4 THE LOVE OF HORSES

Broodmare Nutrition

Feeding Through Pregnancy and Lactation

Broodmare Nutrition

Proper nutrition is the cornerstone of a successful breeding program. The nutritional demands placed on a broodmare change dramatically throughout pregnancy and lactation, and understanding these shifts is essential for producing healthy foals while maintaining the mare's body condition and overall health. This comprehensive guide will walk you through each stage of the reproductive cycle, providing practical strategies to optimize nutrition at every phase.

The economic implications of proper broodmare nutrition cannot be overstated. Well-nourished mares have higher conception rates, carry foals to term more successfully, produce higher quality colostrum, and wean healthier foals. Conversely, nutritional deficiencies or imbalances can lead to developmental orthopedic disease, compromised immune function, poor growth rates, and long-term health issues that may not become apparent until the foal reaches training age.

Understanding the Broodmare's Nutritional Timeline

The equine pregnancy lasts approximately 340 days, or roughly 11 months. However, from a nutritional standpoint, this period is not uniform. The mare's nutritional requirements follow a distinct pattern that mirrors fetal development, with the most dramatic changes occurring in the final trimester and continuing through early lactation.

During the first eight months of pregnancy, fetal growth is relatively minimal and the mare's nutritional needs remain close to maintenance levels. This changes dramatically in the final three months when the fetus undergoes exponential growth. After birth, lactation represents the most nutritionally demanding period in the mare's reproductive cycle, with energy and protein requirements nearly doubling compared to maintenance levels.

Understanding this timeline allows breeders to plan feeding programs strategically, avoiding both the pitfalls of overfeeding early in pregnancy and the critical error of underfeeding during late gestation and lactation.

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Early to Mid-Pregnancy (Months 1-8)

The first two-thirds of pregnancy is often called the "easy keeper" phase of broodmare management. During this period, fetal weight gain is minimal—accounting for only about 35% of total fetal growth. Consequently, the mare's nutritional requirements increase by only 10-15% above maintenance levels for mature mares, and even less for young, still-growing mares.

Maintaining Optimal Body Condition

The primary nutritional goal during early to mid-pregnancy is maintaining a body condition score (BCS) of 5 to 6 on the Henneke 9-point scale. This moderate body condition provides the mare with adequate energy reserves without the complications associated with obesity. Mares entering pregnancy in poor condition should be gradually brought up to ideal BCS during these months, while overweight mares should be carefully managed to achieve weight loss without compromising fetal development.

The Foundation: Quality Forage

Quality forage should form the backbone of the early pregnancy diet. Most mature mares in early to mid-pregnancy can meet their nutritional needs with good quality hay or pasture alone, provided the forage is analyzed and meets basic nutritional standards. Target forage intake should be 1.5-2% of body weight daily in dry matter. For a 500 kg (1,100 lb) mare, this translates to approximately 7.5-10 kg (16.5-22 lbs) of hay daily.

Grass hay such as timothy, orchard grass, or mixed grass hays are excellent choices. Legume hays like alfalfa can be used but may provide excess protein and calories, leading to unwanted weight gain if not carefully managed. Many breeders successfully feed a mix of grass and legume hay to balance nutritional content and palatability.

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Avoiding Overfeeding and Obesity

One of the most common mistakes in broodmare management is overfeeding during early pregnancy. Well-meaning owners often increase concentrate feeds as soon as pregnancy is confirmed, leading to excessive weight gain.

Obesity in broodmares is associated with numerous complications including:

- Reduced fertility and conception rates in subsequent breeding seasons
- Increased risk of dystocia (difficult birth) due to excessive fetal size and poor muscle tone
- Higher incidence of metabolic disorders including insulin resistance
- Developmental orthopedic disease in offspring
- Reduced milk production during lactation

The key message for early pregnancy is simple: feed for maintenance, not for two. The fetus requires minimal additional nutrients during this period, and the mare's body is remarkably efficient at meeting these needs from her baseline diet.

Essential Nutrients in Early Pregnancy

While energy requirements remain relatively stable, ensuring adequate intake of certain micronutrients becomes critical even in early pregnancy. A properly balanced vitamin and mineral supplement designed for broodmares should be provided if forage quality is unknown or borderline. Key nutrients to monitor include:

Copper and Zinc: These trace minerals are essential for proper skeletal development and are often deficient in pasture and hay. Copper should be supplemented at 100-125 mg per day, while zinc requirements are 400-500 mg daily.

