## **SEPTEMBER 2021** BLENDING NATURE AND TECHNOLOGY



### **IN THIS MONTH'S ISSUE –** 1. STUD FARM FEEDING 2. TESTIMONIALS

## STUD FARM FEEDING

#### FEEDING THE MARE AND FOAL

Of all the life stages pregnancy, lactation and growth are all phases that require close attention. Providing an adequate and well-balanced diet throughout pregnancy and lactation plays a vital role in how well the foal grows and develops, as well as impacting on the mare's overall health and wellbeing.

#### **PROIR TO CONCEPTION**

Preparing for pregnancy starts way before conception, as good overall nutrition is important to ensure correct hormonal responses to support both conception and pregnancy. Ensuring the mare is at the correct body weight is also necessary, as over-feeding the mare will not produce a foal with a higher birth weight, but rather it is more likely to increase the risk of problems during foaling.

#### PREGNANCY

The mare's diet should include a balance of nutrients, including essential amino acids, provided by quality protein sources, vitamins and both macro and trace minerals. Essential nutrients are not only needed to support the growing foetus but also the development of the placenta, uterus and mammary glands as well as ensuring internal reserves are built up for both mare and foal after birth. The health of the mare's placenta is crucial to the transfer of nutrients from the mare to the foetus.

Growth of the foetus begins right from the point of conception and gradually progresses with the biggest development happening during the final trimester (last 3 months) of pregnancy.

Although "poor" nutrition may not lead to immediate issues, long term shortfalls could affect the development of the foal. Research has shown that inadequate nutrition during pregnancy can prolong gestation, increase the risk of developmental abnormalities and produce low birth weights.

So where is the best place to start when feeding a pregnant mare? Firstly, the type and quality of forage (hay/grazing) should be considered, as higher value pasture and hay may mean less reliance on concentrate food. Although it should be noted that even mares maintaining well on pasture alone, should still receive supplementary nutrition, such as a balancer, as no modern forage is going to meet all the mineral requirements of a pregnant mare alone.

Once this is in place the type of concentrate needed can be reviewed. Not all mares may need the higher calorie value of a stud feed, however all will need a nutrient dense diet, so again here consider using a balancer alongside small amounts of lower calorie feed or even just a balancer alone.

For mares that are particularly "bad doers" they may need a higher calorie stud ration to ensure that she has enough support and can maintain weight well. This feed must be provided at the manufacturers recommended levels to ensure the mare is receiving all the essential nutrients she needs at each stage of pregnancy.

During the last 3-4 months of pregnancy the mare's requirement for energy/calories increases and so even "good doer" mares may need higher energy feeds and hays during this time.





RCL

As always, make changes slowly and way ahead of foaling to ensure the mare has all she needs to prepare her for the start of final stages of pregnancy into lactation.

Lastly, consider the size of the mare's meals. Space in the last trimester is limited and so provide lots of small meals often and splitting forage rations into smaller amounts will ensure the mare has room to consume these happily.

#### LACTATION

During the first 3 months of lactation the mare's requirements reach the level of a hard-working horse in terms of both calories and additional nutrients.

As an idea, compared to pregnancy, the mare's energy needs double, her protein requirements triple and calcium and phosphorus and amino acid profiles almost quadruple, so this just goes to show the need for nutritional support during this time.

These requirements decrease as milk production decreases - in both quantity and quality - during the fourth through sixth months post-foaling. With the foal growing most rapidly during the first three months, the mare will give up to 3% of her bodyweight daily in milk production so, for example, a mare of 500kg will produce in the region of 15kgs of milk per day.

If a lactating mare's diet is restricted at this point, she will sacrifice her own calorie, protein, and mineral stores for milk production, leading to a decreased wellbeing on her part.

Mares fed enough dietary energy throughout gestation and lactation should have no problem manufacturing enough milk of appropriate nutrient composition to nourish a foal. Even mares that are in suboptimal body condition continue to produce high-quality milk until their energy reserves are depleted. At this point, milk quantity decreases however quality does not and so this indicates the importance for the correct energy/calorie density of the diet.

Whilst good quality grass will make a significant contribution to the mare's requirements, no modern pasture will be able to support a lactating mare alone and thus choose a concentrate product

designed to meet a lactating mares' nutritional needs.

Choosing a product designed for broodmares not only allows you to rest assured that energy and protein requirements are met, but that minerals are furnished in appropriate amounts. Trace mineral supplementation is especially important during pregnancy in order for the foetus to stores in its liver the necessary iron, copper, and manganese to meet its requirements during the first few months of life.

