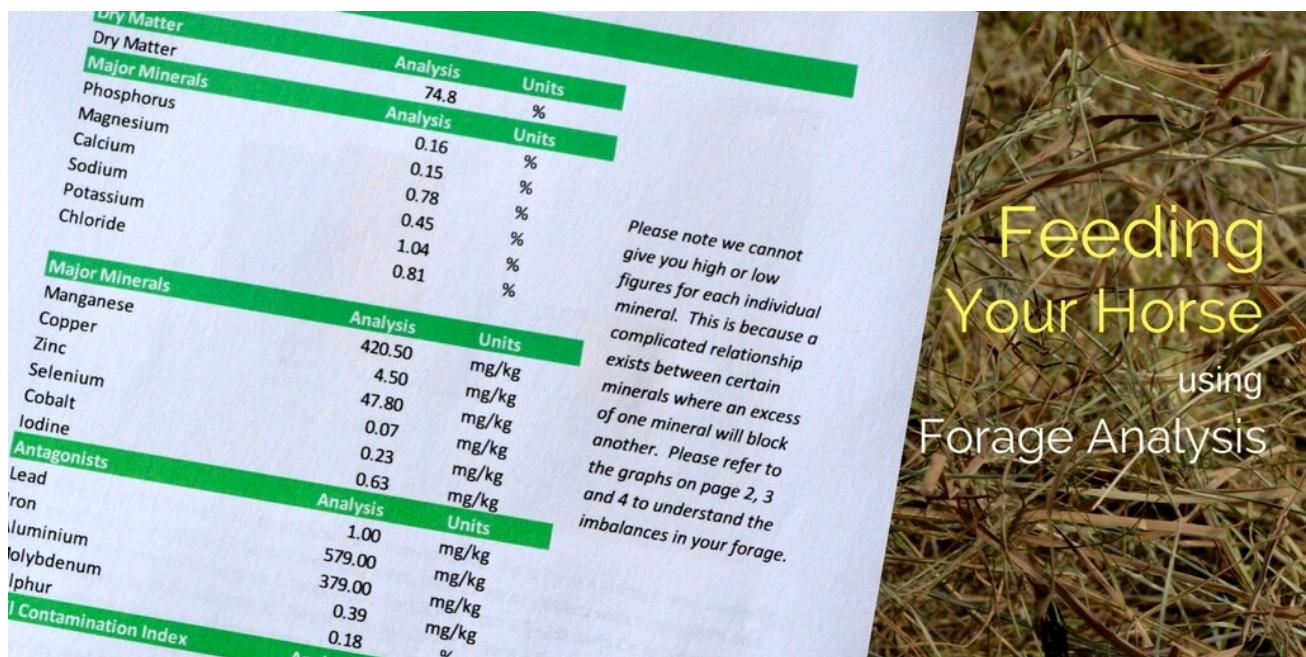


Feeding your horse using forage mineral analysis is a way to determine the correct vitamins and minerals to feed to a horse based on the grass or hay eaten.

The forage analysis below is fairly typical of a UK forage analysis of hay or grass. It is a mineral analysis.



Dry Matter		
	Analysis	Units
Dry Matter	74.8	%
Major Minerals		
	Analysis	Units
Phosphorus	0.16	%
Magnesium	0.15	%
Calcium	0.78	%
Sodium	0.45	%
Potassium	1.04	%
Chloride	0.81	%
Major Minerals		
	Analysis	Units
Manganese	420.50	mg/kg
Copper	4.50	mg/kg
Zinc	47.80	mg/kg
Selenium	0.07	mg/kg
Cobalt	0.23	mg/kg
Iodine	0.63	mg/kg
Antagonists		
	Analysis	Units
Lead	1.00	mg/kg
Iron	579.00	mg/kg
Aluminium	379.00	mg/kg
Tungsten	0.39	mg/kg
Phosphorus	0.18	%
Contamination Index		
	Analysis	Units

