



Solving Current Domestic Horse Nutrition Challenges

Invited Presentation

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Solving horse nutrition challenges require contributions from Psychology, Biology, Agriculture, and Veterinary Medicine because these are biological challenges of an anthropological nature. The domesticated horse has shifted from an animal of war, transportation, and farmwork, to a companion enjoyed for sport, leisure and recreation. The first realization and responsibility must lie in the fact that it is the owners and managers which are the source of many of the horses' challenges. Nutritional challenges include: defining requirements and absorption of nutrients, improving feed efficiencies for performance, improving feeding management and eating behaviors, and preventing or treating clinical problems. These challenges can be addressed through science, horse management, and education. Many of today's challenges in horse nutrition can be related to the equine genome and genetics. Those that can be addressed with nutritional consequences include Polysaccharide Storage Myopathy, Equine Metabolic Syndrome, Recurrent Exertional Rhabdomyolysis, Glycogen Branching Enzyme Deficiency, Hyperkalemic Periodic Paralysis, and Development Orthopedic Disorders. It is the scientific understanding of cellular processes in relation to nutrients which address the symptoms associated with these diseases. Consequently, feeding management can be changed to actually treat the disease. The most recent advances in equine nutrition implement the use of molecular and cellular based techniques to understand how nutrients are needed during times of stress, feed withdrawal and to maintain gut health. For example, the absorptive capacity and transporter gene expression and localization, are now being quantified. We are also now assessing the impact of the loss of reproductive endocrines on calcium and phosphorus homeostasis in the horse. Additionally, bioluminescent pathogenic bacteria have been utilized to view attachment rates in the gastrointestinal tract of the horse. These are merely examples of the approaches

of science to these nutritional challenges.

Science is of little use unless it is incorporated into improved management of horses. Every type of horse requires different management and good husbandry. In our country, 70% of the horses are kept in small herds, on limited acreage, and used for recreation and sport. Since we have taken the horse out of its natural environment and subjected it to these roles, we now seek to determine ways to feed the horse in our environments; i.e. obesity, inconsistent exercise, confinement, surgery, competition, diseases. Private horse feed agribusinesses have aggressively positioned excellent products with claims to improve health, reproduction, performance, and even horse happiness. Owners and managers seek unbiased science upon which they ultimately make their own decisions. General challenge categories seem to be feeding geriatric horses, active performance horses, and idle horses with secondary metabolic problems. Thus, feeding recommendations include the determination of specific horse nutrient requirements, maximization of available forages, providing other nutrients, and exercise to manage horses more as horses. Private and public companies and Extension systems exist to provide online and other sources of information. As more and more people own horses as a hobby and for recreation, they share responsibility to inform themselves on how to best feed and care for their horses.

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