Vitamin E: A powerful antioxidant, vitamin E is crucial for immune function and muscle development. Requirements increase to 1,000-2,000 IU daily for pregnant mares, particularly those on hay-based diets with limited access to fresh pasture.

Selenium: Working synergistically with vitamin E, selenium is essential but must be carefully managed as it has a narrow margin of safety. Provide 1-3 mg daily depending on regional soil levels.

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Late Pregnancy (Months 9-11)

The final three months of pregnancy mark a dramatic shift in nutritional management. During this period, approximately 60-65% of fetal growth occurs, placing significantly increased demands on the mare. Simultaneously, the growing fetus reduces abdominal capacity for feed intake, creating a challenging nutritional paradox: the mare needs more nutrients but has less room to consume them.

Increased Energy Requirements

Energy requirements increase by 10-20% above maintenance levels during late gestation. This translates to an additional 3-5 Mcal of digestible energy daily for an average-sized mare. To meet these needs without overloading the digestive system, concentrate feeds should be introduced or increased gradually. A high-quality commercial mare and foal feed, formulated specifically for late gestation, is often the most practical solution.

Feed concentrates in multiple small meals rather than one or two large ones. This approach maximizes digestive efficiency and helps prevent complications such as colic or laminitis. A typical feeding program might include 2-4 kg (4.4-8.8 lbs) of concentrate feed divided into 2-3 daily feedings, alongside free-choice quality hay.

Protein for Fetal Development

Protein requirements increase significantly during late pregnancy, rising to approximately 11-13% of the total diet on a dry matter basis. More importantly, the quality of protein becomes critical. The amino acid lysine is particularly important for fetal tissue development, and feeds should provide adequate levels of this essential nutrient.

Quality protein sources include soybean meal, alfalfa meal, and properly formulated commercial feeds.

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Critical Micronutrients

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Preparing for Colostrum Production

The final weeks of pregnancy are when the mare begins producing colostrum, the antibody-rich first milk that provides passive immunity to the newborn foal. The nutritional management during late gestation directly impacts colostrum quality and quantity. Ensuring adequate protein, energy, and micronutrients—particularly selenium and vitamin E—supports optimal colostrum production and foal health in those critical first hours of life.

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Early Lactation (Months 1-3 Post-Foaling)

Lactation represents the most nutritionally demanding period in a broodmare's life, with early lactation being particularly challenging. Peak milk production occurs around 6-12 weeks post-foaling, during which time the mare may produce 15-20 liters (4-5 gallons) of milk daily. This production requires massive amounts of nutrients, and failing to meet these needs will result in the mare rapidly losing body condition as she mobilizes her own tissue reserves to maintain milk production.

Energy Demands Skyrocket

During early lactation, energy requirements increase by 70-90% above maintenance levels—far exceeding the demands of late pregnancy. For a 500 kg mare producing adequate milk, this translates to a need for approximately 28-32 Mcal of digestible energy daily. Meeting this requirement typically necessitates 4-6 kg (8.8-13.2 lbs) of high-quality concentrate feed in addition to free-choice hay or access to excellent pasture.

The concentrate feed should be energy-dense and highly digestible. Look for feeds with digestible energy concentrations of 3.0-3.5 Mcal per kilogram. Feeds that include fat sources such as vegetable oils or rice bran can be particularly useful, as fat is energy-dense and doesn't increase the risk of digestive upset when properly formulated.

Protein Requirements Double

Crude protein requirements nearly double during lactation, reaching 14-16% of the total diet. More importantly, lysine requirements increase to support both milk protein synthesis and the mare's own maintenance needs. A lactating mare requires approximately 40-50 grams of lysine daily—roughly double the requirement during late pregnancy.

Quality is paramount. The protein must provide a complete amino acid profile to support optimal milk production. Soybean meal, alfalfa, and high-quality commercial feeds formulated for lactating mares are excellent choices. Inadequate protein during early lactation will result in poor milk production, compromised foal growth, and significant loss of the mare's muscle mass.