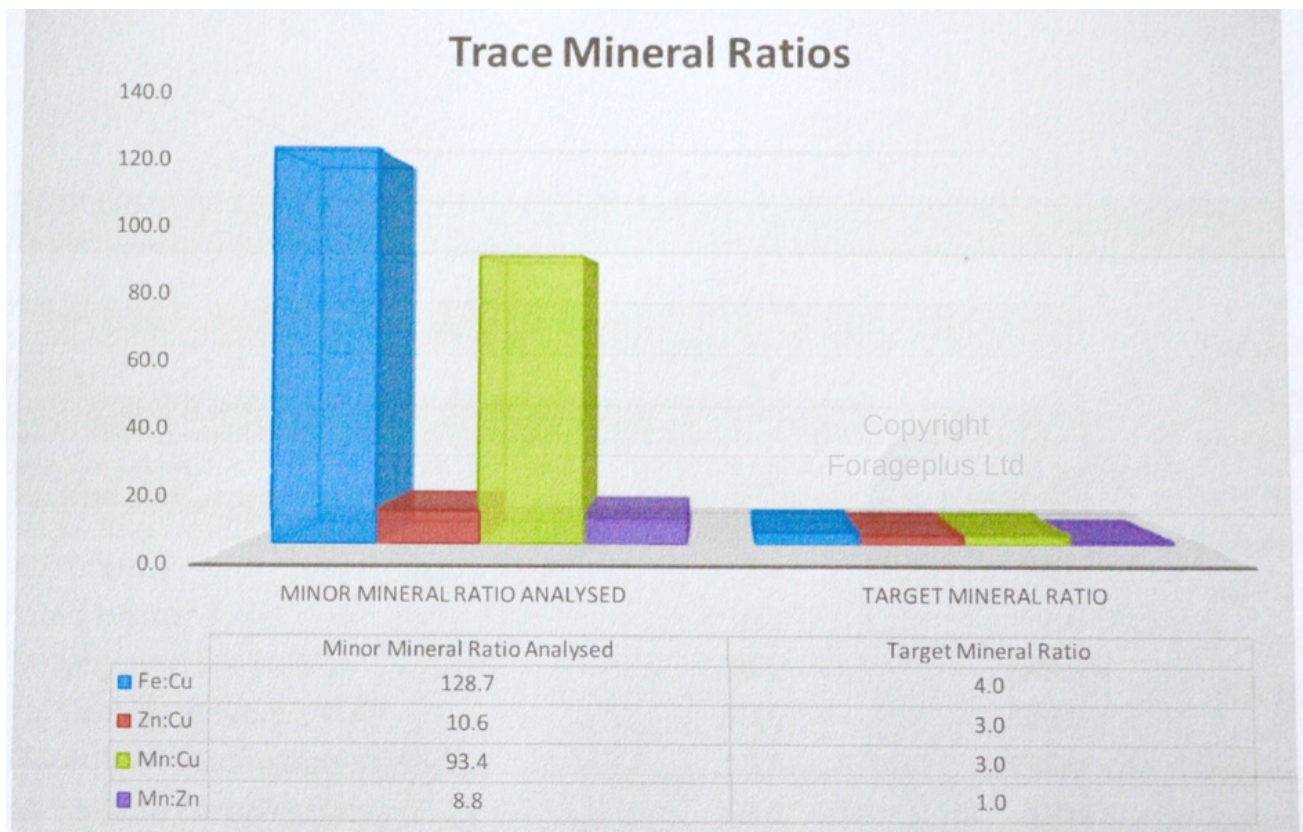
Please note we cannot give you high or low figures for each individual mineral. This is because a complicated relationship exists between certain minerals where an excess of one mineral will block another. Please refer to the graphs on page 2, 3 and 4 to understand the imbalances in your forage.

If we delve through our files and randomly pull out reports then this picture, after forage analysis, comes up again and again and again. The picture is of high iron and high manganese, low sodium, low selenium and low or very low copper and zinc. Usually calcium is also very high in comparison to phosphorous and magnesium.

Mineral Analysis for Horses – Ratios

Why does it matter when one mineral is much, much higher than another? It matters because minerals out of balance with each other in hay, haylage or grass have an enormous impact on the health of your horse. Your horse might be calorie rich but it is quite possibly very nutrient starved even on a broad spectrum supplement. This is because the ratio of one mineral to another matters. When one mineral is too high it locks up the availability of other minerals which it is antagonistic to.

Using the above forage mineral analysis report as an example you can see below that the trace minerals are out of balance with each other. The target ratios can be seen on the right, the actual ratios on the left. Horses eating this forage will be over exposed to iron and manganese under under exposed to copper and zinc meaning that they will have both relative and frank deficiencies of both copper and zinc.



This way of understanding forage reports is very important because it enables targeted feeding of certain minerals which stop excessive minerals locking up those which are low and poorly represented in the greatest proportion of a horses diet.

Learn about using forage analysis when feeding horses correct levels of vitamins and minerals.[Click To Tweet](#)

Horse supplements based on forage mineral analysis

Read what Dr Eleanor Kellon has to say about why knowing the mineral status of forage is

so important and why a focused nutritional supplement based on knowing the scientific analysis of forage is always the best choice you can make for your horse!

Equine Vitamin and Mineral Basics, Dr. Eleanor Kellon

Eleanor Kellon, VMD

In a perfect world, the horse would have an unlimited range of land to roam over, populated with a variety of different grasses growing in different soil types, with easily accessible natural salt deposits.

Today's domesticated horse can't come close to that, and many eat the same meal all year long. This inevitably leads to deficiencies and imbalances.

People often assume a horse is getting everything it needs if the weight is good. Nothing could be further from the truth. Calories are easy to come by. Inside that well fleshed exterior, many problems may be lurking.

