



Feed well to breed well

by Elna Lategan

Good caretakers, good pastures and good horses go hand in hand. Good pasture is the cornerstone of successful horse production. Yet, it requires careful pasture management to maintain quality. Pastures vary in nutritious value from season to season and also from year to year.

Stocking rates and pasture management also play an important role in good pasture management. When stocking rates are too high, horses graze closer to the ground and remove the vital growing points of the plants. However, removal of leaves stimulate the growth of the grass plant and therefore the sward. If the leaves are not removed by grazing or topping (the mechanical cutting of the sward), the plant will continue to grow through its life cycle and flower.

Young spring grasses contain very few stems and are of good nutritional quality, containing high levels of water, protein and soluble carbohydrates (sugars). The fibre level, however, is low due to the small number of stems and often horses can be seen chewing wood and fences in early spring, as they are looking for more fibre. In these cases, putting hay out for them to chew on can be beneficial. As the grass grows through the summer, the nutritional quality reduces together with the proteins, soluble carbohydrates and water, while the fibre increases.

Pastures in South Africa are generally deficient in certain minerals and trace minerals, which should be supplemented at all times. The widespread application of trace minerals to the soil is not a good idea, as problems may be created with trace mineral interactions. All pastures should be analysed for relevant



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nutrients and a comprehensive feeding programme will be based on this information.

Skeletal development

Young growing horses require a balanced intake of the minerals calcium, phosphorus, magnesium, potassium, copper, iron, zinc, iodine, manganese and salt. At any given time, your pastures will be deficient in one or more of these bone-building minerals.

Calcium-to-phosphorus ratio imbalance is most likely to occur when high grain rations are fed and when horses graze grasses such as kikuyu for extended periods. While a calcium deficiency may not reduce growth in stature, the skeleton is much weaker resulting from too little bone being formed. What is formed, is porous and fragile and prone to breakdowns.

Phosphorus deficiencies usually occur when horses are restricted to grazing high legume

pastures such as lucerne, or pastures that are heavily manured or badly weathered. A phosphorus deficiency produces similar skeletal abnormalities and weaknesses as a calcium deficiency, but it also stunts normal growth.

If the growing horse lacks calcium to adequately calcify the bone, the bones become soft and weak, and in extreme cases result in rickets. A chronic lack of dietary calcium, or an excess of phosphorus, can be blamed for such a condition. Deficiencies of manganese, sulphur, potassium, cobalt, zinc and magnesium all contribute to poor bone development, stunted growth, poor or depraved appetites and general unthriftiness. Long term deficiencies of salt will produce similar effects.

Foetal skeleton development

In the last three months of pregnancy, the foetus doubles in size and calcification of the

cartilaginous skeleton occurs. Premature foals are born without a full store of calcium and are predisposed to rickets. To ensure soundness and proper development in the foetal skeleton, adequate protein and minerals must be given to the mare.

During late pregnancy, the mare draws very heavily on the calcium reserves stored in her skeleton. If it lacks, the mare's own body will become severely depleted as her system caters for the formation of the foetal skeleton. The mineral requirements of the lactating mare are far greater than those of the pregnant mare – almost three times greater than her normal requirements.

Mineral supplementation should also be of vital concern to the breeder, because of the subsequent conception rate. Once a mare's skeletal reserves drop below a certain level, the "factory" runs out of raw materials and the mare must protect herself by missing out on pregnancy. The nutritive requirements for milk production, especially minerals, must be catered for if your foals are to get a good start in life. It's a simple case of better milk building a better foal.

Folic acid and vitamins

Of all the B-group vitamins, folic acid is the first to become deficient in a ration, and commonly lacks in summer pastures and cereal grains. Because this deficiency has the most drastic effects, especially on breeding farms, it becomes important that folic acid be supplemented. A deficiency in the pregnant mare leads to an inability to provide her developing foetus with complete red blood cells because folic acid, in association with vitamin B12, is essential for red blood cell formation. Subsequently, the young foal will have poor bone marrow function and impaired growth.

Vitamins A and D are required in the development of strong bone structures. A mare's requirements for this vitamin during peak lactation, are almost three times her normal requirement. Large amounts of calcium and phosphorus must be assimilated and

utilised in the production of her milk, making vitamin D intake critical.

While research shows which individual nutrients are required by horse studs, the actual chemical form of each mineral and vitamin used in a good formulation, ensures the maximum availability of each ingredient to the horse. The horse receives maximum benefit and wastage is minimal. Because of their inter-relationships, the actual levels of all specific minerals and vitamins are critical. Too little or too much of one, can cause the loss of another or ineffective uptake of a specific mineral.

Legs like steel

Bone is formed by a complicated series of events. A simple explanation is that cells called osteoblasts produce a framework of protein fibres called osteoid tissue. This tissue is calcified when the correct amounts of calcium, phosphorus, magnesium and other minerals are present in the blood stream.

In the development of sound, strong bone in the young horses that you breed, your primary concern should be that adequate levels of essential bone-building ingredients are provided in the feed that you give them. While acknowledging the importance of paddocks and pastures, our concern here is with the minerals so vital for bone formation and strength. Legs like steel don't just happen – they must be fashioned, and you are the person to do just that.

It is obvious that the foal's genetics also play a very important role in the development of strong legs. Generally speaking, there is no such thing as a "perfect" environment for breeding sound, good-legged horses. But there are the means available for you to ensure that you have provided your foal with the legs to carry him to many future championships.

Breeding horses with strong bones can be achieved by feeding a balanced diet from foetus to foal to the future champion. Regular pasture analysis is required and the diet can be changed to supplement the shortages occurring in the pastures at any given time.

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