



# Base Feeds

for the

“Keep It Simple Diet”

**By The Nude Horse**

**(Equine Epidemiologist)**

Finding economic, safe feed types is simple once you know what they are and why they are your best choice.

Your priority:

- 1) Supply a calorie controlled base feed, high in fibre and low in starch and sugars - no grain if possible.
- 2) Add a high quality, balanced and preferably chelated and organic mineral supplement along with important vitamins, we recommend FLOWERS GOLD by Wattlelane Stables as the most bio available and scientifically balanced feed supplement. You should easily achieve weight gain, quality coat lustre and strong hooves when the diet is sustained with the right nutrients.

## The truth about carbohydrates

Most grains are high in the polysaccharide carbohydrates of sugar and starch (NSC). This type is connected with metabolic disorders.

Feeds such as beet-pulp, cracked lupin and copra by comparison are high in the fibre type polysaccharide carbohydrates.

## Issues with feeding grains

During the digestive process, both sugars and starches are turned into the sugars. Horses have a limited capacity to digest substantial amounts of sugar and starch in the stomach and small intestine. The excess supply of sugar and starch travels through the small intestines and on into the hindgut where the trouble begins. An increase of sugar fermentation creates lactic acid. Lactic acid lowers the pH causing an acidic environment, this in turn kills off the good microbes. The dead microbes give off endotoxins that now enter the blood stream, this chain reaction often culminates in poor gut health, ill thrift (or obesity) and potentially laminitis.

Studies have demonstrated the etiology of equine ‘Developmental Orthopaedic Disease’ (DOD) in part is attributed to excessive amounts of non-fibre carbohydrates (grain-based feeds and vegetable oils) contributing to hormonal imbalances in foals. OCD

lesions will generally develop within the first 11 months of life but may not be noticed until 3 to 5 years of age as the horse begins training.

A Canadian trial found phytitis and flexural deformities occurred in 88% of 42 weanlings between weeks 6 to 8 of a study fed high dietary energy feeds (grain and polyunsaturated oils).

Discovering the risks attached to feeding grain and grain biproducts (included in pelleted feeds often are bran & pollards) to foals, weanlings and horses in general, prevents many disease risks. Grains include oats, corn, barley, wheat and millet. Grains are the seeds of grasses hence high in sugar and simple carbohydrates. Cereal grain type hay & chaff (oaten, wheat, rye) are also high in sugar and Non-Structural Carbohydrates, averaging alarmingly between 22% - 39% NSC.

## Soybean meal/biproducts

Soybean meal sports a high protein profile, accompanied with high ratios of Lysine and Threonine, so why not recommend it as the BEST protein base feed?

There has been a tremendous debate over soybean (and biproducts) and its associated risks on human and animal health. However, there is equal research showing its nutritional benefits. The Nude Horse found the following data from reputable sources worthy of consideration. We recommend caution be exercised depending on your horse individual age, sex and circumstances before deciding if it is a good option or not.

In 2014 data showed over 80% of all Soybeans are GMO (Genetically modified). Soybean meal is the biproduct of soybean oil. Virtually all soybeans (99%) are solvent extracted (usually hexane) undergo extreme repeat heating during the oil extraction process. Hexane poses health risks and is regulated as a hazardous air pollutant.

Soybean has known allergenic properties and may affect humans and animals who consume.

Soybean is relatively high in phytate. The behaviour of phytate is to bind to calcium-magnesium and/or to proteins. It is thought Soybean meal may contain around 1.4% phytate. Phytic acid has also been implicated in decreased availability of other minerals such as iron, zinc, magnesium, calcium and copper. Reddy et al. (Reddy, N. R., S. K. Sathe and D. K. Salunkhe. 1982. Phytates in legumes and cereals. Pages 1-92 in C.O. Chichester ed. Advances in Food Research. Vol 28. Academic Press, New York, New York 1982 and

Forbes et al 1983. (Forbes, R. M., J. W. Erdman, Jr., H. A. Parker, H. Kondo and S. M. Ketelsen. 1983. Bioavailability of zinc in coagulated soy protein (tofu) to rats and effect of dietary calcium at a constant phytate:zinc ratio. J. Nutr. 113:205-210 1983)

The phytic acid/protein interaction has also been shown to be dependent upon pH. An acidity or alkaline internal environment can further determine the protein solubility and/or inhibited absorption rates of calcium and magnesium.

<https://lib.dr.iastate.edu/cgi/viewcontent.cgi?article=9299&context=rtd> and Phytate-Protein Interactions in Soybean Extracts by O. de Rham & T. Jost. <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2621.1979.tb03844.x> PHYTATE-PROTEIN INTERACTIONS IN SOYBEAN EXTRACTS AND LOW-PHYTATE SOY PROTEIN PRODUCTS O. de RHAM and T. JOST.

More reading: Journal of Food Science, Volume 44, Issue 2 PHYTATE-PROTEIN INTERACTIONS IN SOYBEAN EXTRACTS AND LOW-PHYTATE SOY PROTEIN PRODUCTS.

The solubility of phytate and protein in soy extracts as influenced by pH, NaCl, calcium and EDTA was measured. The behavior of phytate is explained in terms of its binding to calcium-magnesium and/or to proteins.

Soybean contain isoflavones, there are 12 isomers of isoflavones in soybean. These compounds have been implicated in reproduction issues in animals fed diets containing large amounts of soybean meal (Schutt, 1976) Other studies attest to the estrogenic effect attributed to the consumption of soybean byproducts.