#### **THE FOAL**

In an ideal world colostrum will be the first meal ingested by the foal. Colostrum is a nutrient rich fluid containing infection fighting antibodies called Immunoglobulins (IgGs) and is produced during the first hours after birth. Thicker, yellower, and stickier than milk, colostrum quality sets the tone for foal health in the coming days and months. IgGs are not transferred to the foal during pregnancy and therefore foals at birth are far more susceptible to infections.

Colostrum is therefore vital in passing on IgGs and this additional support lasts 6-12 weeks at which stage the foals own immune system should be functioning optimally. Without enough colostrum and thus passive transfer, the foal is at greater risk of developing possible life-threatening conditions.

Newborn foals can absorb the large immunoglobulin proteins across the small intestinal wall and into the bloodstream, however this uptake is greatest within the first 6-8hours after birth and after 24hours is no longer possible due to changes within the intestine.

Something to consider prior to lactation is that studies have shown (Ayad, et al (2017)) that feeding a digestive yeast containing Saccharomyces cerevisiae significantly increased mares' colostrum and foal serum IgG1 concentration and thus it would be worthwhile to include this in the mare's diet. If a foal is orphaned, mare's colostrum can still be given to the foal by hand, but it may be prudent to keep an emergency supply.

The digestive system of young foals cannot easily cope with solid food, so milk must be provided either from a foster mare or a commercial milk replacer. During the first week of life, a foal can







RCL

suckle 7-10 times an hour, decreasing to about 3 times an hour after this. Whilst bottle feeding may be the only option to start with, if no foster mare is available, training the foal to drink from a bucket maybe a good alternative.

Free access to milk replacer in a bucket has the advantage that the foal can drink when he chooses and is more likely to consume small quantities at frequent intervals as he would if suckling from the mare. This encourages even growth rates and a healthier gut, with reduced risk of gastric ulcers or other digestive upsets. The foal can also develop a more "normal" relationship with humans as they are not seen as the only direct source of food.



A healthy foal is entirely reliant on its mother's milk for the first three months (although generally they will start nibbling on hay and grazing from around 10 days), as the enzyme activity of its digestive tract hasn't fully developed to enable the digestion of starches and proteins found in cereals and forage. Therefore, the quality and availability of that milk is crucial and strongly influences the foal's growth rate and body condition.

Research has suggested that mineral intake from milk and pasture alone, in the first three weeks, is insufficient to fully meet the foal's nutrient requirements and would be why, the foal utilises mineral stores accumulated in the liver whilst in utero, to meet the demands of this early developmental stage. Clearly, if the mare hasn't received a balanced diet throughout pregnancy, there may be a deficiency which, without additional nutritional support, could result in developmental problems during the foal's first three months of life.

As time progress some foals may start eating the mare's food and so either provide more to make sure the mare gets what she needs or look at positioning the feed so that the foal cannot get access to it.

Many studies have been carried out with regards to weaning but generally consensus is that gradual weaning of foals reduces stress compared to abruptly weaned foals and associated management should include the introduction of the intended weaning/creep feed ration from 3 to 4 months of age. Not only will this encourage the maturation of the digestive tract and its adaptation to a forage and cereal-based diet, but it will also help support a more even growth rate.

At around 4 months, the mares' milk will only be providing about 30% of the foal's energy requirements so it's also timely to introduce

concentrate feed at this point. The aim should be for the youngster to be well established on this feed prior to the time of separation from the dam, to reduce the problems of dietary setbacks post weaning. The type of creep feed for the pre-weanling will need to be assessed based on the individual's situation and breed type, but generally using a small amount of a suitable stud ration alongside a balancer will provide a balance of nutrients for those foals requiring help maintaining condition. For those that are maintaining weight "too well" a balancer may be all that is needed initially.

Regular monitoring of the foal's bodyweight, through use of a weightape will show the rate of growth and identify any deviations which may indicate an adjustment to the foal's diet is required.

#### **THE STALLION**

Discussion on stud farm nutrition would not be complete without considering the stallion. Just as with the mare and foal correct balanced nutrition is vital for the stallion in order to ensure general wellbeing, reproductive health and performance.

Treating each stallion as an individual is important. The number of mares serviced, or collections taken during the season, age, behaviour, body condition, general health, handling routine, and level of exercise all impact how the stallion will need to be fed.

