

Feeding on the Stud Farm

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Broodmare

Stages of Pregnancy

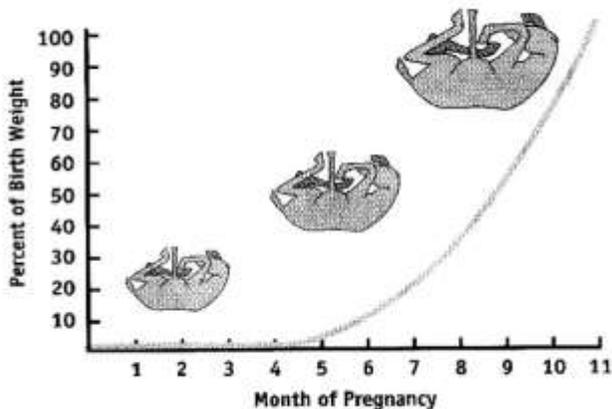
A broodmares' feeding program should be divided into three separate stages. Stage one is early pregnancy, from conception through the first seven months of gestation. Barren mares and pregnant mares without foals by their sides fit into this nutritional category. Stage two encompasses the last trimester of pregnancy, which is from around seven months of pregnancy through foaling. Stage three is lactation, which generally lasts five or six months after foaling. The nutrient requirements for these three stages differ markedly and adjustments should be made in the mare's feeding program to accommodate these differences. The most common mistakes made in feeding broodmares are overfeeding during early pregnancy and underfeeding during lactation. The breeder should aim to maintain the mare in optimum condition throughout the year, keeping careful track of fluctuations body condition score and weight. This is referred to as "straight line nutrition" and is the best way of ensuring correct development and growth of the foetus and nutritional health of the mare.

Stage 1: Early Pregnancy

To feed the mare properly during pregnancy, it is important to understand how the foetus develops throughout the gestation period. Contrary to popular belief, the foetus does not grow at a constant rate throughout the entire eleven months of pregnancy. Figure 1 illustrates a typical growth curve for a foetus expressed as a percent of birth weight. The foetus is very small during the first five months of pregnancy. Even at seven months of pregnancy, the foetus equals only about 20 percent of its weight at birth. At this stage in pregnancy the foetus equals less than two percent of the mare's weight and its nutrient requirements are miniscule compared with the mare's own maintenance requirements. Therefore unless she is lactating, the mare can be fed essentially the same as if she were not pregnant at all. An ideal diet may comprise of pasture alone with the addition of a vitamin and mineral supplement to balance nutrient shortfalls in the pasture (Table 1 & 2). Obviously if pasture is poor or scarce, additional hay or chaff

should be fed a rate of at least 1-1.5% bodyweight per day or *ad lib* throughout pregnancy and lactation if hay quality is average to poor.

Figure 1. Fetal growth in the horse.



All too often, the well-meaning mare owner greatly increases feed intake after the mare is pronounced in foal, reasoning that she is now “eating for two.” This is not only unnecessary, but may lead to obesity and problems at foaling time. Obesity in broodmares is a serious problem, not only affecting the mares’ fertility and ability to conceive, but seriously risking the health of the foetus. Over conditioning your mare at this stage may increase the chances of the foal exhibiting developmental orthopaedic diseases after birth. This is particularly true where mares have access to high quality pasture during early pregnancy. If pasture quality is high, it may be necessary to restrict grazing by means of stabling or muzzling for part of the day. Access to pasture or hay should not be denied for longer than eight hours at a time to prevent digestive upsets.

By the same token, it is very important in early pregnancy that the mare does not go into negative energy balance and loose condition. Owners of picky eaters, poor doers and lactating mares with foals at foot need to be especially vigilant of body condition. Mares in poor condition are at increased risk of pregnancy loss. If a mare is a good milker and pasture is dry and scarce, additional provisions should be made to ensure that she does not begin to loose condition.

Late Pregnancy

After seven months of pregnancy, the foetus begins to develop rapidly. At this point, its nutrient requirements become significantly greater than the mare’s maintenance requirements and adjustments should be made in the mare’s feeding program.