The National Toxicology Program (NTP) agree there are “numerous studies in laboratory animals exposed to the isoflavones... including genistein, show adverse effects on development.”

<https://www.niehs.nih.gov/health/topics/agents/sya-soy-formula/index.cfm>

“Studies using a variety of animal models report negative effects of soy isoflavones exposure during development.”

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3257624/#B26-nutrients-02-01156>

NRC prints that excessive protein from soybean sources has been linked to flexural limb deformities in growing horses (Fackelman 1980).

No data is available on the final Omega 3:6 ratio of Soybean Meal, however soybean seeds are known to contain up to 11% Omega 6 of dry matter (DM). See more information on Omega 6 below under Sunflower Seeds.

<https://pubag.nal.usda.gov/pubag/downloadPDF.xhtml?id=3483&content=PDF>

Almost every commercially prepared premade feed will contain some product of soy, whether it is soybean meal, soy hulls, or soybean oil. So, if your choice is to

avoid soybeans altogether, you will have to read labels thoroughly and likely make your own simple base feeds from alternative high protein, lysine and threonine types. See Keep It Simple Diet at <https://thenudehorse.com.au/nutrition/>

## Benefits of feeding Copra, Beet-Pulp and Lupins



Copra, Beet pulp and Lupins are rich sources of ‘super fibre’ type of polysaccharides. These super fibres have a high water-binding capacity (viscosity increases from the presence of fibrous polysaccharides). The fibres carry volumes of water and nutrients un-digested through the small intestines and on into the hindgut (large intestine) to release their nutrients and feed the good microbes such as Clostridium, Bifidobacterium, Lactobacillus, Staphylococcus, Enterococcus, Streptococcus, Enterobacter and Escherichia hence stimulating colonization of intestinal microflora.

Fibre types of Polysaccharides provide sustainable energy (slow release energy) and help stabilize blood sugar levels (reduction in glycaemic response). Polysaccharides fibre have also been claimed to increase the amount of feel-good chemicals in the brain, decrease gastric emptying, increase satiety, improve immune system health and assist liver function.

**Lucerne Chaff** has been recommended as preferable after comparing the content of non-structural carbohydrates or NSC of alternative chaff types. Carbohydrates also include starch, water-soluble sugar, and fructan. Of note Lucerne hay does not contain appreciable levels of fructan carbohydrate when compared to other types of hay. It has been shown when lucerne is baled later in the growing season with a stalkier appearance, the sugar content will be at its lowest. Common NSC levels in hay/chaff:

- Grass hays average of 13.8%
- Lucerne average of 11.3%
- Oat hay average of 22%
- Rye grass average 39.1%
- Clover hay average 11-18%

## Minerals and Vitamins

By adjusting the volume of the base feeds to meet calorie needs, you can still guarantee the exact mineral and vitamin supply to meet daily dietary needs. How so?



We recommend adding 'Flowers Gold' by Wattlelane Stables, as it offers superior bio-availability (organic & chelated) of both macro and micro nutrients needed daily and each delivered in co-

dependent proportions for the most beneficial uptake and utilization.



Watch the video on how to make the 'Keep It Simple Diet':

<https://youtu.be/rS8AeB1VPTU>

### Of further interest:

**Lupins** contain around 40% proteins, great for building muscle.

**Copra:** The nutritional composition reveals that the fibre fractions are like those of pasture grasses. Copra is approximately 8-10% coconut oil supply which is a cool low gL - sustainable energy source.

**Beet Pulp:** The digestible energy content of beet pulp is greater than most hay and less than most grain ingredients, making its reputation as a weight building feed supplement. It also contains about 7% protein and a nice low 0.07% Phosphorus. Soaked beet pulp is an efficient way to increase a horse's water consumption (soak fully to maximum size 1 hour at least before feeding in 5X volume of added water). The fibre in beet pulp is mostly soluble fibre, so it is more readily digestible than pasture, hay or chaff.

### Reservations some have regarding COPRA

Feeding copra solely on its own is an unbalanced feed source. For example, it has a calcium:phosphorus ratio of 0.25:1. A balanced feed should be 4:1. The other observation is copra's zinc to copper ratio is 2:1, yet ideally it should be 4:1. However rarely is copra fed as a sole feed, so usually these issues are resolved easily by adding a fortified balanced feed supplement (such as Flowers Gold).

Although copra is recognized as being high in protein, 40% of the protein is bound in the fibrous fraction of the copra, thus reducing its bio availability. If copra is used as a major component of the diet for young,

growing horses, additional lysine, threonine, and methionine supplementation should be a consideration. Again, Flowers Gold compensates for these deficiencies.

### References of interest for further reading:

<https://kppusa.com/2012/05/03/laminitis-whats-grain-overload/>  
<https://ker.com/equinews/beet-pulp-ultimate-fibre-horses/>  
<https://www.southernstates.com/articles/feeding-beet-pulp.aspx>  
<https://ker.com/equinews/use-copra-horse-feeds/>  
<http://www.lupins.org/explore/>  
<http://www.safergrass.org/pdf/JEVS8-05.pdf>  
<http://www.safergrass.org/pdf/safergrasses.pdf>

### The Nude Horse –

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- Protein
- Laminitis (indepth)
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