



What's the Difference Between Grass and Legume Forages?

When reading about pastures and different types of hays, they are often described as either being a grass or legume forage. These are two distinct and different types of plants that differ in their nutritional content.

As mentioned in our [Pasture Management article](#), both can be excellent sources of forage for a horse. It is even recommended that pastures are planted with both a mixture of grasses and legumes to optimize a horse's diet.

There are many factors that influence the nutrient content of any grass or legume plant, such as the species of the plant, soil composition, plant maturity, and even weather. If it is hay, how the plants were harvested, and how the hay was cured can influence nutrient content. However, grass forages generally have more structure to the plant itself as compared to a legume plant. Legume plants have more leafiness with less structure. Thus, grasses tend to have more digestible fiber than legume plants. Legumes, due to their abundant leaves, often have more protein, energy and micronutrients as compared to grasses.

Nutrient composition is an obvious and major difference between the two plants. When broadly evaluating these two types of plants, the difference in nutrient composition between mature grass hay and mature legume hay is as follows (grass vs. legume):

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- Crude protein: 10.8% vs. 17.8%
- Digestible Energy (Mcal/kg): 2.04 vs. 2.21
- Fat: 2% vs. 1.6%
- Lysine (limiting amino acid): 0.38% vs. 0.89%
- Calcium: 0.47% vs. 1.22%
- Magnesium: 0.18% vs. 0.27%
- Potassium: 1.97% vs. 2.38%

NOTE: The above values are averages.

There are also other considerations when comparing advantages and disadvantages of these two types of forages. Grasses are usually easier to establish in pastures and are usually more abundant in most areas of the world. Grasses tend to have longer growing seasons, can withstand poorer soils, and respond well to fertilization. Yet, legume plants are seen as superior due to their nutrient density and they tend to improve the soils they are grown in. This is because a legume plant can “fix” nitrogen through the atmosphere and provide it to the soil bacteria (Rhizobium). This, in turn, helps the nitrogen content of the soil for forage crop production. For the horse owner, the added benefit of this nitrogen fixing is lower costs for fertilizer.

Another major difference between grasses and legumes is the growing season. Between the many species of grasses and legumes, they are classified as either a “warm” or “cool” season forage. These are the seasons at which these plants will grow. Certain species of both grasses and legumes will grow during the warm spring and summer months. Whereas, other species grow during the cooler spring and fall months. Again, grasses tend to tolerate weather swings better than legume plants. Thus, they usually have longer growing seasons. Some examples of both plant types used in horse pastures include:



- Bahiagrass
 - Warm season grass with growth during the late spring through the hot summer months
- Bermudagrass
 - Warm season grass with growth during the late spring through the hot summer months
- Kentucky Bluegrass
 - Cool season grass with growth during the fall and early spring months
 - Will become dormant during winter and hot summer months
- Orchardgrass
 - Cool season grass with growth during the fall and early spring months
- Ryegrass
 - Cool season grass with growth during the fall and early spring months
- Timothy
 - Cool season grass with growth during the fall and early spring months
- White Clover
 - Warm season legume with a growth season of late spring into the summer months



- Less tolerant of cold and hot weather than grasses
- Alfalfa
 - Cool season legume with growth during the fall and early spring months
 - Susceptible to frost damage and high temperatures
- Red Clover
 - Cool season legume with growth during the fall and early spring months

Again, it is recommended to plant a mixture of grasses and legumes in a horse pasture. The animals will benefit in different ways from each plant. In addition, when planting a mixture of warm and cool season forages, you will ensure your pastures have coverage throughout the year.

To conclude, pastures are an excellent source of forage for your horse, though caution should be extended to those horses that are at risk of Insulin Resistance or PSSM Type 1. The variable sugar and starch (NSC) load of the plants can pose problems for these types of animals. If you have any concerns about your horse's diet, you can **reach out to us** for help.

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