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Which Animal? Which Hay?

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We all know that animals need feed to live, grow and produce, but what kind of feed does each type of animal need? Dogs and cats eat meat, not hay. Cattle, horses, sheep, goats, llamas, etc., eat hay, not meat, but what kind of hay?

Different animals have different digestive systems. Different stages of growth and production have different nutritional requirements. How do we determine what hay will meet the needs of each type of animal?

Let's look at the differences between species first. Cattle, sheep and goats have the typical ruminant digestive system. Ruminants have a four compartment stomach, with one being a very large fermentation vat. Llamas have a modified ruminant digestive system with only three compartments, one being a large fermentation vat. Horses, on the other hand, have a modified simple digestive system. They do have microbial fermentation capability, but it is not as efficient as ruminant systems, because it is after the main absorption area of the digestive system.

Ruminants are very good processors of higher fiber feeds. Through the rumination process,

they are able to break the fiber down more efficiently than horses. That doesn't necessarily mean that horses need the lowest fiber feed, though. Because the horse's digestive system is designed so backwardly, it is important the horse consumes adequate fiber to stimulate the movement of feed through the digestive tract. This is called the "scratch" or "tickle" factor.

Now let's look at the different phases of production. Generally, the differences between phases are the same for all species. **Maintenance** is the basic body functioning and condition level of a mature animal. Maintenance usually has the lowest nutrient requirement. Under normal weather conditions, lower nutritional quality hay can usually meet the maintenance requirements of most animals. During very wet or cold weather, more energy is needed. This can be met with increased quantity or higher nutritional quality hay. Older animals' digestive systems are not as functionally sound, so they may need more highly digestible feeds.

During gestation, animals will have a slightly increasing need for protein and energy. The key to proper nutrition during gestation is the balance and ratios of minerals. Alfalfa is high

in calcium, so it is important to balance the ration with other feeds to reach the recommended calcium : phosphorus ratio while maintaining the required protein and energy levels.

As soon as the mother gives birth, the nutrient requirements increase drastically. This is the **production stage that has the highest nutritional requirements**. This is when the largest amounts of feed, especially hay, should be fed. It is important to feed very palatable hay that is relatively low in neutral detergent fiber (NDF), so that enough nutrients can be consumed to meet the high requirements.

Weaned young animals require high levels of protein and energy and a balanced ratio of calcium and phosphorus. Shortages in energy and/or protein will result in slower or stunted growth. Once growth is stunted during the growth stage, it is difficult to catch up. For that reason, this is when the highest nutritional quality legume hays are usually needed to meet the growth requirements of young animals.

When we think of nutritional requirements for horses and llamas, another thing that must be taken into account is the **activity level**. Increased activity primarily means an increased energy requirement. At low to moderate activity levels, these requirements can be met by increased intake of higher quality hay. At higher activity levels, grain supplementation is usually needed to meet energy requirements.

As anyone that has fed livestock knows, there is more to feeding than just science and number crunching. Each animal has a different metabolic rate, and it can be a real art form to balance the requirements of each animal with the feeds available. In production situations, we usually feed for the average animal in the group,

and some will perform better than the average and some will perform worse than the average. By grouping animals according to size, age, type, etc., we can narrow the performance range. When animals are fed in smaller groups or individually, we can adjust the feed source and quantity more closely to the group's requirements.

So what does this mean as far as what hay is best for which animal? To begin with, I want to say that there are many viewpoints on this. Some are research-based and some are based on "old wives' tales" or emotion. Feeding for production tends to be more scientific than feeding animals that provide a service rather than a product. Said in another way, the feeding of cattle (dairy and beef), sheep, swine and dairy goats tends to be more scientific, while the feeding of horses, llamas and pet goats involves more emotion. Because of this, cattle, sheep, swine and dairy there are products on the market that combine MSO's with an organosilicone surfactant, and have shown excellent results when used with Pursuit, Raptor, Prism and Poast herbicides.

Nitrogen (fertilizer) salts. There is an increased interest in using fertilizers as adjuvants in water-based herbicides. Ammonium sulfate, ammonium nitrate or urea ammonium nitrate have been documented to increase efficacy of certain herbicides. There is still debate to the exact mechanism responsible for the positive results, but most researchers agree that the ammonium ion helps in penetrating the cuticle. Pursuit and similar chemistry herbicide (Raptor) have shown an increase in weed control when a fertilizer was added with a non-ionic surfactant of other adjuvants. Improved results with fertilizer have also been documented with Prism and Poast herbicides.