



FEEDING AND MANAGEMENT RECOMMENDATIONS

Working with a veterinarian to maintain overall health for geriatric horses is essential. The veterinarian is the best resource for proper dental care that is essential for senior horses. Having the horse's teeth checked by a professional every 6 months after the age 16 is recommended for maintenance. Some horses maintain healthy teeth well into their 20's while others require the benefits of Purina® Equine Senior® horse feed in their teens. The veterinarian can help alert the owner as to when the horse's teeth are no longer able to effectively bring in and properly chew enough roughage to meet the horse's requirements. It is also beneficial to work with the veterinarian to evaluate BCS, muscle tone and mass, haircoat and hoof quality. These are all important indicators of the health and well-being of the horse. When senior horses begin to lose weight, top-line condition, hair or hoof quality, muscle tone, etc., these can be signals to alert the owner that the horse is not getting adequate nutrition from the current feeding program. This can be due to poor tooth quality which inhibits adequate intake or poor digestive efficiency which inhibits adequate uptake of nutrients. At this point, regardless of age, it is necessary to consider switching the feeding program to a diet designed for geriatric horses such as Purina® Equine Senior® horse feed.

The feeding regimen for a senior horse has to be developed around both management factors and the nutritional needs of the horse. Overall management of the senior horse should include proper dental and hoof care, up-to-date deworming and vaccination programs, as well as proper feeding routines. The gastro-intestinal tract of the horse was designed for continuous small meal intake. Therefore, several small meals are more beneficial to the geriatric horse than are fewer large ones. Also, the capability of the horse to graze or take in long stem roughage must be considered when establishing feeding rates. If the horse can no longer graze or does not have access to good quality forage, then the feeding rate of Purina® Equine Senior® horse feed should be increased to meet not only the energy requirement, but the fiber requirement as well which is a minimum of 1% of bodyweight. BCS should serve as a guide to help regulate feeding rates with the BCS of 5-6 as the goal for the senior horse. This feed was designed to

be fed at a minimum of 6 pounds per day to meet the protein, vitamin, and mineral needs of the average horse. If feeding less than that, a supplement such as Enrich® 32 supplement should be used to ensure the horse is meeting the requirements for protein, vitamins, and minerals. If weight gain is necessary, then feeding by product directions based on weight of horse and quantity of feed is recommended. If already feeding at the upper levels of the recommended amounts and more gain is needed, supplementing Amplify® supplement in addition to the diet can also help achieve weight gain goals. When feeding a horse that will not consume adequate amounts of feed and roughage combined, has poor teeth quality, or is unable or unwilling to consume sufficient quantities of longstem roughage, remember to feed quantities of Purina® Equine Senior® horse feed to meet fiber requirements (1% body weight minimum) as well as energy requirements. Varying environmental conditions have an effect on feeding for the geriatric horse as well. Feeding rates may need to be increased in cold weather to maintain BCS of 5-6 or decreased in spring or summer to avoid excessive weight gain. This feed is balanced and formulated to accommodate these changes by adjusting feeding rate using BCS as a guide as long as a minimum of 6 pounds is fed per day. If less than 6 pounds per day is required to maintain the proper BCS of 5 then include Enrich® 32 supplement.

When feeding to maintain the health and well-being of an equine friend, no detail is too small. That is why Land O'Lakes Purina Feed continues to conduct research, promote owner education, and offer the very best products for geriatric horses. Purina® Equine Senior® horse feed can be fed with confidence and the quality and research is a difference you can see.

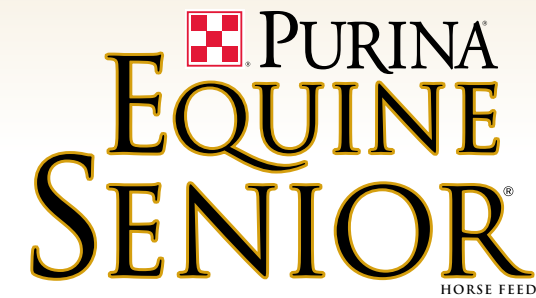
References

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FEEDING MANAGEMENT OF SENIOR HORSES

