KENTUCKY EQUINE RESEARCH
Equine Review

SM 06

Understanding Protein

Do your customers know what's important about protein in horse feeds? Do you have simple, clear answers to those protein-related questions that keep popping up? **Here's the information you will need to understand, explain, and market horse feeds that contain a range of protein levels and sources.**

- **A customer says, "I can understand why my dog and cat need meat for protein. Why do horses need protein? They eat grass, don't they?"**
- **Your answer:** Although the sources are different, dietary protein is essential for all animals. Carnivores like dogs and cats easily digest the protein in meat, while horses and other herbivores, or plant eaters, derive protein from forage and grain.

- **A customer asks, "Why is protein so important?"**
- **Your answer:** Protein makes up a large part of the tissue in the horse's muscle, blood, internal organs, and skeleton. The processes of growth, reproduction, and cell replacement require a constant supply of protein. Protein is a necessary part of hormones, enzymes, antibodies, and other vital elements of body function. Horses can manufacture some amino acids (the building blocks that make up different types of protein) internally, but about half the required amino acids cannot be synthesized by the horse and must be obtained from feedstuffs.

- **A customer asks, "Can you explain the protein content on the feed tag?"**
- **Your answer:** Feed manufacturers are required to state the level of crude protein on a feed tag. Usually the wording is something like "crude protein not less than 12 (or 14 or 16) percent." This means that if a horse eats 10 pounds of a 12% protein feed daily, this ration has provided him with 1.2 pounds of crude protein. The remainder of the feed supplies fiber, energy, vitamins, and minerals.

- **A customer asks, "What other feedstuffs provide protein to horses?"**
- **Your answer:** A large amount of a horse's protein is supplied by forage. Pasture grass and grass hay average around 8% protein. Timothy hay is about 10% protein, and alfalfa hay is about 15% protein. Protein levels in grass and hay are influenced by weather, plant maturity, and other factors. Hay can be analyzed to determine exact protein content.

- **A customer says, " 'Crude protein' doesn't sound very nourishing. Are there different ways to measure how much protein is in a feed?"**
- **Your answer:** Crude protein percentage is based on the nitrogen content of a particular feed. Although this number is different from digestible protein (the amount the horse can actually absorb and utilize), the crude protein figure is helpful in comparing different feeds.

- **A customer asks, "Does a feed with a higher protein percentage give a horse more energy?"**
- **Your answer:** More protein in a feed does NOT equal more energy. Energy in a feed comes from the carbohydrate portion of the grains and molasses in the mix, while protein is used to build and repair body tissues.

- **A customer asks, "Is there a danger in feeding too much protein?"**
- **Your answer:** Protein that is provided beyond what the horse requires for maintenance of body tissues can be metabolized to fuel exercise. The process of turning protein into useable energy produces nitrogen that must be excreted in the urine. This excretion is the natural work of the kidneys, so the process does not harm a healthy horse in any way. A consequence of overfeeding protein is increased water consumption that leads to the production of more urine. Ammonia fumes in a poorly ventilated barn may contribute to respiratory problems, especially in young horses.

- **A customer asks, "Isn't protein bad for young horses?"**
- **Your answer:** Protein is absolutely essential for proper growth and development of young horses. In the past, it was thought that foals fed large amounts of high-protein feed developed skeletal problems, and "stable wisdom" interpreted this to mean that excess protein was the culprit. However, research has never turned up a link between high-protein feeds and developmental problems in growing horses. Current understanding is that orthopedic problems are most commonly seen in foals that experience rapid growth spurts triggered by rations that are too rich in energy. It is common for high-protein feeds to offer high levels of carbohydrate, possibly oversupplying both requirements. Feed-related risk of deformity can be minimized by management that allows steady moderate growth, avoiding extremely energy-dense rations.

- **A customer asks, "What happens if a horse doesn't get enough protein?"**
- **Your answer:** Young horses need high-quality protein in order to grow steadily. While timothy hay and oats might keep a mature horse in good condition, this diet is deficient in lysine, an amino acid that is essential for proper growth. Feeds designed for young horses often include soybean meal, alfalfa pellets, or other lysine-rich ingredients. Older horses require lower levels of protein for tissue maintenance and repair. Poor coat condition, loss of appetite, and lowered immune response are signs of protein deficiency in mature horses.

- **A customer says, "There are so many factors to consider. How can I decide what to feed my horse?"**
- **Your answer:** Base the equine diet around forage and supplement with a nutritionally balanced concentrate as needed to support growth, reproduction, or performance. Equine nutritionists have worked out formulations and feeding directions to provide superior nutrition to all types of horse. Feed salesmen can help an owner select a product that is correct for each situation.

See Equine Review article SM 07 for information on how much protein is needed by different classes of horses.