



Understanding nutritional requirements for winter feeding of gestating and lactating goats

Contributed by guest author
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Introduction

Most producers do not have winter forages for grazing and so they depend mostly on legume, grass, or mixed grass/legume hays. Such hays are typically cheaper in terms of protein (CP) and energy (TDN) content than commonly available grains, grain byproducts, and oilseed meals. Females of breeding age can ‘make it’ on all-forage diets, either pastures or hays, provided the protein and energy contents of the hay is adequate for individual goat needs (maintenance, gestation, lactation, and, as necessary, growth).

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[Montero/Clinger Goat Farms](#)*

When is it time to supplement forage?

Dry and early-gestation does typically require diets containing 8-10% CP and 48-50% TDN. Many higher quality grass hays meet these figures, making supplementation unnecessary. Likewise, legume or grass/legume hays may contain enough CP and TDN to meet the increased needs of late-gestation and early-lactation does.

There are, however, certain situations in which CP and/or TDN supplementation

could be nutritionally required (and might be economically feasible, depending on prices of the extra nutrients and on specific management objectives).

These situations mostly occur when younger females are still growing, when does are carrying triplets or unusually large twins, when does are suckling triplets or quads, or when does are not in good enough body condition.

In these situations, it would

be logical to separate the ‘needier’ animals from the ‘less needy’ animals in order to offer costlier supplements only to the animals with the highest need. On the other hand, site-specific circumstances may not permit such separations. If so, owners face the dilemma of over-feeding one group or underfeeding the other group. Feeding a compromise (mid-point ‘average offering’) might make some owners feel better, but it does not circumvent the issue.

Guidelines for nutrient supplementation

Table 1 (back of article) shows the pounds of CP and TDN required daily for early- and late-gestation and for early-, mid-, and late-lactation does weighing 132 and 154 lb.

For convenience, it also shows these daily CP and TDN requirements as percentages of the average daily feed intake (DFI).

The pounds of DFI shown in the table (and also the pounds of CP and TDN) are taken from the book, *Nutrient Requirements of Small Ruminants*, published by the National Research Council (NRC). This is the ‘bible’ for goat nutritionists worldwide because it reflects international research results over many years using many breeds. For your convenience, I have converted the NRC’s metric figures and figures from dry-matter basis to as-fed basis in order to reflect the fact that goats typically eat hays containing about 10% moisture.

It is important to note that goats will not always consume the ‘average’ DFI, but one cannot talk about percentages of CP and TDN in a total daily diet without using an estimated DFI. To illustrate, look at the first line-entry in Table 1; it shows a DFI of 3.50 lb/day for a 132 lb doe in early gestation carrying twins. This doe requires .31 lb of CP and 1.67 lb of TDN per day. By dividing each of these

figures by the DFI of 3.50 and multiplying by 100, I calculated the percentage of CP (%CP) in the diet to be 8.86 ($.31/3.50 \times 100$) and the percentage of TDN (%TDN) to be 47.8 ($1.67/3.50 \times 100$).

If this doe consumed, say, 10% less of this diet (3.15 lb DFI), she would be short of CP by the same 10% ($3.15 \times 8.86\% = .28$ lb CP), as compared to .31 lb needed, and her performance could suffer. What to do with a doe that under-consumes? Raise the percentage of CP by 10% to 9.70. Contrarily, if she consumed 10% more of the diet (3.85 lb DFI), she would ingest 10% more CP than she needed, which would be largely wasted. So, if she over-consumes, lower the percentage of CP in her diet by 10% to 8.



Photo courtesy of [North American Savannah Association](#)

Such fine-tuning of diets is often unjustifiable for individual does even in a very small herd, so in practice diets are formulated based on the expected average consumption for the management group. I concede that in doing so, DFI will vary from day to day among animals, but it will usually be 'equalized'

over consecutive days (the rumen serves as an equilibrating tank). However, some portion of the does will likely not get what they need, and sometimes otherwise good genes for performance are lost, via culling, because individuals are not aggressive enough eaters.