Horses getting the bulk of their nutrition from good pasture may not require a higher potency vitamin and mineral supplement, but hay is a different story. Vitamin C and vitamin E are lost very rapidly after hay is cut and cured, however all but hard working horses will have access to enough vitamin C. Vitamin A lasts longer but may reach deficient levels by approximately 1 year, especially if it was not very green. Vitamin A is quite possibly the most over supplemented vitamin.

Vitamin D is the sunshine vitamin. It is produced in the horse's skin by sun exposure. Fresh pasture does not contain vitamin D, but cured hays contain a vitamin D precursor which the horse's body can convert to vitamin D.

Hays are actually good sources of B vitamins but horses being exercised may need more. There is also good evidence that many horses will often benefit from biotin supplementation when they have hoof or skin problems and the National Research Council recognizes a thiamine requirement for exercising horses.

Commercial Feeds

How many times have you heard someone say they feed a little bit of XYZ feed so that their horse will get their vitamins and minerals? It doesn't work like that. It's true that the feeds are supplemented with vitamins and minerals. However, even the most highly fortified feeds only provide 50% or less of the minimum daily requirements when they are fed at their recommended minimum rate, which is typically 3+ kg/day. If you are feeding 1.5 kg/day, the horse is only getting 50% of their required nutrients and at 0.5 kg/day it drops to less than 20%. You are also adding concentrated calories which many horses do not need.

Mineral levels in grasses vary widely even between different areas of the same field, and different types of plants have different profiles. Alfalfa and clovers are very high in calcium. Potassium is high in all except very, very mature hays - more like straw. Sodium is always low, except in grasses irrigated with high sodium waters.

Trace minerals are those needed only in small, milligram, amounts. While the requirement is small, the impact is huge. These minerals are indispensable for enzyme functions, carrying oxygen to the tissues, energy generation, immunity, antioxidant protection, thyroid function, reproduction, pigment production - to name a few.

The nutritionally important trace minerals include iron, iodine, copper, zinc, selenium, chromium and manganese. Full blown, life-threatening deficiencies are rare but inadequate levels of some of these minerals can produce a variety of symptoms. Two of the most common are poor hoof quality, including a predisposition to thrush, and "bleaching" of the coat. Immune system dysfunction includes allergies, exaggerated reactions to vaccines or insect bites, and exaggerated inflammatory reactions in general. Ability to maintain and repair tendons, ligaments and other connective tissues may be impaired. The list goes on.

Zinc and copper deficiencies are extremely common. On the other hand, iron

and manganese are rarely low and often very high. They worsen the problem with zinc and copper by competing with them for absorption. Iodine is highly variable, usually low unless very close to the coast. Conversely, forages from alkaline soils usually have adequate selenium while all others are borderline to deficient.

The ideal way to perfectly supplement and balance the horse's diet is by having the forage, either hay or pasture, analyzed. This allows for precise management of the ratios between minerals and is especially important for compromised horses. However, horses in good health can handle some imbalances better and can do well with a well formulated supplement.

Some features to look for include:

if feeding alfalfa hay, mixed hay with alfalfa or a pasture mix including clover, calcium

should be less than phosphorus

with grass hays, calcium:phosphorus ratio between 1.2:1 and 2:1

iron and manganese low and less than zinc

zinc higher than copper

selenium 1 to 2 mg/dose

A little time spent in reading labels can go a long way in supporting your horse's health by addressing the common deficiencies and imbalances inherent in the diet of domesticated horses.

Eleanor Kellon, VMD, currently serves as the Staff Veterinary Specialist for Uckele Health & Nutrition in the USA. An established authority in the field of equine nutrition for over 30 years, Dr. Kellon is a valuable resource in the field of applications and nutraceuticals in horses. She formerly served as Veterinary Editor for 'Horse Journal' and John Lyons 'Perfect Horse' and is owner of Equine Nutritional Solutions, a thriving private practice. A prolific writer, Dr. Kellon is the author of many best-selling books on a variety of medical and nutritional topics and has contributed to both lay and professional publications.

Mineral amounts in horse diets are totally dependent upon that contained in forage. Find out more. [Click To Tweet](#)

Forageplus offers a full analysis and mineral balancing service for all horse owners who want to target only the minerals which are deficient in their horses diet. We sell separate minerals as well as ready mixed balancers. We don't believe the broad spectrum approach creates optimum health so we target minerals with our forage focused approach. For those owners who do not want to or cannot analyse forage we have used the hundreds of scientific forage reports we have carried out to create a range of balancers containing only the most commonly deficient minerals at the amounts needed to help balance the forage your horse eats. Our balancers are not broad spectrum they are forage focused so they will optimise health and performance in horses without adding to already high iron and manganese burdens. Feed our minerals and watch your horse blossom with intelligent nutrition from Forageplus.

Forageplus Talk is a free access website sponsored by
Forageplus Ltd Intelligent Nutrition for your Horse.

Sign up to our Horse Talk community and receive articles like this straight to your inbox