Table 1: *Straights based diet. Based on a 5yo 500kg mare on moderate to good quality pasture. If pasture is too good, grazing restriction may be necessary, if pasture is poor; supplementation of hay or chaff may be required.*

Pregnancy Stage	Oats kg	All-Phase Pellet kg	Pasture or hay kg DM	Salt (loose or block) g
1. Early Pregnancy	0-2	0.5	~6	25
2. Late Pregnancy	0-4	1	~6	25
3. Lactation	0-8	1	~8	25

Table 2: *Pre-mixed broodmare feed diet. Specialised broodmare feeds can vary considerably so check feeding recommendations on the bag and check ingredients to ensure correct DE, Protein, Calcium, Phosphorus, Copper, Zinc, vitamin and trace mineral requirements are being met. Remember that if good doers are fed below recommended levels on the bag, a vitamin and mineral supplement may also be required.*

Pregnancy Stage	Breed N Grow kg	Pasture or Hay kg DM	Salt (loose or block) g
1. Early Pregnancy	1-3	~6	25
2. Late Pregnancy	2-5	~8	25
3. Lactation	3-7	~10	25

Digestible energy (DE) requirements only increase about 15 percent over early pregnancy. Protein and mineral requirements increase to a greater extent. This is because the foetal tissue being synthesised during this time is quite high in protein, calcium and phosphorus. During the last four months of pregnancy, the foetus and placenta retain about 77 grams of protein, 7.5 grams of calcium, and 4 grams of phosphorus per day. Trace mineral supplementation is also very important during this period because the foetus stores iron, zinc, copper, and manganese in its liver for use during the first few months after it is born. The foetus has developed this nutritional strategy of storing trace minerals during pregnancy because mare's milk is quite low in these elements.

New Zealand researchers studied the effect of copper supplementation on the incidence of developmental orthopaedic disease in Thoroughbred foals. Pregnant Thoroughbred mares were divided into either copper supplemented or control groups. Live foals born to each group of mares were also divided into copper supplemented or control groups.

The four treatment groups therefore were: 1) mares supplemented with copper (0.5mg/kg body weight), but their foals were not supplemented; 2) both mares and foals were supplemented with copper; 3) mares were not supplemented, but their foals received supplementation; and 4) neither mares nor foals received supplementation.

Copper supplementation of mares was associated with a significant reduction in the phytitis scores of the foals at 150 days of age. Foals from mares that received no supplementation had a mean phytitis score of 6, while foals out of supplemented mares had a mean score of 3.7. A lower score means less phytitis. There was no significant effect of copper supplementation of the foals on phytitis scores. There was a significantly lower incidence of articular cartilage lesions in foals from supplemented mares. However, there was no significant effect of copper supplementation of the foals on articular and physeal cartilage lesions. The amount of copper consumed per day should total around 175mg per day for a 500kg mare. Remember that some copper (around 50– 75mg per day) will be supplied from pasture or alternative forage sources too although amounts depend on pasture or forage quality.

Vitamin A has been found to be of critical importance to the late pregnant mare. Studies by Dr Kathleen Crandell of Kentucky Equine Research showed that if mares are maintained on hay alone with no green pasture and no vitamin A supplementation, the subsequent growth rates of their foals is reduced significantly. As hay is stored over a period of weeks and months, it's vitamin A content is drastically reduced. If pasture is scarce, and the mare relies on hay as her major forage source, supplementation of vitamin A may be necessary to avoid this scenario.

Additionally, selenium and vitamin E supplementation in late pregnancy has been shown in recent research to enhance immunity in both the mare and foal. Antibody levels were higher in foals of mares receiving 3mg selenium and 1600 IU vitamin E /day as opposed to controls (only 1mg selenium and 800 IU vitamin E /day). Selenium may also help the mare by reducing the risk of retained afterbirth as shown in cows.

To ensure that mares are receiving enough copper, vitamin A, selenium and vitamin E in their diets at this stage of pregnancy, choose either pre-mixed feeds or supplements containing appropriate levels of these vitamins and minerals as detailed on the bag or bucket. Mares in late pregnancy are often overfed energy in attempt to supply adequate protein and minerals to the developing foal. This seems to be especially true of warm-blood and draught horse breeds. If the pregnant mare becomes fat during late