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Balancing Milk Production with Mare Health

The challenge of early lactation lies in providing enough nutrients to support generous milk production while maintaining the mare's body condition and health. Even with optimal feeding, many mares will lose one-half to one full body condition score during this period, which is acceptable and expected. However, excessive weight loss—more than one condition score—indicates inadequate nutritional management and should be addressed immediately.

Monitor the mare closely during early lactation. Weekly body condition scoring and visual assessment of rib coverage, topline, and overall appearance will help identify mares that need additional feed. Some individual mares are particularly efficient milk producers and may require even more nutrients than typical recommendations suggest.

Calcium and Phosphorus in Lactation

The mineral content of milk is substantial, creating high demands for calcium and phosphorus. Lactating mares require 45-65 grams of calcium and 30-40 grams of phosphorus daily, depending on milk production levels. These minerals should continue to be provided in approximately a 2:1 calcium to phosphorus ratio.

Alfalfa hay can be particularly useful during lactation due to its high calcium content, though it should be balanced with grass hay to avoid excessive protein intake in mares that are easy keepers. Alternatively, commercial feeds formulated for lactation are typically fortified with appropriate levels of these minerals.

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Late Lactation (Month 4 to Weaning)

As the foal begins consuming significant amounts of solid feed—typically around 3-4 months of age—the mare's milk production naturally declines. This gradual decrease in lactation allows for a corresponding reduction in the mare's nutritional requirements, though she will still need considerably more nutrients than during early pregnancy.

Gradual Reduction in Nutrient Requirements

During late lactation, energy requirements typically drop to 50-60% above maintenance, and protein requirements decrease to 12-13% of the diet. Concentrate feeds can be gradually reduced by 0.5-1 kg weekly, while maintaining free-choice access to quality hay. The exact rate of reduction should be guided by the mare's body condition—mares that lost significant weight during early lactation may need to maintain higher feed levels to regain condition.

Preparing for Weaning

The transition from late lactation to weaning should be gradual when possible. Abrupt weaning while the mare is producing substantial milk can lead to udder engorgement, mastitis, and significant discomfort. Some managers reduce concentrate feed significantly in the week before weaning to help decrease milk production naturally.

Post-weaning, the mare's feed should be reduced to maintenance levels over a period of 7-10 days. However, if the mare is thin (BCS less than 5), higher feeding levels should be maintained until she regains appropriate body condition before the next breeding season.

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Re-breeding Considerations

Many broodmares are re-bred on their first season after their foal heat which is about 30 days after foaling, meaning they will be in early pregnancy while still lactating. These mares face the compounded nutritional demands of both lactation and early pregnancy. While the nutritional requirements of early pregnancy are minimal, lactation demands are maximal, so feeding should be managed for lactation during this overlap period.

The mare's body condition at re-breeding significantly affects conception rates. Mares in moderate to good condition (BCS 5-7) have higher conception rates than thin mares (BCS 3-4). This emphasizes the importance of maintaining good nutrition throughout lactation to support both milk production and reproductive success.

Essential Nutrients and Their Roles

Understanding the specific roles of key nutrients helps explain why proper broodmare nutrition is so critical. Each nutrient serves specific functions that directly impact mare health and foal development.

Energy: The Foundation

Energy, measured in digestible energy (DE) or megacalories (Mcal), provides the fuel for all body functions including maintenance, pregnancy, and lactation. Insufficient energy forces the mare to mobilize her own fat and eventually protein reserves, leading to weight loss and compromised function. Excessive energy leads to obesity with its associated complications. The goal is to provide energy at levels that maintain appropriate body condition while meeting production demands.

Primary energy sources include forages (hay and pasture), grains (oats, corn, barley), and fats (vegetable oils, rice bran). Forages should always form the foundation of energy intake, with concentrates added as needed to meet requirements that exceed what forage alone can provide.

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Protein: Quality Over Quantity

While crude protein percentages are commonly discussed, what truly matters is the quality and amino acid composition of that protein. The horse cannot synthesize certain essential amino acids and must obtain them from the diet. Of these, lysine is typically the first limiting amino acid in equine nutrition, meaning it becomes deficient before other amino acids if protein quality is poor.

During pregnancy, protein supports fetal tissue development. During lactation, it's essential for milk protein synthesis. Inadequate protein or poor protein quality results in slower foal growth, reduced milk production, and loss of the mare's muscle mass. Quality protein sources include alfalfa hay, soybean meal, linseed meal, and properly formulated commercial feeds that specify lysine content.