Principles of nutrient supplementation

As you closely examine the figures in Table 1, certain 'principles' become obvious:

1. The heavier the doe the more nutrients are required. To illustrate with does carrying twins, those weighing 154 lb, on the average, will eat 10-11% more DFI than 132 lb goats. Does weighing 176 lb would require 10-11% more DFI than their 154 lb contemporaries; inversely, does weighing only 110 lb would require about 10% less DFI than 132 lb does.
2. When comparing nutritional needs of does of the same weight and same number of kids in utero between early and late gestation, does in late gestation (the last 6-8 weeks) require more DFI than comparable does in early gestation.
3. There are major differences in the levels of CP (quantity and percentage) required for late-gestation does over early-gestation does. To illustrate, does carrying twins or triplets in late gestation require not less than 12% CP in the total ration while does carrying twins and triplets in early gestation require only about 9% CP.
4. Late-gestation does require higher TDN (quantity and percentage) than early-gestation does, regardless of the number of kids carried.
5. Does carrying triplets require more DFI than does carrying twins. This holds true over different doe weights and across early and late stages of gestation. Additionally, these does require slightly more protein/day (and higher dietary percentage of CP) than does

carrying twins. As shown, dams with triplets require a bit more daily TDN intake than those with twins; however, the dietary percentages of TDN are not appreciably different.

6. Similar variations in nutrient needs across body weights, number of kids suckling, and stages of lactation are also observable. During early lactation (parturition to 45 days), the DFI of does, regardless of weight, is usually lower than needed (they simply can't eat enough); this causes the animals to lose weight. During mid lactation (46-90 days), they eat more and their body weight tends to stabilize; in late lactation (91-135 days), even though they typically eat somewhat less, they begin to gain weight as they dry up. During the following dry period, if they do not gain sufficient condition, they may need extra nutrients 45 days or so before breeding (this is called 'flushing').
7. Does suckling triplets require more DFI, more daily protein, and more daily TDN than does suckling twins, whether stated as actual daily intakes or as dietary percentages. Quads would require even more nutrients from the doe, of course.

The application of these demonstrated principles of nutrition to practical herd management situations will be discussed in a follow-up article, but in the meantime, a close examination of the CP and TDN percentages needed, as shown in Table 1, suggests strongly that forage-only feeding programs are quite doable if you have sufficient hays in the 10-13% CP range and 47-50% TDN range, as-fed basis.

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As such, some extra grain (for TDN) would likely only be required only for late gestation does and for pregnant kids and thin yearling does. Moreover, some portion of large, heavy milking does and yearling first-fresheners in early lactation might also benefit from a bit of concentrate (containing perhaps 16% CP and 60% TDN, or more).

Next week: Part 3 of the series, Calculating rations for winter feeding of gestating and lactating goats.



About the author

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Table 1

Not included are the requirements for does with single kids during gestation and lactation. These does require 5-6% less (DFI, CP, TDN) than those needed for twin-bearing does of the same weight.

Goat class	WT, lb	DFI, lb	CP, lb	TDN, lb	%CP	%TDN
Early gestation w/twins	132	3.5	0.31	1.67	8.86	47.8
	154	3.89	0.34	1.85	8.74	47.6
Early gestation w/triplets	132	3.62	0.33	1.74	9.12	48.1
	154	4.03	0.37	1.94	9.18	47.9
Late gestation w/twins	132	3.72	0.45	2.25	12.2	60.5
	154	4.11	0.5	2.46	12.11	60
Late gestation w/triplets	132	3.94	0.5	2.35	12.69	59.6
	154	4.38	0.55	2.62	12.56	59.8
Early lactation w/twins	132	4.28	0.46	2.05	10.74	47.9
	154	4.72	0.55	2.24	11.65	47.4
Early lactation w/triplets	132	4.48	0.57	2.13	12.72	47.5
	154	4.96	0.63	2.35	12.7	47.4
Mid lactation w/twins	132	4.57	0.46	2.18	10.06	47.7
	154	5.08	0.5	2.42	9.84	47.6
Mid lactation w/triplets	132	5.11	0.54	2.44	10.56	47.7
	154	5.65	0.59	2.71	10.44	48
Late lactation w/twins	132	4.08	0.37	1.96	9.08	48
	154	4.55	0.41	2.18	9.01	47.9
Late lactation w/triplets	132	4.57	0.43	2.18	9.41	47.7
	154	5.08	0.48	2.42	9.45	47.6