



MAXIMIZING CONCEPTION IN THE MARE

Dr. Tania Cubitt – Performance Horse Nutrition

Nutritional management is a simple, cost effective tool to ensure normal cyclical behavior, improved conception rates and increased pregnancy maintenance in mares. Body condition scoring serves as an effective means to determine the nutritional needs of your mare. Using a numeric scoring system from 1 to 9, we can estimate the animal's body energy reserves (Henneke et al., 1983). This information can be used to adjust feeding regimes to reach optimal body condition. The optimal body condition score for a mare coming into the breeding season is between 5 and 7. If a mare exhibits a body condition score at either end of the scale reproductive efficiency is decreased.

The effect of nutrition and body condition on reproduction in mares has been illustrated. Mares coming into the breeding season with an optimal body condition score (5-7) start cycling earlier than mares with a low body condition (< 5). Thinner mares have also shown longer inter-ovulatory periods, decreased pregnancy rates, and decreased ovarian activity (Dunn and Moss, 1992). Some obese mares continue to cycle throughout the winter when typically reproductive cycling is halted (Gentry et al., 2002). The impact of energy intake and body condition on the reproductive performance of the mare has also been described where high-energy diets shortened the interval to first ovulation in thin mares transitioning from winter as compared to those on a low energy diet. This increase in dietary energy however did not benefit mares in moderate (BCS 7) or fat body condition (BCS 8 or 9) (Kubiak et al., 1987).

A mare that is very thin, either body condition score 1 or 2 at the beginning of the breeding season should be placed on a gradual increased plane of nutrition in order to restore body weight. The 2007 National Requirements for Horses suggested that it takes 16 to 20kg (35 to 44 lbs) of gain to change a horse's body condition score by 1 unit, based on a 500kg, 1100lb horse. Therefore a mare with a body condition score of 2 would need to gain around 60 kgs (132lbs) to increase her condition score to a 5. This would take around 6 months to achieve and would require a very energy dense feeding protocol. Care should also be taken when feeding for weight gain not to cause digestive disturbances with the increased feed intake. In this case it would be advisable to wait until the following year to incorporate the mare into the breeding program, this would allow her time to gain and maintain weight and

resume normal reproductive cycling behavior before putting her through the stresses of trying to get her in foal. If the mare had a body condition score of 3 or 4 prior to the beginning of the breeding season it would be more feasible to increase her condition and resume cycling to be able to breed her in that year. In order to do this her caloric intake must be increased. Based on the assumptions outlined above it would take approximately 2 to 4 months of feeding the mare approximately 40% more energy per day than if she was just maintaining. Maintenance energy requirements for an average 500kg horse are approximately 16.7Mcal/d, plus the additional 40% would equal 23.4 Mcal/d for 2-4 months to increase the mare condition score from 3-4 to 5 (NRC, 2007).

While some obese mares may continue to cycle throughout the winter there are negative repercussions for keeping mares in this condition. In humans and rodents obesity contributes to infertility, poor pregnancy and impaired fetal well-being (Pasquali et al., 2003). Obesity has been associated in horses and ponies with decreased insulin sensitivity (Hoffman et al., 2003), and both obesity and decreased insulin sensitivity have been associated with decreased reproductive function in mares (Vick et al., 2006). Obese mares can have longer intervals between ovulations which can be due to a persistent corpus luteum (Vick et al., 2006). This makes the obese mare more difficult to rebreed if an initial breeding is not successful increasing the cost incurred to the owner. Evidence in other species indicates that high planes of nutrition in moderately obese animals also lead to hyper-insulinaemia and impaired oocyte quality (Adamiak et al., 2005).

Most mares if currently in a reproductively optimal body condition (5-7) can be sufficiently maintained on good quality pasture and hay. Horses allowed free choice grazing on high-quality pasture will consume as much as 3 percent of their body weight in long roughage daily, which normally meets their needs for protein and energy. Along with this forage mares should have access to a mineral and vitamin supplement to balance mineral insufficiencies in forage. While most broodmare nutrition is focused on pregnancy and lactation research has shown that deficiencies in mineral and vitamin profiles can have deleterious effects on pre and post implantation of embryos (Ashworth and Antipatis, 2001).



Specialized Feeds

For mares that are going into the breeding season in an optimal body condition, good quality alfalfa or grass hay fed at approximately 1.5-2% of body weight (15-20lbs for a 1000lb mare) should be adequate to meet her energy and protein requirements. Additional fortification with vitamins and minerals will however be required. **Poulin Grain's EQUI-PRO® MVP** is a perfect choice as it will adequately fortify the diet without adding excess calories. **EQUI-PRO® MVP** is a low intake feed designed to be fed at approximately 1lb/day.

For mares needing to gain extra weight going into the breeding season **Poulin Grain** offers an ideal choice. **EQUI-PRO® E-Tec™** is a moderate to high fat feed containing minimal amounts of grain and increased amounts of highly digestible fat and fiber sources. Once optimal body condition has been reached mares can generally be transitioned to **EQUI-PRO® MVP** through the 1st 5 months of pregnancy.

All the Poulin Grain feeds have been formulated specifically for East Coast feeding management strategies and conditions. **Poulin Grain's EQUI-PRO®** horse feeds are a premium line of feed balanced and formulated for the current stage of life of your horse. Formulated in these feeds, is research on growth, energy, digestion and absorption of nutrients. Included in the **EQUI-PRO®** line is live cell yeast that aids in digestion and chelated or organic minerals that increase the availability of minerals and provides increased stress and disease resistance. High levels of vitamin E and selenium are included for the immune system. **EQUI-PRO®** feeds are nutrient dense feeds that work with your horse's nutrient system to provide the maximum natural nutrition your horse needs.

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