Calcium and Phosphorus: The Skeletal Framework

These macrominerals work together to build and maintain the skeletal system. The developing fetal skeleton and the mineral content of milk create high demands for both minerals, particularly during late pregnancy and lactation. Beyond absolute amounts, the ratio of calcium to phosphorus is critical. The ideal ratio is approximately 2:1, though ratios anywhere from 1:1 to 6:1 are tolerable if both minerals are provided in adequate amounts.

Excess phosphorus relative to calcium interferes with calcium absorption and can lead to nutritional secondary hyperparathyroidism, even when calcium intake appears adequate. This is why the ratio matters as much as the absolute amounts. Legume hays are naturally high in calcium, while grains are high in phosphorus, making balanced feeding essential.

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Trace Minerals: Small Amounts, Big Impact

Although required in much smaller quantities than macrominerals, trace minerals are equally essential for health and development. The most critical trace minerals for broodmares include:

Copper: Essential for proper bone and cartilage formation, copper deficiency is strongly associated with developmental orthopedic disease in growing foals. Copper also plays roles in connective tissue formation, melanin production (coat color), and immune function. Many regions have copper-deficient soils, making supplementation necessary.

Zinc: Working closely with copper, zinc is vital for skeletal development, skin and hoof integrity, wound healing, and immune function. Zinc deficiency can result in poor hoof quality, skin lesions, and compromised immunity.

Selenium: This antioxidant mineral works synergistically with vitamin E to protect cells from oxidative damage. Selenium is critical for immune function, fertility, and muscle development. However, selenium has a narrow margin of safety between deficiency and toxicity, requiring careful supplementation based on regional levels.

Manganese: Important for bone development, carbohydrate metabolism, and reproduction. Manganese works with other trace minerals to support skeletal health and is often included in balanced broodmare supplements.

Vitamins: Catalysts for Health

Vitamin A: Essential for vision, immune function, growth, and reproduction. Vitamin A is abundant in green, growing pasture but degrades rapidly in stored hay. Mares on hay-only diets require supplementation at 30,000-45,000 IU daily.

Vitamin D: Necessary for calcium absorption and bone mineralization. Horses synthesize vitamin D from sunlight exposure, so horses with outdoor access typically don't require supplementation. However, horses kept primarily in stalls may benefit from supplementation at 3,000-6,000 IU daily.

Vitamin E: A powerful antioxidant that protects cell membranes from oxidative damage. Vitamin E is crucial for immune function, muscle integrity, and neurological health. Fresh pasture is the best natural source, but vitamin E degrades rapidly in hay. Broodmares require 1,000-2,000 IU daily, with higher levels (2,000-3,000 IU) beneficial during late pregnancy and lactation.

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Water: The Forgotten Nutrient

Water is perhaps the most critical nutrient, yet it's often overlooked in discussions of broodmare nutrition. Lactating mares have enormous water requirements—potentially 50-70 liters (13-18 gallons) daily in warm weather or during heavy milk production. Inadequate water intake rapidly reduces milk production and can lead to serious health complications including impaction colic.

Ensure constant access to clean, fresh water. In winter, heated water sources encourage adequate intake. Water quality matters—high mineral content, contamination, or unpalatable water will reduce consumption. Monitor water buckets and automatic waterers daily to ensure they're functioning and being used.

Practical Feeding Strategies

The Forage-First Approach

Regardless of production stage, forage should form the foundation of every broodmare's diet. Horses evolved as continuous grazers, and their digestive physiology is optimized for high-forage diets. Free-choice access to quality hay or managed pasture supports digestive health, provides a steady energy source, helps prevent stereotypies and vices, and supplies essential fiber for gut function.

Forage quality varies tremendously based on species, maturity at cutting, storage conditions, and growing conditions. Whenever possible, have hay analyzed at a forage testing laboratory. A basic analysis costs $20-40 and provides invaluable information about digestible energy, protein content, and mineral composition. This allows you to make informed decisions about supplementation rather than guessing.

Choosing Appropriate Concentrates

When forage alone cannot meet the mare's needs—particularly during late pregnancy and lactation—concentrate feeds become necessary. Commercial feeds specifically formulated for broodmares offer several advantages over mixing your own rations: consistent nutrient content, appropriate vitamin and mineral fortification, quality protein sources with adequate lysine, and research-backed formulations.

