

Feeding the Broodmare.

This subject is enough for a book in its own right and could cover everything from avoiding OCD to managing the overweight mare at weaning. Here we will stick to basics and try to emphasise a logical approach to feeding, to meet nutritional requirements at various different stages of the breeding cycle, in a healthy and cost effective way.

There are three “Take Home Messages” here, and these are:

- Understand the different phases of nutrition requirement in the broodmare
- Cost effective mare nutrition depends on maximizing the use of forage feeds and pasture. Good pasture management is integral to good broodmare nutrition.
- Minerals and Trace Elements are essential for mare and foal health.

For nutrition purposes we divide broodmares into four groups:

1. Maiden and barren mares (empty mares)
2. Early pregnant – First 180 days or first two “trimesters” of pregnancy
3. Late pregnant – Last 90 days or last “trimester”
4. Lactating or “wet” mares (further divided into early and late lactation)

For simplicity we will look at the nutrient requirements in terms of energy and minerals. Generally if energy intake is correct, protein intake will be adequate. Horse owners are often unduly concerned about protein. Don't be. It is incorrect energy intake, too much or too little, which will cause the most trouble.

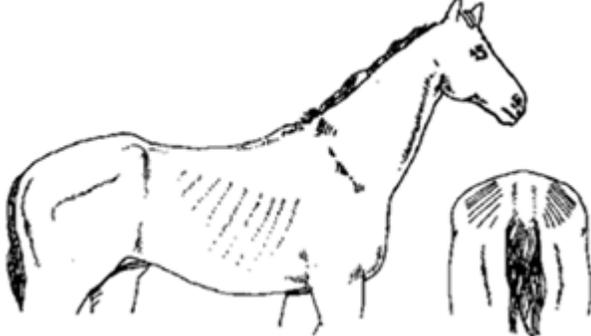
Again, for simplicity we will talk about only two broad classes of feed, forage (pasture & hay) and concentrates or “hard feed” meaning grains and manufactured feeds such as pellets etc.

Condition scoring. This is just a technical term for assessing the mare's body condition and weight, which in turn is the key to assessing the adequacy of her energy intake. A more accurate method is to weigh the horse, and routine weighing if broodmares monthly and young stock fortnightly is ideal. Either way, the owner / manager needs to be able to assess the mare's condition routinely and react to fluctuations in weight promptly. Research has proven a direct link between body fat stores and reproductive efficiency with mares which are gaining weight more likely to get in foal than mares losing weight.

Weight gain or loss results from the **energy balance** - Energy in from feed, versus energy out used for maintenance, work, growth, pregnancy, milk etc. A neutral energy balance will result in the mare maintaining body weight, whereas a positive energy balance will cause weight gain. Mares should not be in a negative balance for extended periods at any stage of the breeding cycle. As her energy needs vary, so the energy intake must be regularly adjusted to compensate. Put simply this means “Feed for Body Condition”.

This is not as simple as it may sound. Mares vary a lot in their appearance, even when in optimal condition. Broadly there should be enough fat over the ribcage so that the ribs can be easily felt, but not seen. The ridges in the spine should not be easily visible and the belly and flank more or less rounded. Fat stores over the top of the neck under the mane can be felt as thickening and can act as a useful guide. Recognising how each mare looks when in optimal condition helps a lot in monitoring her weight over the breeding cycle.

The chart below is taken from the website of the Victorian Department of Primary Industries (www.dpi.vic.gov.au) – this and other useful information can also be found at the Victorian Horse Industry Council website (www.vhc.org.au)

<p>0 Very poor</p>		<ul style="list-style-type: none"> • Very sunken rump • Deep cavity under tail • Skin tight over bones • Very prominent backbone and pelvis • Marked ewe neck
<p>1 Poor</p>		<ul style="list-style-type: none"> • Sunken rump • Cavity under tail • Ribs easily visible • Prominent backbone and croup • Ewe neck - narrow and slack
<p>2 Moderate</p>		<ul style="list-style-type: none"> • Flat rump either side of backbone • Ribs just visible • Narrow but firm neck • Backbone well covered
<p>3 Good</p>		<ul style="list-style-type: none"> • Rounded rump • Ribs just covered but easily felt • No crest, firm neck.

4 Fat		<ul style="list-style-type: none"> • Rump well rounded • Gutter along back • Ribs and pelvis hard to feel • Slight crest
5 Very fat		<ul style="list-style-type: none"> • Very bulging rump • Deep gutter along back • Ribs buried • Marked crest • Fold and lumps of fat

Empty Mares.

These include maiden mares and barren mares.

Maiden mares which have recently come out of racing may be both underweight and stressed and need special consideration. They may be fillies which are still growing and require higher protein (14%) levels than mature mares (12%). Thin maiden mares should be fed to increase their weight so that they are in a positive energy balance coming into the breeding season. Such maidens should be fed as for mares in the last trimester of pregnancy. Mares which have slipped a foal should be brought up in condition before breeding, as should thin mares recently weaned. All mares should be in positive energy balance and gaining weight when it comes time to breed.

Early Pregnant Mares – First two trimesters.

Feed these the same as for Barren Mares.

The energy requirements for barren mares through to the end of the 6th month of pregnancy can be met by good quality forage feed fed *ad lib*. If pasture is poor or scarce then supplemental hay and possibly hard feeds will be needed. Under Australian conditions, where pasture quality may be less than ideal, inclusion of 1.5 to 2.0 kg of hard feed per day is commonly needed. Minerals for barren mares and early pregnant mares can be provided in the form of a free choice mineral block; however, supplementary feeding is preferable.

