



# What About Hay?

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Ruminants (goats, cattle, sheep, deer, antelope, elk, bison, etc.) are, by design, grazing animals. Their rumen, the largest gastrointestinal compartment, is an environment wherein bacteria anaerobically ferment (digest) forages. This unique digestive process converts solar energy captured by plants into higher quality, more nutrient dense foods like milk and meat.

Compared to harvest by a grazing animal, hay production is an expensive process, involving fossil fuel, machinery and man-hours. Haying also involves significant soil nutrient relocation when compared to grazing. Protein (nitrogen) and minerals harvested and hauled off the soil of a hay meadow or field must be replaced if optimal hay production is to be maintained. Grazing, on the other hand, is part of a natural cycle. A portion of the nitrogen and minerals from the consumed forage is returned to the soil with urine and feces.

So, whether it's feeding beef cows on the open range or goats in a small paddock, hay is not a supplement - it is a substitute. A substitute for the standing forage or browse that makes up the diet of a ruminant animal in their natural habitat. As shown in the Table 1, the typical diet of a foraging goat ranges from ● to ½ browse and ½ to ● grass, depending upon season and availability of the respective forages. Goats are opportunistic grazers and will select a diversity of plants to result in the highest attainable diet quality.

Table 1. Average seasonal diet composition for goats.*			
Season	% Browse	% Grass	% Forbs
Spring	34	49	17
Summer	33	53	14
Fall	53	37	10
Winter	53	42	5

\*from What Range Herbivores Eat - and Why. TAEX Pub. B-6037.

**Is feeding hay to goats wrong or bad?** No, just expensive and inefficient. On a cost per

pound of nutrient basis, hay is one of the most expensive feedstuffs. Likewise, if waste (uneaten hay) is considered, the cost rises even higher.

As previously mentioned, hay is not a supplement. Goats on pasture should not need hay. If hay feeding is warranted, forage availability is limiting, stocking rate is too high and a reduction in the number of goats is probably in order. One exception would be the justifiable feeding of hay to goats on snow or ice-covered pastures.

**So, why feed hay to goats?** Personal observation indicates goats seem to have an inherent requirement for long-stemmed fiber. Small amounts of hay will stimulate the intake of pelleted and/or processed diets by pen-fed goats. No doubt, long-stemmed fiber stimulates the papillae lining the rumen and helps to maintain their integrity.

Goats suffering from acidosis or other digestive disorders often need some long-stemmed hay to assist in the reestablishment of rumen homeostasis and function. Recently weaned kids reared on pasture (and not familiar with pelleted or textured feeds) will usually eat a high quality hay (like alfalfa).

Some geographical regions experience periods of time during the growing season when forage production is much greater than the amount efficiently utilized by grazing animals. For example, grasses in the Southeastern US during the spring and early summer. In such instances, excess forage can be harvested as hay or silage and subsequently fed during periods of restricted forage availability (winter, droughts, inclement weather, etc.).

**What is the best goat hay?** It depends - on what is available, how much it costs and the expected response. Regardless of the type harvested, as plants mature the quality of the hay they will yield declines. Hay from immature plants will be relatively soft to the touch. As plants mature, stems represent a larger portion of the plant weight. Maturity and quality are inversely related. In contrast to a fine wine, as hay gets older, it gets less desirable in terms of palatability and nutrient content.

Characteristics of a good quality hay include: 1) a high leaf to stem ratio, 2) a fresh smell and appearance, 3) clean (free of weeds etc.) and 4) appealing color.

Hay can be characterized according to the type of plant from which it is made. There are two basic types: legume or grass (Table 2).

Table 2. Types of Hay	
Legumes	Grasses
Alfalfa	Bermudagrass
Soybean	Sorghum, Sorghum sudangrass
Peanut	Orchardgrass
Clovers	Fescue
Trefoil	Timothy
Lespedeza	Oat
Lists are not all-inclusive. Other types also appropriate for goats.	

The experiences of this author are that goats prefer legume hays over grass hays. (Yes, there is an exception to most every observation or rule.)

There are many grasses and small grains suitable for making hay. They vary greatly in nutritive content and palatability, depending on the particular variety, where grown, season harvested, soil type and fertility, and stage of maturity at harvest. The grass hays generally contain less protein and energy than legumes. In general, the highest quality grass hays will contain 14-16% crude protein; an average for grass hays is 8% CP. In contrast, legume hays are typically higher in protein, averaging 14-16% CP.

If hay is purchased in large quantities (i.e. by the ton), core samples from several bales should be taken, composited and analyzed for nutrient content. An accurate assessment of nutrient quality is especially important when developing diets for fed goats with high nutrient requirements - lactating dairy does, weaned kids gaining rapidly. Goat feeders purchasing a few bales at a time should expect the purveyor of the hay to know something about its nutrient content.

**Feeding Considerations.** In pens or paddocks, small numbers of goats, high animal density - If possible, feed hay in a rack or basket slightly above shoulder height of the average size goat in the herd. Put a trough or box below the rack to catch fines and leaves that fall through. Hay fed on the ground will be scattered, trampled, soiled and wasted.

In large paddocks or pastures, larger numbers of goats, low animal density - Feeding hay on the ground may be the most feasible option. If so, feed in different locations. Also, place hay against the fence or around the base of trees to minimize trampling and scattering.

Wastage generally increases with maturity at harvest. Grass hays with seed heads and large stems will demonstrate greater waste. Sorghum sudangrass stems larger than a pencil will

often be refused by goats.

Ad libitum (free choice) feeding of hay results in greater wastage than limit feeding. When limit fed, goats tend to clean up more of the hay and are less picky relative to what they will eat. Straw is for bedding - hay is to be eaten.

When evaluated on a cost per unit of nutrient basis (ex. ¢/lb CP, ¢/lb TDN), hay is expensive when compared to cereal grains, oilseed meals and many commercially prepared, balanced feeds. Consequently, if profitability is a management goal, be prudent with the use of hay.

Periodically clean up wasted hay, especially around pens or under a barn. Old hay on the ground retains moisture and is a harbor for pathogens. Old hay and fecal material can be composted to make an excellent soil amendment for gardens or flower beds.