higher in calcium are sugar beet, and legumes such as lucerne and lupins, however, the last two are also incredibly high in protein and so are not ideal to feed to a horse at grass. A stabled horse will be fine on a balanced feed with correct ratios.

Sugar beet is a fabulous feed because it has no protein, its high in calcium and high in fibre. It is a perfect match for extruded/micronised grains that are higher in phosphorus and helps keep the overall protein level down and calcium content up in feeds for grass fed horses. It is also high in fibre and helps to keep horses hydrated. It can also be fed with premixed feeds for horses on pasture, as other than dropping the overall protein level down and topping up the calcium, it does not significantly interfere with other feed values. Feeding calcium carbonate is another way of increasing the calcium content in feed, and the most common way feed manufacturers balance their feeds when making premixed feeds.

One of the most common mistakes people make is adding grains to a balanced feed. Premixed feeds are generally correct in this ratio because it is so important for horse health, and so by adding a grain that is high in phosphorus you tip the balance the wrong way. This can be offset by adding sugar beet or calcium carbonate, but then you have to make sure your protein levels are appropriate if your horse does not have access to grass.

## Energy or Calories

For years raw grains were the only way horse owners could give horses the energy they needed for work. Unfortunately grains are not digested well by fermentation and this can lead to many problems which detract from performance and health.

The process of cooking, extruding or micronising grains makes them significantly more digestible in the small intestine so there is little or none left to ferment in the hind gut. This significantly reduces or eliminates the risk of tie-up, acidosis, colic and other grain related problems. Grains can become as much as 70% more digestible than a raw grain after processing, making them around 95-98% digestible.

When you are trying to put condition on a horse, you need to feed calories. The correct amount and type of protein (12% for a working horse) will allow a horse to build muscle with the correct work. If you want top line and condition you need to feed calories in the form of carbohydrate or carbohydrate and fat, not excess protein. Excess energy = increased condition. It is a simple energy in vs energy out equation. When trying to add condition to a horse, the form the energy takes can be very important in keeping the horse manageable whilst adding the excess energy.

Fats and oils can be used as a cooler energy source than grains, but horses have to 'learn' how to process these forms as energy. It can take up to 3 months for a horse's system to effectively use oil as an energy source and large amounts are not advisable. There are also some wonderful cool non-grain pelleted feeds available for hot horses or those that are grain intolerant.

## Nutrition

The most important factor to consider in equine nutrition is mineral content and quality. Macro minerals are the foundations of nutrition and health because the body's systems rely on the correct nutrition to function correctly. Think of it like a pyramid, and the bottom layer are macro mineral levels. Get these levels correct and the body can absorb other nutrients needed in smaller amounts. Macro minerals are also intertwined in their actions and so should be fed in the same form if at all possible. For example, anaemia is often caused by a copper and cobalt deficiency. Instead of supplementing with iron, often correcting these balances is enough and far more body friendly. Fixing the problem at the cause rather than treating the symptom is the best approach. Mineral deficiencies are a factor in many diseases or health conditions in production animals and horses are no different.

Quality is much more than purity. You can get a pure synthetic mineral or a pure poison. It is a case of you get what you pay for in most situations. The highest quality minerals are organics and the highest quality organic is a proteinate mineral. Is this really important you say? Sometimes it is hard deciding what is important and what is simply a marketing schpeel, especially when people have been getting by for years on cheaper synthetic and inorganic options.

To cut a long story short, minerals come in many forms. Some are able to be 10% absorbed, some 30%, some 50%. They are all different, and so when you feed several forms together imbalances are probable. On top of that some non-organic minerals have toxicity issues, and there is also a global contamination issue surrounding minerals of all kinds.

High quality organic proteinates on the other hand are 100% absorbable, are non toxic and easily excreted if fed in excess. If you feed all your minerals in proteinate form then imbalances can be avoided.