Look for feeds labeled specifically for "mare and foal," "broodmare," or "breeding stock." These products are formulated with the elevated protein, lysine, calcium, phosphorus, and trace mineral levels that reproductive horses require. Avoid generic "sweet feeds" or feeds formulated for other horse types, as they may not provide adequate nutrition for breeding stock.

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Commercial Mare Feeds vs. Custom Rations

For most broodmare operations, commercial mare and foal feeds represent the most practical choice. They're convenient, consistent, and eliminate the guesswork of balancing minerals and vitamins. However, larger operations or those with specific management goals may benefit from custom rations formulated by an equine nutritionist.

Custom rations allow precise tailoring to specific forage types, regional mineral deficiencies, and individual mare requirements. They may also prove more economical at scale. The investment in professional consultation is typically worthwhile for operations managing more than 10-15 broodmares.

Feeding Frequency and Meal Sizes

Horses have relatively small stomachs for their size and are designed to consume small amounts of feed frequently throughout the day. Large concentrate meals can lead to digestive upset, colic, laminitis, and inefficient nutrient utilization. As a general rule, concentrate meals should not exceed 0.5% of body weight. For a 500 kg mare, this means maximum meal sizes of 2.5 kg (5.5 lbs).

During peak lactation when concentrate intake may reach 6 kg daily, divide this into three or four meals rather than two. The extra labor is worthwhile for improved digestive health and nutrient utilization. Early morning, midday, late afternoon, and evening feedings work well for most operations.

Pasture Management Considerations

When available, quality pasture can meet many or all of a broodmare's nutritional needs, particularly during early to mid-pregnancy. However, pasture quality varies tremendously by season, grass species, stocking rate, and management. Spring and early summer pasture is typically very high in nutrients and may require limiting access for easy-keeper mares to prevent excessive weight gain. Late summer and winter pasture often becomes too mature or sparse to meet even maintenance requirements.

Rotational grazing, appropriate stocking rates (typically 1-2 acres per horse depending on productivity), and good pasture management including fertilization, weed control, and rest periods will maximize pasture value. Even with excellent pasture, mineral supplementation is typically necessary as most pastures are deficient in copper, zinc, and selenium.

Common Nutritional Mistakes to Avoid

Feeding Frequency and Meal Sizes

Understanding common pitfalls in broodmare nutrition can help you avoid costly mistakes that compromise mare health and foal development.

Overfeeding During Early Pregnancy

As discussed earlier, this is perhaps the single most common error. The natural inclination to "feed for two" leads to obesity with its numerous complications. Remember that the fetus requires minimal additional nutrients during the first eight months. Feed the mare for maintenance and appropriate body condition, not for pregnancy.

Inadequate Nutrition in Late Pregnancy

The flip side of overfeeding early is failing to increase feed during late gestation when the fetus is growing exponentially. Mares entering late pregnancy in thin condition or losing weight during the final trimester are at risk for producing small, weak foals with inadequate immunity. These foals are more susceptible to disease and developmental problems. Monitor body condition closely and increase concentrates as needed during the final three months.

Failing to Meet Lactation Demands

Some managers fail to appreciate just how demanding lactation is nutritionally. Attempting to maintain lactating mares on forage-only diets or inadequate concentrate rations results in dramatic weight loss, poor milk production, and compromised foal growth. Don't shortchange lactation—it's the most important nutritional period for foal development.

Improper Calcium:Phosphorus Ratios

Feeding grain-heavy diets without adequate calcium supplementation creates inverted calcium:phosphorus ratios that interfere with calcium absorption. This is particularly problematic when feeding large amounts of grain to lactating mares. Balance high-phosphorus grains with calcium-rich alfalfa hay or appropriate mineral supplementation.

Neglecting Trace Mineral Supplementation

Even on excellent forage and high-quality commercial feeds, trace mineral deficiencies can occur, particularly copper and zinc. These deficiencies may not become apparent until foals develop orthopedic problems months after birth. Provide a quality trace mineral supplement or ensure commercial feeds are fed at levels sufficient to meet trace mineral requirements—not just energy needs.

