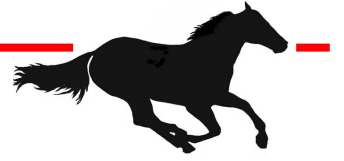




EquiPage



NUTRITION AND OTHER TOPICS OF INTEREST TO THE HORSE INDUSTRY.

Growing More Durable Equine Athletes

Dr. Randel Raub; Director of Research, Development and Marketing; Ridley Inc.

(Excerpts from: Growing More Durable Equine Athletes, R. H. Raub, 2010, Comparative Exercise Physiology 7(2); 49-56.)

Although much knowledge has been gained regarding the nutrient requirements of the young growing horse, there are still many unanswered questions concerning optimum nutrition for growth and the avoidance of developmental orthopedic disease (DOD). What degree, if any, of DOD can be considered normal? If any DOD is abnormal, then what degree can be considered acceptable or recoverable, such that future athletic performance will not be compromised? Is there a perceived increase in the incidence due to a greater ability to detect DOD or due to changes in management practices that predispose horses to the disease, or both? Our ability to recognize and detect DOD has most likely increased, which leads back to the question of how much of what we detect is normal or inconsequential regarding the development and maturity of the tissue. Whether changes in management practices have affected the incidence of DOD is difficult to ascertain. Confounding factors of genetics, environment, non-nutritional management, and their interactions with nutrition make the establishment of accurate and precise optimal nutrient requirements for growth complex and difficult. The end goal is to grow individuals that will be more durable during their athletic career. So we will continue to work toward nutritional, management and medical practices that will help to develop earlier maturing horses and horses with improved skeletal strength and integrity.

We must define to what degree our nutritional management affects the horse during different stages of its growth. It would seem logical that nutrition would have the most profound effects during the most rapid periods of growth. Therefore, concerns have been directed toward the last third of gestation and the possible indirect effect broodmare nutrition has on fetal development. The early postnatal period is another period of rapid growth; thus, the effect of broodmare nutrition on lactation may affect the growth of the foal. Nutrition also will have a direct effect on growth and development from the initiation of creep feeding programs through maturity. Thus, the nutritional and management concerns regarding growth should start at conception and continue through maturity.

Genetics is the primary determinant in the expression of DOD, and there is some degree of heritability in the horse. Heritability estimates could vary with specific joints and breeds since most of the studies only have addressed the hock in Standardbreds. Selection against DOD could be feasible; however, it would have to be based on progeny testing since stallions free of DOD have produced foals with a significant incidence of DOD lesions. As a population, feral horses have significantly less radiographic incidence of DOD than the domestic population. This is probably primarily due to natural selection pressures, although nutrient intake differences and activity levels between feral and domestic horses also may play a role. Although genetics is the primary determinant, knowing the possible genetic predisposition of a particular horse may allow adjustment to nutrition and management programs in order to reduce the risk of DOD.

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Concerns regarding the maternal effects on foal growth and development should include the prenatal period, particularly during the last two thirds of gestation. Some evidence suggest neuroendocrine control of growth hormone secretion in the horse may occur before parturition, which is earlier than in other species and may emphasize the importance of



broodmare nutrition during gestation and lactation. Increasing the amount of nutrients available to the broodmare during the last third of gestation and during lactation is well accepted. Such increases help insure proper fetal growth and development. In the mare, it provides for adequate milk production and maintains a desired broodmare body condition score of 5 to 7, which enhances rebreeding efficiencies. Currently we do not understand how nutritional supplementation in the

mare may affect DOD in the foal. There is still much to learn regarding broodmare nutrition and possible fetal imprinting effects.