pregnancy, she should be switched to a feed that is more concentrated in protein and minerals so that less can be fed per day. This will restrict her energy intake while ensuring that she receives adequate quantities of other key nutrients. Mares in the late stages of pregnancy can be fed either a complete mixed feed designed for broodmares eg **BARASTOC BREED'N'GROW** and balanced to provide all the vitamins and minerals required by the mare at this stage or an owner designed diet in conjunction with a commercially available balancer supplement. Rates of feeding depend on the size and age of the mare and the recommendations for the particular brand of feed. Some mares can survive on pasture alone with a vitamin and mineral supplement even in late pregnancy and not lose condition without any detriment to the foal. Good horse sense and personal knowledge of the mare and her condition in relation to feeding should always be the first guide when designing feeding schedules. If owners prefer to feed straights, oats are always the first choice grain to feed for energy along with a balancer supplement such as **KER ALL-PHASE PELLETT** to ensure adequate vitamin and mineral intake (Table 1 & 2).

Lactation

After foaling, the mare's nutrient requirements increase significantly. During the first three months of lactation, mares produce milk at a rate equal to about 3 – 4 percent of their body weight per day. Some mares milk so well that whilst the foal grows quickly strong, the mare begins to lose condition, using her own reserves to supply her foal. This may make it difficult for the mare to conceive again and subsequently retain the foetus due to malnutrition. All efforts should be made to keep the mare in good condition during lactation and this is the time that the art of condition scoring on a regular basis can reap rewards. Mare milk is rich in energy, protein, calcium, phosphorus and vitamins. Therefore, the mare should be fed enough grain to meet her greatly increased nutrient requirements. Mares in early lactation may require up to 8 kg of grain per day depending upon the type and quality of forage they are consuming but as previously mentioned, some mares of particularly well doing breeds can be successful milkers on good pasture and a vitamin and mineral supplement alone. The aim should be to use the best quality forage, and keep grain levels down to avoid potential digestive upset. If straight grains are being used, the grain should be fortified with additional protein, minerals and vitamins to meet the lactating mare's needs. There are a number of commercially available balancer supplements that can be used to fortify grains, but check labels to ensure adequate intake of each constituent. Again, the grain portion can also be in the form of a complete mixed feed to ensure balanced and convenient

nutrition (Table 1 & 2). Trace mineral fortification is not as important for lactating mares as for late pregnant mares because milk contains low levels of these nutrients and research has shown that adding more to the lactating mare's diet does not increase the trace mineral content of the milk. Once the foal starts eating from the mares feed bucket, however, a well fortified feed is important to ensure adequate intake of vitamins and minerals by the foal, unless the foal is being creep fed, in which case only the foal's diet really needs to be supplemented. Calcium and phosphorus are the minerals that should be of primary concern during lactation so lucerne hay is the forage of choice due to its high calcium content. It may benefit to the foal to supplement the mare with additional calcium and phosphorus during lactation. Grain intake should be increased gradually during the last few weeks of pregnancy so that the mare is consuming nearly the amount that she will require for milk production at the time that she foals. A rapid increase in grain should be avoided at foaling time because this may lead to colic or founder. After about three months of lactation, milk production begins to decline. At this time, grain intake can be reduced to keep the mare in a desirable condition. It is often beneficial to cut down the mares grain ration just prior to weaning to help the mares' milk to dry up when the foal is taken off.

The Thin Barren Mare

This type of mare may have a multitude of reproductive problems including lactational anoestrous and the inability to get back in foal. You want to get this mare cycling regularly in August and have her covered in early September. It is advisable to get this mare in good condition (> CS 3) going into the breeding season and perhaps do some nutritional flushing in the thin mare along with having the mares under lights and with an individual feed program starting June 1. Flushing refers to having the mare in an ascending plane of nutrition and gaining weight when she is bred. Though there is little experimental data that shows flushing to increase the reproductive efficiency of the mare, but common wisdom and experience tells us that flushing has a valid place in the nutritional management of the thin mare. This is the case with most maiden mares, especially those that are retired to stud just before the season.

The Mare with Poor Reproductive Conformation

Mares with poor reproductive conformation are far more likely to 'windsuck' and have reproductive inflammation and infection, which reduces their reproductive efficiency. This type of mare will usually be 'caslicked' after service to limit contamination of the

uterus, but keeping the mare in good to fat condition (CS 3 to 4) leads to fat deposition around the vulva and improved reproductive conformation. This can improve the reproductive efficiency of this type of mare

The Fat Mare

After having read the previous sections it would be tempting to think the mare should be maintained in fat (CS 4 and above) condition after weaning. This approach has some drawbacks even though it may look good for the amateur mare owner. The fat mare has an increased risk of having a foal with bent legs (angular limb deformities) that could, if not treated effectively, limit the foal's athletic potential.