Body Condition Scoring and Monitoring

Body condition scoring is an essential management tool for evaluating the adequacy of your feeding program. The Henneke Body Condition Scoring system uses a 1-9 scale where 1 is emaciated and 9 is extremely obese.

How to Assess Body Condition Score

Body condition scoring involves visual appraisal and palpation of six key areas: neck, withers, shoulder, ribs, loin, and tailhead. At a BCS of 5 (moderate condition), ribs are not visibly discernible but can be easily felt with light pressure. The topline is level, and fat deposits along the neck and tailhead are minimal but present.

Score your mares at least monthly, more frequently during late pregnancy and lactation. Maintaining consistent scoring technique—ideally having the same person perform all assessments—improves accuracy and allows meaningful comparisons over time.

Ideal Scores Throughout the Cycle

Early to Mid-Pregnancy: BCS 5-6 is ideal. Mares should enter pregnancy in moderate condition and maintain this throughout the first eight months.

Late Pregnancy: BCS 6-7 provides beneficial energy reserves for the upcoming lactation. A slight increase in condition during late pregnancy is desirable as long as obesity is avoided.

Early Lactation: BCS 5-6 is acceptable, with a loss of half to one condition score expected even with good nutrition. Mares should not drop below BCS 4.

Late Lactation to Weaning: BCS 5-6 should be the target, regaining any condition lost during early lactation before the next breeding season.

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Adjusting Feed Based on Individual Needs

Individual horses vary tremendously in their metabolism and nutrient requirements. Some mares maintain good condition on minimal feed while others require substantial rations. Use body condition scoring to guide individual adjustments rather than feeding all mares identically.

For mares losing excessive condition, increase concentrate feeds by 0.5-1 kg increments every 5-7 days until condition stabilizes. For mares gaining too much condition, reduce concentrates gradually and consider limiting pasture access. Always make dietary changes gradually to avoid digestive upset

Warning Signs of Nutritional Deficiencies

Beyond body condition, watch for other signs that may indicate nutritional inadequacies:

- Poor hair coat quality, dullness, or slow shedding patterns
- Hoof quality problems including cracks, slow growth, or weak horn
- Decreased milk production or thin, watery milk
- Lethargy or decreased performance
- Poor foal growth rates or developmental problems
- Frequent infections or poor wound healing (may indicate protein, vitamin E, or selenium deficiency)

Any of these signs warrants consultation with your veterinarian or equine nutritionist to assess the diet and make appropriate adjustments.

Special Considerations

Maiden vs. Experienced Mares

Maiden mares—those pregnant for the first time—require special attention as they face the dual demands of their own continued growth and development alongside pregnancy requirements. Mares bred as three- or four-year-olds are still growing themselves and need higher protein and energy levels than mature mares. These young mares should be fed as growing horses with added allowances for pregnancy, which may mean providing 10-20% more nutrients than mature mares in the same stage of pregnancy.

Maiden mares also tend to be more anxious about foaling and motherhood, which can temporarily reduce feed intake around parturition. Monitor these mares closely during late pregnancy and early lactation to ensure they maintain adequate condition.

Older Broodmares

Mares aged 15 and older may face challenges maintaining body condition and meeting the demands of pregnancy and lactation. Dental problems become increasingly common with age, potentially interfering with forage utilization. Senior mares benefit from twice-yearly dental examinations and may require alternative forage forms such as cubes, pellets, or chopped hay if dental function is compromised.

Metabolic efficiency may also decline with age, meaning older mares may need higher feed quantities to maintain the same body condition as younger mares. Some senior mares benefit from feeds specifically formulated for older horses, which typically provide easily digestible fiber sources and enhanced protein and mineral levels. However, these senior feeds may not provide adequate nutrition for lactation, so supplemental mare and foal feed may still be necessary.

Mares Carrying Twins

While twin pregnancies are very undesirable in horses and are often reduced to a singleton early in gestation, occasionally mares carry twins to term. These mares face significantly increased nutritional demands, particularly during late pregnancy and lactation. Twin-carrying mares require approximately 20-30% more nutrients than mares carrying singles.