The effects of supplemental feeding programs for young, growing horses may be most profound during the transition period when the young horse begins receiving most of its nutrients from feed sources rather than mare's milk. This transition period is usually associated with weaning (3 to 5 months of age), a period of rapid growth that may compound the effects of feeding programs on growth. Creep fed foals (at approximately 1.5% of body weight) generally show a greater growth response than non-creep fed foals. However, differences in weight and height between creep and non-creep fed horses that may be evident at the weaning to yearling stage are not maintained provided the non-creep fed horses receive adequate nutrition for growth until maturity. Growth in the foal has been expressed in a curvilinear fashion as it relates to age. However, the growth pattern may be more reflective of a stair step pattern with a negative rate of gain for 2-3 days post weaning. Where on the growth curve a horse should be at a given point in time is dependent on breed, the growth potential of the individual horse, and the desired growth rate. It is generally accepted that moderate or less rates of growth contribute less to the incidence of DOD than rapid rates of growth. Horses that may be predisposed to DOD (i.e., large framed individuals with an apparent potential for rapid growth) may benefit from diets of lower caloric density. This is sometimes confused with nutrient deprivation (starvation), which is counter-productive to reducing the potential for DOD. Protein, vitamins and minerals are needed to insure sound tissue development, but do not accelerate growth rate as an increase in calories. Managing the growth rate of predisposed horses is best achieved by reducing calorie intake while still providing adequate protein, vitamins and minerals.

The other aspect of the growing horse's diet that is often neglected is the forage component, which can vary from 30% of the diet or less to 70% or more. Depending on the quality of the hay or pasture, this aspect of the diet will have a greater impact on the amount of calories consumed than the concentrate portion of the diet and thus should be considered in the overall calorie reduction and management of the growth rate of predisposed horses.

The possible effects of exercise / activity in young, growing horses and DOD are not often discussed. Although exercise contributes positively to bone density, exercise seems to have a dual role regarding DOD depending on the circumstance. One role is as a contributing factor to DOD. Researchers have suggested that non-clinical lesions present at an early age manifest into clinical signs with the increased trauma of exercise. More recent research suggests another role serves as a potential prophylactic to the development and severity of DOD.



In summary, genetics is the primary determinant of DOD in horses. Nutritional management may help diminish the severity and frequency of DOD, particularly in those identified as "high risk". Such nutritional management should consist of a reduction in daily calorie intake, but not a reduction in the daily protein, vitamin and mineral intake. Increased exercise / activity levels in young, growing horses not expressing signs of DOD may be beneficial to long term joint health and well-being.

Meet Dr. John Lew

Equine Nutritionist & Manager of Research and Technical Services at McCauley Bros.

Dr. John Lew earned his Ph.D. in equine nutrition from the University of Kentucky, and served as a research fellow, centering his studies on animal science and pharmacology.

Dr. Lew began working as an equine nutritionist at McCauley Bros., Inc., a world-renown equine feed manufacturer in Versailles, KY, in 1989. Currently, Dr. Lew is the Manager of Research and Technical Services and is the head nutritionist for McCauley Bros. in Kentucky and McCauley Equine Center in Pennsylvania.

In his daily duties, Dr. Lew is responsible for the formulation and quality of McCauley's feeds and supplements. He is the senior researcher and leads the technical team in providing nutritional consultation. Being a well-respected and recognized nutritional authority, his duties are not limited to Kentucky or the United States. Dr. Lew consults with horse professionals around the world.

His professional expertise in equine nutrition is supplemented by practical, hands-on horse experience. Aside from having managed the University's horse farm, he is a certified riding instructor and donates much of his spare time to Central Kentucky Riding for Hope. He is a former steeplechase jockey and has successfully competed in 3-day events and show jumping. He is also a member of the Woodford Hounds.



Meet Dr. Randel Raub

Director of Research, Development & Marketing at Ridley, Inc.

Dr. Randel Raub currently is the Director of Research and Marketing for US Feed Operations – Ridley Inc. In this position, Dr. Raub provides strategy, direction, and accountability to all divisions of Ridley's research and marketing efforts.

Dr. Raub is a recognized authority on equine growth physiology and has authored or co-authored numerous articles for scientific journals, as well as having written many articles for popular press. He also is a frequent speaker at educational, research and industry-related functions throughout the country and was the 2011 recipient of the Fellow Award from the Equine Science Society.