The other drawback of having your mare too fat is that she may be difficult to get back in foal. Consider the situation of the fat mare that has been pampered at home with 3 feeds a day. She is sent to the stud just before foaling and suddenly she's mixed with a new group of mares, is in a new environment and on a new feed program. The mare loses weight and doesn't cycle as well or may shut down entirely. So avoid getting your mare fat even though it may look more pleasing to have her in show condition.

In conclusion, mares should be fed differently during early pregnancy, late pregnancy, and lactation. By understanding the mare's nutrient needs during each stage of her reproductive cycle, an intelligent and cost effective feeding program can be designed and implemented. Remember to avoid overfeeding during early pregnancy and underfeeding during lactation. Be aware of differences in nutritional requirements between breeds. Know that the season affects pasture quality and quantity, which can drastically affect your mare's supplementary feed requirements. Make condition scoring a routine and act on the slightest noticeable changes aiming always to keep the mare at a consistent level of healthy body condition.

Stallion Fertility and Nutrition

Like all horses, a stallion needs a balanced diet with adequate, but not excessive amounts of nutrients for optimal health and fertility. Stallions are commonly overfed energy and they get fat. This can lead to reduced fitness, libido and fertility and make the horse prone to soundness problems, insulin resistance and laminitis. Unfortunately many older stallions suffer from laminitis or die from heart attacks and both conditions

may relate to being too fat. So adjust the feed and work to keep your stallion in good, but not fat condition.

Whilst there are no prepared feeds designed especially for stallions in Australia, there are a number of quality feeds that if fed according to directions will supply a balanced diet. If you are mixing your own feed, addition of the **KER ALL PHASE** feed balancer pellet will fill in the nutrient gaps in a basic diet of grains and forage.

If you need help to maintain condition and a shiny coat in a breeding stallion the stabilised rice bran **EQUI-JEWEL** is a great supplement. **EQUI-JEWEL** is a very palatable source of rice bran oil and supplies 'cool' safe energy. It also contains high levels of natural vitamin E and organic selenium, important antioxidants for stallions. Rice bran oil contains gamma oryzanol which also has antioxidant properties.

Reactive oxidative species (ROS) and free radicals cause oxidative stress to sperm and play an important role in sperm function. Reduced motility is a good indicator of oxidative stress and chilling or freezing semen increases oxidative stress. The detrimental ROS can be neutralized by antioxidants in semen. Stallions may benefit from supplementation with the antioxidants vitamin E or selenium, especially if they are being collected for chilling or freezing semen where survival of motile sperm is vital. Low levels of selenium in sperm are associated with changes in DNA and reduced fertility. Higher blood levels of antioxidants may boost antioxidant protection in the seminal plasma, and increase the survival of progressively motile sperm.

Feed from many areas of the country have very low levels of selenium, so the feed or supplement fed to your stallion should supply at least 2 mg selenium per day and organic selenium is the preferred source. Recent research has shown that natural vitamin E has much greater bioavailability than synthetic forms so it makes sense to supplement stallions with high levels of natural E, especially if green pasture intake is limited. **KERx Nano E** is a new nanodispersed water soluble liquid source of natural Vitamin E that has been shown to be more effective than other forms in boosting blood levels of vitamin E. Higher blood levels means better antioxidant protection in semen and sperm. It is the vitamin E supplement of choice for the stallion.

Recent research in the US has demonstrated benefits in supplementing the diet of sub fertile stallions with omega 3 fatty acids from fish oil sources. Several studies have concluded that stallions with poor sperm survival and motility after chilling or freezing,

can benefit from added long chain omega 3 fatty acids EPA and DHA from fish oil. These fatty acids are important components of sperm membranes and most modern diets contain low levels of these fatty acids and their precursors. Positive results have included increased progressive motility, increased % morphologically normal sperm and even increased sperm output. It has been shown that supplementation with fish oil increases the levels of DHA and EPA in sperm cell membranes and this helps protect against cold shock. **KER EO-3** is a new palatable and stable fish oil product which contains 25% EPA & DHA and is the supplement of choice for supplying these long chain omega 3 fatty acids. The recommended dose is 60ml per day for normal stallions and 90 – 120 ml for horses with sub fertility.