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INTRODUCTION

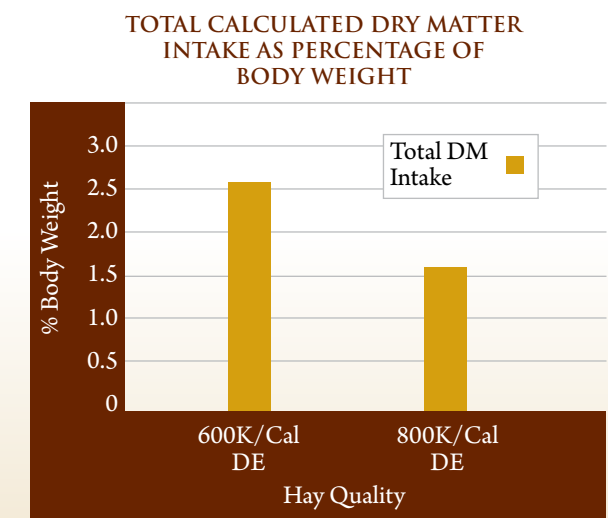
Horses are living longer and healthier lives thanks in part to improved management and nutrition programs. As these equine family members reach their geriatric years, it is important to understand some of the changes that are occurring and adjust care and feeding programs accordingly. There is no specific age or date that dictates when the horse becomes "old". Their nutritional needs are a function of the teeth and capability of the digestive tract. When the horse no longer physically brings in and effectively chews enough roughage to satisfy the 1% body weight per day minimum, then the horse's condition will drop markedly without proper supplementation. It is sometimes mistaken that the forage (hay and grazing) portion of the horse's diet is simply to keep the horse busy. However, research has indicated how vital the fiber from forages is to the health of the horse. Microbes in the cecum and large intestine digest the fermentable fibers producing volatile fatty acids which the horse uses as a sustained source of digestible energy (DM). If ample fiber is not consumed by the horse to maintain the microflora of the hindgut, the microbial populations are altered and in turn cannot provide energy to the horse from volatile fatty acids. Feeds designed for geriatric horses, such as Purina® Equine Senior® horse feed, helps deliver the required high quality fiber in a form that is available for digestion and fermentation in the hindgut regardless of the quality of the horse's teeth or ability to chew. Also, the efficiency of digestion decreases with age and must be accounted for in the nutritional program to maintain the geriatric horse's condition. Nutrition programs for senior horses require a specific balance of energy, protein, vitamins, and minerals as well as fiber to accommodate their changing needs and maintain proper body condition. Through the ongoing research at Longview Animal Nutrition Center,

Land O'Lakes Purina Feed nutritionists continue to define this intricate balance and ensure the needs of the senior horse are supplied.

RESEARCH STUDY RESULTS

Recently (2008-2009), Land O'Lakes Purina Feed nutritionists collaborated with farms and universities across the United States to conduct a comprehensive scientific research study in order to determine how feeds formulated for aged horses affected weight gain, body condition score, and selected blood analyses. In this research, it became apparent that some senior horses have limited digestive capacity, appetite, or combination thereof and consume as little as 1.5% of their body weight per day in hay and Purina® Equine Senior® horse feed (Figure 1).

Figure 1.



FEEDING MANAGEMENT OF SENIOR HORSES

Therefore, if the geriatric horse is a Body Condition Scoring (BCS) 4 or less, using higher quantities of Purina® Equine Senior® horse feed and little to no hay are recommended for optimal gain. In this 90-day study, most of the geriatric horses with no medical conditions or well-maintained medical conditions were fed to regain weight and BCS (Figures 2 & 3).

Figure 2.

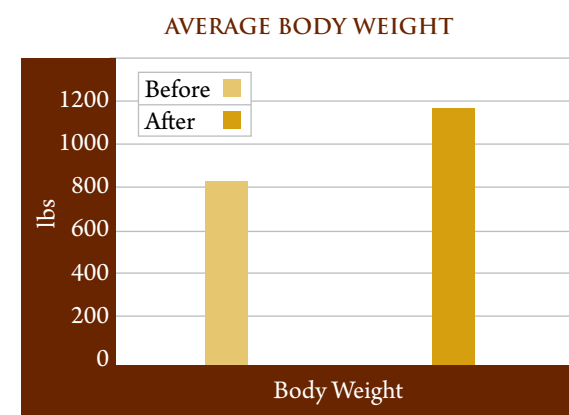
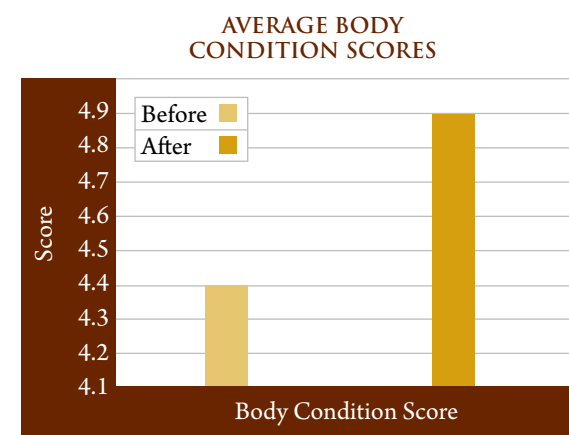


