

# Turning Grass into Cash with Small Ruminants

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As agriculture continues to change, it is important to consider sustainability before starting or expanding any enterprise. One critical factor in any animal agriculture enterprise is controlling feeding costs. Most research indicates feeding is the largest expenses in any livestock enterprise. However, nutrition is critical to overall productivity and the income of the enterprise. Because of this, producers need to find ways to improve nutrient availability while minimizing costs to optimize production and profitability for their livestock enterprise.

This is especially critical for small ruminant production. Their smaller size actually increases nutritional demands which means diets for sheep or goats need to be of higher quality in many cases. Fortunately, small ruminants have the ability to be more selective in their diets when grazing and they have adapted to select a higher quality diet when given the opportunity. They also prefer different forage types, which can provide higher nutritional intake under specific grazing programs.

As with cattle, nutritional demands in sheep and goats change over time; thus, they need different levels of nutrition based on the stage production. Table 1 shows the nutritional needs of a 120 lb. doe or ewe during different stages of production. These needs require different management practices and possible use of different forage combinations. Combining warm and cool season forages and the possible use of annuals with different grazing management practices can result in a very productive and effective grazing system for small ruminants.

Table 1. Nutritional needs of sheep and goats at different stages of production (NRC 2007).

Stage of Production	Sheep (120 lb. Ewe)			Goat (120 lb. Doe)		
	DM (kg)	CP (g/d)	TDN (kg/d)	DM (kg)	CP (g/d)	TDN (kg/d)
Maintenance	1.75	79	0.56	1.9	82	0.6
Early Gest.	2.52	129	0.80	2.38	140	0.76
Late Gest.	2.75	173	1.09	2.54	206	0.76
Early Lact.	3.01	281	1.20	2.91	207	0.93
Mid Lact.	2.23	235	1.03	1.87	208	0.99
Late Lact.	3.00	182	0.95	1.67	166	0.89

DM: dry matter; CP: crude protein; TDN: total digestible nutrients

Another factor to consider is differences in diet choice when planning a grazing program. Small ruminants tend to prefer a variety of plants in their diet and they can be very selective in their grazing habits. A number of studies have been published on the percentage of grass, forbs, and

browse in the diets of ruminant animals. The most comprehensive study was conducted in Texas by Lyons et.al. (1996). They reported that grass made up 81% of cattle diets but only 61% of sheep and 45% of goat diets. In contrast, browse made up only 7% of cattle diets while it was 22% of the diets of sheep and 43% of goat diets.

These preferences also provide an opportunity for producers. This can open other opportunities for producers as they can be used as part of pasture renovation or prescribed grazing programs. In a study conducted in Carter Co. KY, we saw a significant increase in grass in the sward after grazing hill side pastures with goats (Bebe et.al. 2014). This increase and the corresponding decrease in browse was achieved with an increase in overall production of the land as measured by pounds of animal sold. The goats were able to graze in areas that would not have been possible to mow or spray without using hand or aerial application.

When considering overall production management, rotational grazing programs and plans are very important for the overall health and productivity of small ruminants. Both sheep and goats have issues with parasites. Resistance of parasites to chemical treatments is a growing problem. Through appropriate grazing management, we can reduce exposure of the animals to parasites. Specifically, by using rotations of 14 days or less and keeping the forage grazing height above 6 inches, we can reduce the exposure of animals to parasites.

Another aspect of a good grazing plan that can reduce parasite issues is the inclusion of some alternative forages. The first is the use of annual forages. Annual forages are always a “clean” field in terms of parasites when the animals are first placed on it. The added nutrition and growth habits improve overall productivity of the animals and helps break the cycle of parasite infection.

In addition to annuals, some alternative plant species have the ability to reduce parasite loads directly. Sericea Lespedeza (*Lespedeza cuneata*) has been shown to reduce parasite load in goats and sheep. It is also a high quality warm season perennial, and small ruminants consume it better than cattle. Forage type chicory is another alternative forage that has high quality and has potential to reduce parasite loads.

A final forage option, especially for goat producers, is grazing invasive woody species, including multiflora rose, bush honeysuckle, and autumn olive. These plants have potential as a forage, but grazing these plants also offers an opportunity to utilize areas on a farm that would otherwise not be productive. The issue with these plants is that they often are grazed out within 3 to 4 years. While this is good for land management, it is more difficult to manage these plants as a reliable forage and they must be replaced at some point. In land management for these plants, it is important to remember that the seed bank will allow them to return over time if the area is not maintained.

Finally, small ruminants can be a profitable if managed properly. There are several grazing programs that can enhance the overall profitability of these animals. Alternative forages are

very important in the overall forage system for small ruminants. Rotational grazing practices in a systematic approach is critical to the overall success of a forage-based small ruminant production system. Prescribed grazing for land management can also increase profitability and create alternative income sources for some producers. Selection of the proper species and breeds as well as individuals within the different breeds is also critical to success.

**Literature Cited:**

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