Like all horses, stallions should be fed a simple balanced diet, but they do have some special needs and the sub-fertile stallion can benefit from some extra attention to maximise fertility.

Growing Horses

Weanlings

One of the most challenging aspects of the feeding program on a breeding farm involves weanlings. The weanling faces the stress of removal from its dam, mixing with a group of young horses and sorting out a pecking order all at a time of year when weather conditions are tending to deteriorate and cold nights or wet days are more likely to occur. Yet commercial demands mean that weanlings must continue to grow at a rapid rate so that they can reach growth targets for weanling or yearling sales. The weanling has similar nutrient requirements to the yearling but eats a lot less feed, so that the required nutrients must be packaged in a more concentrated form. Weanlings have a significant risk of getting Developmental Orthopedic Disease (DOD) such as physisitis of the fetlocks, contracted tendons, bone cysts or OCD.

The first factor to consider is age of weaning. The mare's milk production peaks at two months, and then there is an increasing gap between the foal's needs and what the milk can supply. This gap can be supplied by pasture or the mare's hard feed. A foal can be weaned from 4 months of age and a recent study showed that weaning was less stressful for four month old foals than it was for six month old foals, when stress was judged by the growth setback at weaning. Some foals that are doing too well, or not well enough or have signs of DOD may need to be weaned earlier than the rest of the

group. Another factor is how the mare is doing and early weaning may be needed if the mare is falling away in condition as she feeds an older foal.

One factor that has a big influence on the growth of weanlings is familiarity with the post weaning feeding program prior to weaning. A foal that is used to the hard feed will adapt to conditions much better after weaning. This means that if your mares are not being fed or are being fed differently to the weanlings feed, then you will need to creep feed your weanlings. Creep feeding does not imply force-feeding. Creep fed foals should be given no more than 1.5- 2kg of grain or concentrates per day starting at three months of age.

To achieve optimum growth rates, the weanling needs to consume significant amounts of energy, amino acids, protein, and minerals yet its restricted appetite means that it needs a concentrated nutrient package. Commercial weanling feeds such as **BARASTOC BREED N GROW** are more concentrated sources of nutrients than feeds for adult horses such as mares. They have higher energy and protein content along with elevated mineral levels, so the requirements of the weanling can be met in a 2.5 –3kg feed per day. In sweet feeds, the processing of barley and corn is desirable and the steam flaking used in feeds increases the digestibility of energy in these grains. The average 6 month old 250 kg weanling growing at 1 kg per day will require about 2.5-3 kg of a weanling feed per day for satisfactory growth. This equates to 1% body weight and will need to be fed twice a day. Remember you need to allow for variation in intake so if you have eight weanlings in a paddock provide them with nine feeds. Allow two weanling feeds for any granny or minder that you have in the group. If you have large numbers of weanlings, the older and bigger weanlings will need more feed than the younger group, so provided you match up your mobs right, you can vary the intake appropriately.

As the weanling has a restricted appetite it is important that the feed you give them is palatable. Sweet feeds have been shown to have greater palatability than pellets or extruded feeds, and the use of a sweet feed such as **BARASTOC PREPARE or LEGEND** may ensure that all weanlings eat enough hard feed to supply their nutrient needs.

The advent of pre sale x-rays has focused attention on DOD and other bone problems in yearlings. If you feed high grain intakes to achieve maximal growth you will increase the risk of DOD problems being found in yearlings. But if you don't feed any grain, you are unlikely to meet market expectations for growth and condition. Some hard feeds are safer to feed than others, as research has shown that feeds that have a lower Glycemic

Index (the glucose response after feeding) are associated with a lower incidence of OCD. Since this research was completed KER have developed some specialised low glycemic index feeds in several countries and investigated the Glycemic Index (GI) of many other feeds. In one Australian study, the **KER Low GI Cube** was shown to have a significantly lower GI than oats or 2 extruded feeds. However, it is important to remember that nutrition is only 1 of the risk factors involved in the development of OCD.

