



### How fibre based feeding improves performance.

Horses are designed to digest fibre and to acquire all their nutritional requirements from grazing. It is easy to forget this simple fact in the face of the artificial lifestyle and diet we impose on so many horses. Evolved as plains-dwelling, herd-living, obligate herbivores, horses are the ultimate performers in their own environment. They are perfect in their design and extremely successful. That is why there are vast herds of Brumbies in Australia and Mustangs in America. They are fleet, athletic, nimble and well organised and, given the right conditions, will flourish and survive predation.

When we want these beautiful and courageous creatures to perform for us, what do we do? We put them in solitary confinement in a stable, deny or restrict their access to pasture and companions and feed them on a diet they were never intended to eat. Molasses, cereals and pulses just do not occur in their natural environment, yet these are ingredients found in just about every cube or mix. Does it matter that we have made these changes? After all, we have been keeping horse in unnatural conditions for thousands of years! It probably does matter, and probably more than we thought. For instance, farmers are duty bound to allow their animals enough space to express their natural behaviours, and maintain their stock in flocks and herds. If the same criteria were applied to many horses, their management would be found to be seriously lacking. But in the last generation, things have changed quite dramatically on the horse keeping front. Hunters used to have the summer off and show jumpers, dressage horses and other competitors had the winter off. Now, we tend to keep our horses up all year and they no longer spend several months at a time recovering from the indignities imposed on them with a spell at pasture. Lameness used to be turned away for six months or a year; now, they have prolonged box rest and are so debilitated by the forced idleness it takes many months to rehabilitate them from the cure, let alone the original injury. The feed they get is no longer farm-produced straights, but processed, often imported and frequently the by-products of someone else's food chain. The vitamins have been processed out, so artificial ones are added back. Mineral imbalances are rectified with chemicals and ground rocks.

Where does this leave us as horse keepers? We have bigger vet bills for a start! Our horses suffer more lameness, colic and metabolic disease such as laminitis and tying up. Nearly every old horse and some young ones, too, suffers from Cushing's Disease. They are underweight, overweight or lack stamina. Their immunity is at a low ebb and they keep getting new infections or cannot get rid of old ones.

Can we do anything about it? Sure we can, and lots! First, we have to look at what a horse really is – that herd-living, plains-dwelling obligate herbivore. Even if he has to live in a stable, it might be possible to cut a window in the wall between him and his next-door neighbour. Even removing just one brick creates a "blow-hole" that allows some extra communication and contact. And a bit more turn out would not go amiss. Making changes to the diet, using feeds that the horse is able easily to digest can make huge differences. Cereals and pulses contain high levels of starch. The horse's natural environment is at times very arid and cannot afford the luxury of growing plants that "waste" energy by making rich seeds. The result is that the poor old horse makes very small amounts of the enzyme amylase, which is what digests starch. We use starchy foods to give horses extra energy for work, but in order to avoid too many problems, have to feed these feeds very carefully. We must rest a horse after such a feed. It must be small, so as not to overfill the stomach. We have to feed frequently, in order to spread the load as thinly as possible. There are definite limits to the amounts we can feed each day, and woe betides us if we upset the balance between work and feed!

However, there is an alternative and that is to feed the best quality of the feeds that the horse was designed to eat. Traditionally, preserved forages such as hay have been used just as a means of supplying bulk, but if modern drying methods are used with plants harvested at the peak of their nutritive value, then we can have a forage with an energy value similar to that of cereals. The calories will come mainly from young, digestible fibre rather than from starch. Some early cut grasses can have significant

levels of plant sugars, supplying quick release energy and a total energy level some 15% greater than that of oats. The protein from these forages is good quality and has the right balance of amino acids for horses, but is of lower digestibility than cereal based proteins, which are not nearly so well balanced with regard to amino acids. Dried lucerne feeds (lucerne is called alfalfa in America, and curiously, has been adopted by Dengie for their dried lucerne products, even though they are made in Essex!) are excellent for building muscle and condition. Protein levels at around 16% ensure good topline and high levels of calcium help support the skeletal system. Sugar levels are low, generally 5% or so, so lucerne is a very safe feed for all horses, including those prone to laminitis, tying up and filled legs.

In adopting a more natural feeding regime, many benefits will start to become apparent. With most of the energy coming from fibre, the supply is steadier due to the gradual breakdown of the fibre by the microbes of the hindgut. This process takes around 24 hours. Thus there are no surges in blood sugar levels with the accompanying fluctuations in behaviour and energy output. Fibre is turned into free fatty acids by the microbes and this is absorbed into the horse's blood stream, distributed and used as required. Burning free fatty acids releases less heat in the muscles, so you may notice that your horse sweats less. This energy pathway is also less likely to be depleted and more readily topped up, so stamina will improve. Fibrous feeds, needing comparatively little digestion in the stomach and small intestine, make their way quickly, in a matter of minutes, to the caecum. They are not interfering with heart or lung function and you are able to work your horse soon after a meal.

Performance can only be improved in adopting a forage-based feeding regime. In addition to the benefits already mentioned, a horse without cereals and so on will actually feel better. Grain feeding is the major cause of ulcers in horses. Ulcers do not cause colic, but must be very uncomfortable and make the horse feel less inclined to work well. The prolonged periods of time over which competing horses are not allowed to eat will make them feel grumpy and uncomfortable due to the accumulation of acids in the stomach and bile in the duodenum. Horses do not have a gall bladder, so bile is constantly being secreted. With no feed to mop it up, the feeling cannot be good! The combined effects of cereal feeding, which increases blood sugar levels, and is followed by a release of insulin, and exercise, is that the blood sugar levels in a cereal fed horse become lower as a result of work than if you had starved the horse. Thus we have a horse who starts off with an over-abundance of energy, then goes well for a short while before his blood sugar levels sink so low he can no longer perform to your required standard.

Feeding forages gives a consistent, sustainable level of energy with pronounced stamina. Recovery is quick. The horse can be kept content by allowing it to eat between classes and up to the point of work, avoiding the discomfort of excess bile or acid. Forages hold a considerable amount of water, four to five times their dry weight, this water being available from the caecum and reducing or eliminating dehydration.

Dried forages come in several forms. Cubes or pellets are the most economical, and are best fed soaked. Chops do not need to be soaked. Compressed chops ("Bix") become succulent chop following a short soak. Hay is the form we are familiar with, but generally has lower feed value than flash dried feeds. Beet pulp, whilst not strictly a forage, is a valuable source of highly digestible fibre and a useful addition to cereal free diets. Further nutrient density can be added by using linseed. A good sample of linseed will be nearly 40% oil, so uses the same energy pathways (slow release) as forages. Fortunately, it is possible to get full fat linseed ready cooked and ready to feed, so all that hassle of preparation is now a thing of the past. Linseed has a good balance of omega oils 3, 6 and 9, is a natural anti-inflammatory and anti-oxidant.

Avoiding cereals, pulses and molasses in horse feeds is not easy. Read a few feedbag labels and you will soon see why! But there is considerable evidence, both scientific and anecdotal, to show that your horse can be better off on forages. Once you make the change, it is a lot less work, it is worry-free and the horse will tell you how much better he feels. And you will enjoy that feeling, too!

© 2007, Jane van Lennep B.Sc., M.Sc., BHSI (SM Cert), NPSD.

Jane is a founding director of Simple System Ltd, a specialist feed company supplying feeds free from cereals, pulses, molasses, additives and preservatives. Simple System Ltd can be contacted on 01371 870 753 or 01728 604 008.