Although it has been shown that stallions have increased requirements (when comparing geldings and mares of the same breed, age, temperament) of around 10-20% above maintenance, quite often the stallion's energy requirements are overestimated. As a result, many stallions are prone to being overweight. Fat stallions have an increased risk for developing insulin resistance and laminitis. An overweight stallion also must work much harder as he serves mares and may end up fatiguing quicker if the breeding schedule is heavy.

However, the reverse must be noted that stallions should not be too thin, as obviously this can impact on their overall health as well. A sound feeding program for stallions should be built around good-quality forage fed at a daily rate of 1-1.5% body weight. A fortified concentrate should be added to balance the ration. Most stallions can be fed on a performance horse feed or those designed for breeding horses. It should also be noted that some stallions may need a different type of concentrate during the non-breeding season compared to the breeding season. This may be simply a reduction in concentrate food during the off season or a change to a lower energy density feed.

Stallions that need to gain weight and very active stallions may benefit from concentrates containing supplemental fat or additional fat could be added in the form of oil. This also has the benefit of helping to provide calories, without the fizz for those where temperament needs to be managed. For overweight stallions a balancer pellet may be a better choice than a full concentrate.

When considering an oil, it may be worth looking into the Omega content especially if the stallion is involved in semen collections. High DPA (an Omega 6 fatty acid) to DHA (an Omega 3 fatty acid) ratios have been linked to infertility with higher DHA being linked to increased fertility, and species with naturally higher levels of DHA handle cooling and freezing of sperm with less negative effects. Due to the types of fats, grains and forages commonly fed to horses, many rations are high in omega-6 fatty acids, precursors for DPA.





This may lead to a lowering of the ratio of DHA to DPA in sperm membranes causing a decrease in fertility.

Cooling and freezing semen causes cellular level injury in sperm, disrupting membrane lipids. Supplementation of DHA has been indicated to have direct impact on the cells in order to help create stronger membranes more able to withstand the aggressive freezing and thawing processes involved. For stallions that already have high fertility and handle cooling and freezing, supplementing DHA is likely unnecessary.

Good sources of DHA include fish oil and some algal preparations. Linseed oil does contain Omega 3 but the form ALA (alpha linoleic). ALA can be converted to DHA by the horse, but this is not always efficient and thus may mean not as much is supplied therefore if you are looking for an increase in benefits a direct source of DHA will be more beneficial.

Other aspects that are worth consideration are Zinc, Vitamin E and Beta Carotene. Zinc a trace mineral commonly recognised as being important for fertility because it is a key constituent of testosterone. A stallion's requirement for zinc is no different whether covering or not, which supports the theory that, as with most nutrients, providing enough is crucial, but feeding extra might have no effect.

Studies in human males showed that increasing levels of the antioxidant Vitamins E and C and beta carotene (pre cursor of Vit A) resulted in higher sperm numbers and motility, however less work has been done in horses.

The main sources of beta carotene in a horse's diet are green, leafy plants, so the horse with grass access should be consuming plenty of

beta carotene. The stabled stallion, being fed poorer-quality forage, might be consuming much less. Adding Lucerne to the ration could provide lots of beta carotene but be careful to also consider its high calorie content which may be a problem for good doers.

Generally, Vitamin E is included in feeds, and balancers by manufacturers, so these levels should be enough for most stallions. However, Vitamin C is not always added and, because the horse's requirements tend to increase at times of stress, choosing a feed that contains supplementary Vitamin C, could be beneficial.

Choosing a fully fortified, well balanced feed is vital in giving the peace of mind that the stallion is receiving everything he needs, however don't forget practical considerations such a behaviour change and meal size.

Intensive covering could affect the behaviour of the stallion and often they may go off their food. Although common this can obviously effect weight and condition, and if it continues for a long period of time could affect fertility if daily essential nutrients are missing.

In these situations, lots of small meals, with very concentrated sources of nutrients (balancers for example) can be useful, alongside high calorie hays such as Lucerne to keep energy levels up.

As with the mare, make any dietary changes slowly and prior to the breeding season so there is enough time for improvements to take place. For example, sperm take 60days to form and so benefits of additional sperm support would need to be started several months before in order to reap the rewards.

# TESTIMONIALS

#### "Born, Bred and Fed on Epol"

Dubawi Princess pictured below is a multiple winning SA bred filly by stallion, Willow Magic.







RCL