The quality and quantity of pasture available will determine what sort of hay you need to feed and how much hay and chaff weanling needs. Green pastures will usually contain close to or over 20 % protein, so this means protein and amino acid supply will be met from the combination of pasture and an appropriate grain mix. In the case of plentiful pasture resulting from irrigation or autumn rain you can mix a little bit of chaff in with the grain, but you don't really need to supply hay, apart from days of rain and cold weather. On the other hand, if your weanlings are in paddocks with little grass or dry pasture they will need supplementary lucerne or clover hay/chaff to meet their protein and amino acid needs. If you are providing supplementary forage for your weanlings, always use top quality chaff or hay. Lucerne and clover have higher energy, protein, amino acid, and calcium content than grass hay or oaten chaff. This means they are the preferred supplementary forage source if you are aiming for optimum growth. It is not essential to feed chaff, but it does increase the safety of feeding grain to groups of weanlings and the amount of chaff fed should be in proportion to the amount of grain.

The aim of weanling feeding is to allow for optimum growth with minimal DOD. If you choose the right weanling feed and feed the appropriate amount there is no need for added supplements, and in fact the use of extra supplements can create nutritional imbalances. Key nutrients such as amino acids, calcium, phosphorus, copper, zinc, manganese and Vitamin E should be provided by the hard feed you use. However if you have your own oats in a silo and need a supplement to mix with them, then the **KER ALL PHASE BALANCER PELLETT** offers you great flexibility and an easy way to feed a balanced diet. Weanlings that are too heavy or have early signs of DOD can benefit from a period with no grain, but having their amino acid and mineral needs supplied by the **ALL PHASE PELLETT** as a supplement to forage. Putting these weanlings on a plain grass or hay diet will be counter-productive as they will be getting a mineral and vitamin deficient diet

Weanlings not going to sales are typically fed in a more conservative manner. These weanlings do not have to grow at a maximum rate or look their best at a young age. Instead, breeders are trying to raise young horses that will be sound athletes. Generally

the best way to assess the impact of the feeding program of these weanlings is through assessment of body condition. Weanlings should maintain a thrifty appearance in which the horse's ribs can just be seen, or are not seen but can be easily felt. Monitoring weight along with an accurate condition scoring system allow for the assessment of quality and quantity of growth. We have developed a specialized software program Gro-Trac to allow breeders to record and monitor growth and link that with dietary changes necessary for optimum growth.

The amount of grain necessary to maintain a thrifty appearance varies with the individual weanling, and the available quality and quantity of forage. Being able to feed weanlings as individuals and make necessary feeding adjustments is very important, so don't feed all groups the same. "Good -doing" weanlings should be kept from becoming fat by being fed a low-intake, low-calorie source of essential protein, vitamins and minerals. On the other hand, weanlings that are large with much growth potential can consume normal amounts of fortified concentrate. A general rule of thumb for feeding weanlings is one kg of fortified grain per 100 kg of body weight, up to a maximum of 3 kg per weanling per day. If you need extra energy above this level, it is best to supply it from fat eg oil or **EQUI-JEWEL** or from a high quality forage. It is important to remember that foals will not all weigh the same at a given age. There are many good ways of feeding weanlings that work in different situations, but horses should be fed as individuals for the best results.

Feeding and Fitting: The Sales Weanling and Yearling

There are two groups of horses that are assessed and therefore valued to a large extent on their looks, conformation and the way they are "turned out"; the show horse and the sales weanling or yearling. There are vast sums of money riding in the balance that literally can be made or lost depending on the job that the feeder and fitter does. We have all heard the adage "fat is a pretty color" and seen that some sales and show horses are simply fed all they want to eat and have then gotten too fat. In the modern sales and show arena simply fat is far from being enough. To be really successful in preparing sales horses and show horses the "fitter" must be able to differentiate between fit and fat.

It may come as a surprise that one would consider the young show horse and the Thoroughbred sales weanling and yearling in the same context. But let's face it, the horse sale is a horse show and many times horses are worth more on sale day than they

will be the rest of their lives. Prepping these horses is a combination of superior nutrition, superior health management, superior and specific exercise and superior genetics, tempered with hard work and attention to detail.

Feeding

Preparing a weanling is perhaps the biggest challenge of all. When one prepares a weanling for a show or sale it is vital to understand the nutrient requirements of the horse and the critical balance between feed intake and exercise as they impact on condition and soundness.