Prior to joining Ridley, Dr. Raub was Director of Equine Business Development and Technical Service from 2007 through 2011, and Director of Research and New Product Development from 2001 through 2007 for the Horse Business Group of Purina. From 1989 to 2001, he was the head of the equine teaching and research program at Kansas State University and was the 1999 College of Agriculture's Faculty Member of the Year. He received his Bachelor and Master of Science degree in animal science from the University of Illinois and a Ph.D. with a minor in physiology from the University of Kentucky. His Ph.D. work focused on the effects of nutrition and exercise on bone and muscle development in the growing horse.

Today, he and his wife Elizabeth, daughter Indira and son Ryley are involved with western performance and ranch horses.

Meet Amy Parker, M.S.

Equine Nutritionist & Manager of Technical Services at McCauley Bros.

Amy Parker is a native of Lexington, KY and earned both her Bachelor of Science degree in animal sciences and Master of Science degree in equine nutrition from the University of Kentucky. During her tenure at UK, Amy worked as a graduate student teacher in the Department of Animal Sciences, assisted with 4-H horse shows and horse contests, and co-authored the Horse Industry Handbook's Youth Leader's Manual for the American Horse Youth Council, which is still being used today throughout the United States. Additionally, she authored or co-authored several scientific journal and meeting proceedings articles.

Following graduation in 1997, Amy began employment with McCauley Bros, a world-renown equine feed manufacturer in Versailles, KY, as an equine nutritionist and customer service specialist. Amy is known throughout Central Kentucky as an established technical resource for owners, trainers, youth, equine organizations, retail stores and team members. She also performs ongoing customer / market research for planning and forecasting and manages ongoing nutritional research, which includes weighing over 1500 horses each month on over 25 esteemed horse farms. Amy also taught equine studies courses at Lexington Community College from 2002 to 2004. If Amy is not consulting or weighing on a horse farm, you will find her assisting with new product developments, creating marketing designs and product promotions, writing technical newsletters or articles, working trade shows, giving seminars, or spending hours on the phone providing consultative nutrition support to horse owners and retail dealers across the United States. Amy is also a horse owner and enjoys trail riding and spending time with her family in her "spare" time.



Customer Focus: Tri-County Feeds, Etc.

Established in 1978, Tri-County Feeds, Inc. specializes in serving the equine industry by providing quality products, services and delivery to Northern Virginia, West Virginia, and Montgomery County, Maryland.



Bill Jackson started this company by delivering paper bedding in his pickup from his brother's garage. He admits with a grin that some of his first customers may have bought from him primarily because they were tired of seeing him knocking at their door. Shortly thereafter, TCF began selling horse feed.

In 1980, TCF moved to Frost Street in Marshall, Virginia. It did not take long for Bill to figure out that if customers need horse bedding and feed, they might need a few other items. Under his salesmanship, the 700 square foot retail, limited warehouse and one loading bay facility became the biggest little feed store in Northern Virginia.

Loyal customers, confident of the knowledgeable staff and reliable delivery, continued to ask for new products and services. Bill and his family listened. Tri-County Feeds became Tri-County Feeds, Etc. In order to do right by their customers, plans were drawn for a 12,000 square foot, three story post-and-beam retail structure attached to a 12,000 square foot warehouse with 14 loading bays. This one-of-a-kind retail space offers a wider variety of goods and services that encompass the equine and companion animal market as well as the equestrian enthusiast, the animal lover, and their families. New product lines include tack, equestrian riding equipment and clothing, home and stable furnishings, gifts, books, toys, dog and cat care, and more...all under one roof. In addition, the facility allows loyal customers and their families to enjoy the use of TCFE's library/media/conference room.

For more information, visit www.tricountyfeeds.com or call (540) 364-1891.



McCauley Bros., Inc
111 Broadway
Versailles, KY 40383
800-222-8635
859-873-3333

www.mccauleybros.com