Barren & Early Pregnant Mares – Maintenance requirement (NRC)

Mare weight	400 kg	500 kg	600 kg
Energy required (MCal/Day)	13.4 MCal	16.4 MCal	19.4 MCal
Equivalent in oaten hay (kg)	7.7 kg	9.4 kg	11.1 kg

In energy terms, one kilogram of oats equals about 1.7kg of oaten hay and 1kg of average manufactured concentrate feed equals about 1.4 to 1.7kg of oaten hay. The above hay intake can be varied by including concentrates accordingly.

Pregnant Mares – Last Trimester.

During the last three months of pregnancy the mare’s energy requirements increases significantly, by about 12%¹ over maintenance, as this is when most growth of the foetus and associated membranes etc. occurs. Mares should not be allowed to loose weight during this period as this may reduce their ability to breed later, but nor should they be allowed to become fat. Overweight mares tend to have more problems at foaling.

For practical purposes, the mare’s energy needs at this stage will be met by a combination of forage and concentrate feeds. Forages may include lucerne which has both higher energy and protein levels than cereal or grass hay, plus a better Amino Acid profile.

Pregnant Mares – Last Trimester.

Mare weight	400 kg	500 kg	600 kg
Energy Required (MCal/Day)	15 – 16 MCal	18 – 19 MCal	21 – 23 MCal
Example Diet			
Hay (Oaten / Wheaten)	5.0 kg	5.0 kg	6.0 kg
Lucerne	1.5 kg	1.5 kg	2.0 kg
Hard Feed (2.7 MCal/kg)	1.5 kg	2.5 kg	3.0 kg

Note. The above diet can also be used for skinny maiden mares and for “flushing”.

Where pastured, this guide can be used substituting pasture for hay. If no lucerne is fed, mares at pasture will require 2.5 to 6.0 kg of concentrates per day depending on pasture quality and body weight. The key is to maintain optimal condition score having regard for the fat stores, not the increasing size of the belly.

Adequate mineral intake during this critical phase is important and the use of manufactured feeds enables introduction of these via the feed as well as by using supplements. Adequate calcium and phosphorous intake is crucial and the ratio of Ca: P should not be lower than 1.2: 1.0 in the overall diet. A ratio of 1.5 : 1.0 is safer and will do no harm. The use of a comprehensive mineral and trace element mix containing these plus copper, zinc and manganese is recommended as many types of forage are deficient.

Wet Mares.

The wet mare requires a higher energy intake than at any other time of her life and should not be allowed to go into negative energy balance or her breeding potential may be compromised. A 500 kg mare will yield about 15 kg of milk per day, equivalent to over 7 MCal of energy or 5 ½ kg of hay. All that energy needs to be replaced if she is to avoid going into negative energy balance and losing bodyweight.

Lactation should be divided into two phases, the first 3 months, and from 3 months to weaning, with adjustment in feeding to match the two different phases as below.

¹ Level of protein quoted refers to the overall diet, and not just that of the supplementary feed

Wet Mares – Birth to 90 Days.

Mare weight	400 kg	500 kg	600 kg
Energy Required (MCal/Day)	23 MCal	28 MCal	34 MCal
Example Diet			
Hay (oaten / wheaten)	6.0 kg	6.0 kg	7.0 kg
Lucerne	1.5 kg	2.0 kg	3.0 kg
Hard Feed (2.7 MCal/kg)	3.5 kg	5.0 kg	6.0 kg

Wet Mares – 90 Days to weaning

Mare weight	400 kg	500 kg	600 kg
Energy Required (MCal/Day)	20 MCal	24 MCal	30 MCal
Example Diet			
Hay (oaten / Wheaten)	6.0 kg	6.0 kg	7.0 kg
Lucerne	1.5 kg	2.0 kg	3.0 kg
Hard Feed (2.7 MCal/kg)	2.5 kg	4.0 kg	5.0 kg

Roughly speaking this can be achieved by maintaining the forage intake constant throughout lactation and reducing the concentrates by 1.0 to 1.5 kg after the first three months. Maintaining the mare’s condition score during lactation will ensure that, other factors aside, she is in the best condition when it comes time to breed again.

It is common practice to eliminate hard feed and reduce forage intake during the week before weaning to reduce milk output. With mares generally already in foal again at the time of weaning, this is fine. However, if for some reason the mare is not going to be rejoined until after weaning, care is required as it would be putting the mare into negative energy balance just when she may be required to breed again, when the opposite is needed. The solution is to minimise the condition loss and reverse it as soon as possible before breeding. Mares which are thin at weaning are less likely to conceive short term.

Finally, as the quality and quantity of pasture available is so critical to all of the above, time spent on pasture improvement is never wasted. Of all the nutrient sources available, pasture is the cheapest and arguably the most important. It is no accident that the best horses have come from regions such as Central Victoria, the Hunter Valley, Kentucky and Ireland where the soils and rainfall are good and the pasture quality is high. Good grass comes from good soils and, as Australian soils are notoriously impoverished, the use of mineral and trace element soil improvers is logical. Hopefully the trend to more sustainable agricultural practices, and away from the use of “Super” alone, will slowly generate better soils, better grass and hence better, stronger, tougher young horses. To feed broodmares well, we really do need to start from the ground up.