The weanling feeding program should be based on a balanced ration using palatable, easily assimilated nutrient sources that meet the weanling's requirements for protein, energy, minerals and vitamins. Often people fall into the trap of feeding all-grain feeds to weanlings that may encourage fattening but do little to ensure optimum growth and bone development. It is crucial that people understand that "HIGH" PROTEIN DOES NOT CAUSE BONE PROBLEMS! And in fact more cases of acquired flexural deformities and developmental orthopedic disease (DOD) are caused by improper mineral balance and over feeding energy than from any other nutritional cause.

The amount of feed that an individual foal/weanling will tolerate is extremely dependent upon the individual and it is crucial to adjust individual feeding levels based on individual performance (growth rate and degree of fatness). It is common to feed a weanling intended for the futurity or weanling sales a minimum of 1 lb of feed per month of age right up until the time of the event. In general one would be best served to feed a 15 - 16 % protein concentrate (**BARASTOC BREED N GROW OR PREPARE**) to these horses in addition to a fat supplement and really good quality clover or lucerne hay that was harvested in early stages of maturity. A high quality/high energy hay is needed for these horses as this maximizes the utilization of fibrous feeds in meeting the energy requirements of these horses and as such decreases the amount of starch the weanling has to deal with. Also, in using a high quality, early cut hay one tends to minimize the appearance of gut-fill that is often associated with a mature hay of high lignin content. Often hay intake is restricted just prior to the show or sale to reduce a pot bellied appearance.

In selecting the appropriate concentrate feed for the weanling it is important that the total nutrient profile of the feed be considered, not just the protein concentration. All

too often, due to formulation errors on the part of the feed manufacturer or misuse of a feed (primarily cutting a prepared feed with oats) by the consumer, the nutrient/calorie ratio of grain mixes fed to weanlings is all wrong. Horse owners should be educated to the fact that the nutrient profile of a feed designed for a specific class of horses is critical and that by "tinkering" with a feed this balance of nutrients is destroyed. Similarly, feeds formulated for older horses do not get the job done with respect to macro and micro-mineral intake when fed at appropriate levels to meet the young horse's energy requirements. For one thing, a weanling's appetite is much less than an adult horse so you need to have higher concentrations of critical nutrients. Feeds containing heat processed barley and corn are very useful, because the energy in the grain is much better digested and assimilated after steam flaking, micronising or extrusion.. A feed used for weanling sales or show prep should contain added fat from oil, stabilized rice bran or sunflower seeds. This fat is a very concentrated source of energy and helps minimise the grain intake needed, as well as putting a shine on the coat.

Beyond the feed bin the real art involved in fitting weanlings is the exercise and "rubbing" they receive. Although not advocating routine lungeing for the sales or show weanling, judicious use of free lungeing, time on the walker and hand walking can be very useful tools depending on the individual. Foals run, romp and play nearly from birth, and to think that a careful program of forced exercise is detrimental and risky is folly. Daily grooming, rinsing with warm water, braiding or banding of manes and conditioning of tails are all necessary for weanlings if optimum condition is to be achieved.

Feeding at least 125 ml oil daily or a minimum of 500g stabilized rice bran such as **KER EQUI-JEWEL** (or a higher fat feed) and a biotin, zinc, methionine coat conditioner eg **KER BIO-BLOOM** for a month before the sale will also really help the coat. As much as 300g of added fat per day has been fed in some instances when it was critical that more energy be provided without increasing starch (grain) intake. If horses are gradually adjusted to fat intake, a great deal of energy may be fed to the weanling in the form of fat. If you have a weanling with physitis or other DOD it is preferable to feed a high fat rather than a high grain diet, but these young horses still need supplementary protein, minerals and vitamins which is usually fed in the form of a low intake balancer pellet

The last thought for the weanling deals with weaning time. In general we have found 5 months of age to be the most ideal time to wean, all things considered. However, it is best to let the individual weanling tell you when to wean. If a weanling is top-heavy and

too fat or starts to get upright in the pasterns or show severe physitis, there are good reasons for weaning as early as 3 months of age so that you can carefully control nutrient intake. A general rule of thumb is to wean a foal at least 45 days before a sale or futurity or if that is too early for late foals, wean 5 days before a sale. Forty-five days gives adequate time to get the weanling over the post-weaning slump and into good shape, and five days does not give the weanling time to fall apart.