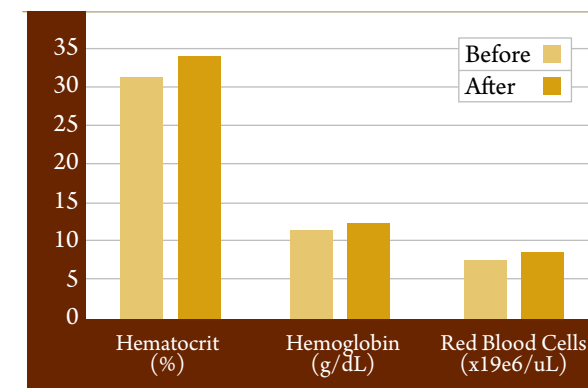
Figure 3.



The average rate of gain was 1.21 lbs/day after the feeding rates were adjusted to the proper levels. Initially, hay intake was calculated at 10 to 15 pounds per day based on standard NRC recommendations (NRC, 2007). Within the first 6 weeks of the study it became apparent the horses were not taking in or utilizing the nutrition from those quantities of hay and therefore not gaining as they should. The feeding rates of Purina® Equine Senior® horse feed were increased to account for smaller quantities of total dry matter (DM) intake and weight gain was documented (Figure 2). Some horses however were fed for weight and BCS reduction which was also safely and successfully achieved with this diet.

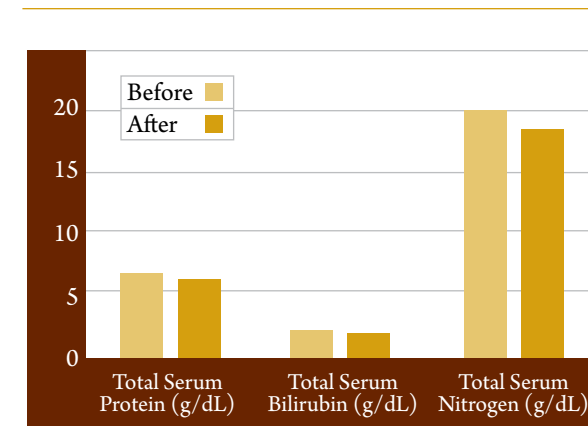
In addition to evaluating feeding rates of hay and Purina® Equine Senior® horse feed in relation to BCS, blood analyses were performed on the senior horses. The results indicated hemoglobin and red blood cell counts were improved after the 90-day feeding period as demonstrated in Figure 4.

Figure 4.



Also vitamins E and C were maintained at desirable levels in the blood. Total serum protein, bilirubin, and urea nitrogen levels were lower in horses fed this feed. These data suggest no defects in hepatic or renal function of these aged horses utilizing a 14% protein ration. (Figure 5.)

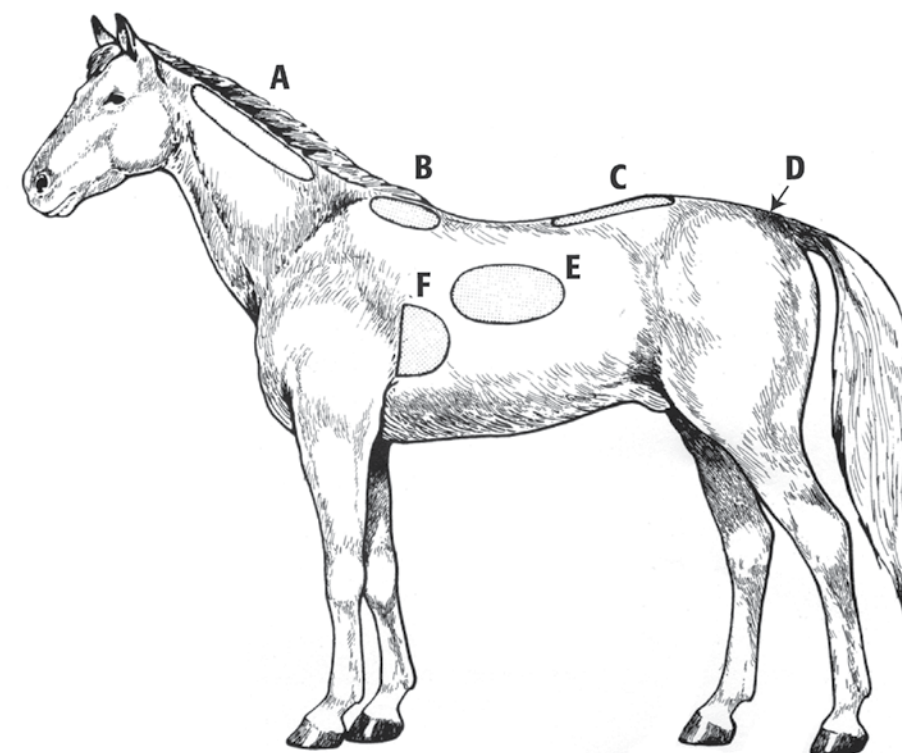
Figure 5.