The increased abdominal distension from twin fetuses further limits feed intake, making it challenging to meet nutritional needs through conventional feeding. These mares may benefit from more frequent meals of energy- and nutrient-dense feeds. Careful monitoring of body condition is essential, and veterinary consultation regarding supplemental feeding strategies is advisable

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Metabolic Issues

Broodmares with equine metabolic syndrome (EMS) or pituitary pars intermedia dysfunction (PPID, formerly Cushing's disease) require modified nutritional management. These conditions affect glucose metabolism and may predispose horses to laminitis, making careful dietary management critical.

EMS: Mares with EMS should be maintained at lean body condition and fed diets low in nonstructural carbohydrates (starch and sugar). Choose low-NSC hays and feeds specifically formulated for metabolic horses. Grazing may need to be restricted, particularly on lush spring pasture. Weight management is critical before breeding, as obesity exacerbates EMS.

PPID: Older broodmares with PPID require medical management alongside dietary management. These mares often struggle to maintain body condition and muscle mass, so adequate protein and calorie intake is essential. Work closely with your veterinarian to balance the need for good nutrition during pregnancy and lactation with metabolic management.

Seasonal Factors and Forage Quality Changes

Forage quality changes seasonally, affecting the nutritional value of what mares consume. Spring and early summer pasture is typically high in protein and energy but may be excessively rich for easy keepers. Late summer pasture becomes mature and less nutritious. Winter pasture in most regions provides minimal nutrition and should be considered primarily as exercise space rather than a nutritional resource.

Hay quality also varies by cutting. First cutting hay is typically more mature and stemmy with lower nutrient content. Second and third cutting hays are usually leafier, more digestible, and higher in nutrients. Later cuttings may command premium prices but can be excellent choices for lactating mares with high nutritional demands.

Plan your feeding program with seasonal changes in mind. Mares due to foal in late winter or early spring (common timing for many operations) will enter peak lactation just as pasture becomes available, potentially reducing concentrate costs. However, this also means managing lush pasture intake to prevent obesity in mares transitioning from lactation. Mares foaling in fall will face peak lactation during winter when pasture provides minimal nutrition, increasing reliance on hay and concentrates.

Conclusion

Successful broodmare nutrition requires understanding the dramatically shifting demands throughout pregnancy and lactation. The nutritional program that serves a mare well in early pregnancy is completely inadequate during peak lactation. Similarly, feeding practices appropriate for lactation would cause obesity if continued during early pregnancy.

The key principles to remember are:

- Feed conservatively during early to mid-pregnancy, focusing on maintaining appropriate body condition
- Increase feed substantially during late pregnancy as fetal growth accelerates
- Maximize nutrition during lactation, particularly the first three months post-foaling
- Always provide quality forage as the foundation of the diet
- Ensure adequate trace mineral supplementation, particularly copper, zinc, and selenium
- Monitor body condition score regularly and adjust feeding accordingly
- Maintain constant access to clean, fresh water

No single feeding program works for all operations or all mares. Variables including forage quality, climate, individual mare metabolism, and management goals all influence the optimal approach. The guidelines presented here provide a framework, but successful implementation requires observation, monitoring, and adjustment based on individual results.

Don't hesitate to seek professional guidance when needed. Equine veterinarians and certified equine nutritionists can provide valuable insights into your specific situation, help troubleshoot problems, and develop customized feeding programs. The investment in professional consultation is minimal compared to the potential costs of nutritional mistakes—weak foals, developmental problems, compromised mare health, or reduced fertility.

Proper broodmare nutrition is both an art and a science. Success comes from understanding the physiological demands of reproduction, providing appropriate nutrients at each stage, monitoring results carefully, and making thoughtful adjustments as needed. The reward for this attention to detail is healthy, vigorous foals and mares that maintain good condition and fertility year after year—the foundation of any successful breeding program.

Additional Resources

Recommended Reading:

- NRC (National Research Council) - Nutrient Requirements of Horses, 6th Revised Edition
- American Association of Equine Practitioners resources on broodmare care
- University extension publications from equine programs (Kentucky, Virginia Tech, UC Davis)

Finding Nutritional Analysis:

- Local forage testing laboratories for hay analysis
- Feed manufacturers for guaranteed analysis of commercial feeds
- University extension services for interpretation assistance

Professional Consultation:

- Board-certified equine veterinarians for health-related nutrition concerns
- Equine nutritionists (PhD or MS in equine nutrition) for ration formulation
- Feed company nutrition consultants for product-specific guidance

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