Feeding the Yearling

Yearlings in some ways are easier to prepare than weanlings. Since we are in most cases talking about horses that are at least 12 months of age there are fewer skeletal wrecks that we can precipitate when we start our fitting or "prep" program.

In discussion of the prepping process it is appropriate that we start with the feeding program. Yearlings do best on a 13-14% protein ration balanced for macro and micro-minerals and fat and water soluble vitamins eg **BARASTOC COOL COMMAND**. Feeding rates for yearlings are extremely variable depending on growth history, skeletal size, individual metabolism, actual age and quantity and quality of forage. In the preparation of sales yearlings, hard feed intakes range from 1- 2 kg/day of a supplement pellet to 10 kg/day of concentrate feed. Generally it seems to take more feed to get a colt fit than it does a filly. The real key here is realization that "the eye of the master fattens the ox." What works in the feeding program for one yearling may totally miss the mark for another!

Comments made concerning hay type and quality for the weanling, apply to the yearling as well. However if you have a short, fat filly that needs to lose weight, choose a lower energy grass hay or oaten chaff rather than rich lucerne or clover hay. But if gastric ulcers are suspected, lucerne hay will provide the best buffering of the stomach acid.

Besides the base feed, there are some tools of the trade that fall into the nutrition category. First, always use some supplemental fat. You can use vegetable oil, feed sunflower seeds, or a commercial fat supplement such as **EQUI-JEWEL**. Suitable oils include corn, soy, canola or vegetable oil, but do not use recycled oil. The manner in which the fat is provided in the diet is a choice for the horseman but in many instances it makes more sense to top-dress the fat rather than use a fat added feed.

As for the "grain" portion of the ration, the amount of fat that is appropriate to use is going to be highly individual. This is due to the fact that there are two main reasons that we are using fat to begin with. First there is the hair effect and second there is the energy effect. The hair effect is easy, a minimum of 60g per day of vegetable fat. The use of high levels of fat intake in the yearling is to reduce the amount of starch that must be fed to achieve a specified energy intake. When you reach 5 kg of hard feed intake in the yearling, start to really consider the advantages of supplemental fat. Big, rugged, raw boned yearlings can take as much as 750 ml of vegetable oil or 2 kg **EQUI-JEWEL** per day with absolutely no detrimental effect. Again feeding **BIO-BLOOM** will help get the gleaming coat you need to stand out from the field and will reduce the time you need to spend grooming the yearling. That saves staff time and costs.

In addition to fat, many prep and show rations will contain lupins and beet pulp. Unlike the weanling, there is a real possibility of starch over-load diarrhea, colic, laminitis and behavior problems in the yearling. By using lupins or beet pulp in the feed, one can reduce the amount of starch that a horse has to consume while keeping relatively high levels of energy intake. These sources of highly digestible fibre are fermented in the hind-gut and absorbed as volatile fatty acids therefore reducing the amount of starch that may enter the hind gut un-digested, and contributing to a happy hind gut! Heat processed feeds or components in the feed are also useful - they don't reduce the starch intake but they do ensure most of the digestion takes place in the small intestine thus reducing the risk of hindgut acidosis. As hindgut acidosis is so common in sales yearlings on high grain diets, ad lib hay should be fed and the hind gut buffer **KERx Equi-Shure** can be used as a preventative measure or to yearlings showing signs of hindgut acidosis.

Emphasis should always be placed on the individual in terms of feed intake levels and exercise programs. The goal should be individual fitness. That takes an individually tailored feeding and fitting program. It is critical to understand that fit and fat are not the same, and that lot's of feed without an increase in the work program results in a horse that is patchy in its fat cover and more prone to disorders such as colic, laminitis, phytitis and behavior problems.

Obviously there are as many tricks of the trade as there are preppers and what techniques work for some may not work for others. The important thing is to design a program and stick to it. Modifications may be necessary along the way to suit individual needs, but the critical aspect of getting this job done is daily attention to detail. One should not get caught in the trap of thinking that there is some magical feed ingredient

that is going to turn a sow's ear into a silk purse. Great genetics, good feed and hard work beat steroids, poor genetics and lack of preparation every time. Remember you are preparing a future athlete, not fattening a lamb for market.