Several horses involved in this study demonstrated difficulty chewing or swallowing, and it was necessary to create a mash by adding water to the feed. Purina® Equine Senior® horse feed absorbed the water quickly and remained palatable for the horse to consume their entire rations.

BODY CONDITION SCORING

Maintenance of proper body condition is important throughout a horse's life, but is especially critical during the geriatric years. As the horse ages it becomes more difficult not only to build muscle and tissue, but to simply maintain it. Therefore once the horse loses condition it is difficult to regain it. The Body Condition Score (BCS) system (Henneke, et al. 1983) is an excellent tool to evaluate the condition of horses of any age. Simply assigning the number score of the category in which the horse best matches the criteria is an unbiased way to determine if the horse is in proper flesh. Maintaining senior horses at a BCS of 5-6 is recommended. At this condition, the horse is provided enough energy to meet its needs but is not carrying excess weight which can be detrimental and lead to other disorders associated with obesity.



- A. Along the Neck
- B. Along the Withers
- C. Crease Down Back
- D. Tailhead
- E. Ribs
- F. Behind the Shoulders

1. **POOR** - Animal extremely emaciated; spinous processes, ribs, tailhead, tuber coxae (hip joints), and ischia (lower pelvic bones) projecting prominently; bone structure of withers, shoulders, and neck easily noticeable; no fatty tissue can be felt.
2. **VERY THIN** - Animal emaciated; slight fat covering over base of spinous processes, transverse processes of lumbar vertebrae feel rounded; spinous processes, ribs, tailhead, tuber coxae (hip joints) and ischia (lower pelvic bones) prominent; withers, shoulders, and neck structure faintly discernable.
3. **THIN** - Fat buildup about halfway on spinous processes; transverse processes cannot be felt; slight fat cover over ribs; spinous processes and ribs easily discernable; tailhead prominent, but individual vertebrae cannot be identified visually; tuber coxae (hip joints), appear rounded but easily discernable; tuber ischia (lower pelvic bones) not distinguishable; withers, shoulders and neck accentuated.
4. **MODERATELY THIN** - Slight ridge along back; faint outline of ribs discernible; tailhead prominence depends on conformation, fat can be felt around it; tuber coxae (hip joints) not discernable; withers, shoulders and neck not obviously thin.
5. **MODERATE** - Back is flat (no crease or ridge); ribs not visually distinguishable but easily felt; fat around tailhead beginning to feel spongy; withers appear rounded over spinous processes; shoulders and neck blend smoothly into body.
6. **MODERATELY FLESHY** - May have slight crease down back; fat over ribs spongy; fat around tailhead soft; fat beginning to be deposited along the side of withers, behind shoulders, and along sides of neck.
7. **FLESHY** - May have slight crease down back; individual ribs can be felt, but noticeable filling between ribs with fat; fat around tailhead soft; fat deposited along withers, behind shoulders, and along neck.
8. **FAT** - Crease down back; difficult to feel ribs, fat around tailhead very soft; fat area along withers filled with fat, area behind shoulder filled with fat, noticeable thickening of neck; fat deposited along inner thighs.
9. **EXTREMELY FAT** - Obvious crease down back; patchy fat appearing over ribs, bulging fat around tailhead; along withers, behind shoulders and along neck, fat along inner thighs may rub together; flank filled with fat.