extension
ALABAMA A&M & AUBURN UNIVERSITIES

Nutrient Requirements of Sheep and Goats

► Learn the nutritional keys to optimize sheep and goat health at each life stage.

The right nutrition provided at the right stage is essential to the profitable production of sheep and goats. It is needed to produce a high-percentage crop, to wean heavy animals, and to develop satisfactory flock replacements. The ideal program also is efficient and economical, and minimizes nutrition-related problems.

To succeed, producers should know basic animal nutrition, be familiar with common nutrition terms, and understand nutritional requirements at different stages of life. This begins with knowing the essential nutrients these small ruminants need—energy (fat and carbohydrates), protein, vitamins, minerals, water, and fiber—and their roles in growth, production, and reproduction.

Essential Nutrients and Their Roles

Energy

The best sources of energy for small ruminants are the most plentiful feeds available. These are usually pastures and browses, hay, and grains. Sheep and goats often lack nutrients, however, due to poor-quality pastures and roughage or inadequate amounts of feed. Because of this, energy is the most common limiting factor in small ruminant nutrition. Deficiency will result in decreased production, reproductive failure, increased mortality, and increased susceptibility to diseases and parasites.

It is essential to evaluate the efficiency and overall performance of a feed or ration—referred to as the total digestible nutrients (TDN). TDN is a broad term used to express the energy value of a feed or ration. The percentage of TDN is the most widely used method of evaluating feed for energy. As a rule, the greater the TDN is in a ration, the greater the rate of gain will be in the animal.

Protein

Protein is used to repair old tissues and to build new tissues. In small ruminants, the quantity of protein is more important than the quality. Protein deficiency is particularly detrimental to the young animal, so an adequate amount must be supplied if rapid growth and high production are to be obtained. On the other hand, excessive feeding is expensive. When protein supplementation is the primary objective, the cost per pound of protein is the most important consideration.

Minerals

In comparison to energy and protein, minerals are necessary in smaller quantities (macro and micro). Essential macrominerals (required at 0.1% or more in diet) for sheep and goats are calcium, phosphorus, sodium, potassium, chloride, sulfur, and magnesium. Essential microminerals (required in parts per million) include manganese, iron, copper, cobalt, zinc, iodine, selenium, and molybdenum. The primary sources of these minerals are: diet, mineral supplements (loose and block), and, in some areas, the water supply.

Calcium is a necessary constituent of the bones and teeth and is essential for regular heart action and muscular activity. A calcium deficiency results in poor growth and bone development in growing animals.

Phosphorus is an essential part of blood and of all cells in the body. It is involved in chemical reactions that release energy in the body. Bones and teeth contain

relatively large amounts of phosphorus as well as calcium. Both calcium and phosphorus must be present in the ration in the proper proportions.

Required microminerals (minerals needed in smaller quantities) include iodine, copper, iron, manganese, zinc, molybdenum, cobalt, selenium, and fluoride. These are found in the diet, mineral supplements, and, in some areas, the water supply. Soil quality and pH can be a factor in the availability of macro- and microminerals absorbed by vegetation.

Vitamins

Vitamins are compounds necessary for normal growth, health, and reproduction. Small ruminants require many vitamins, but their dietary requirements in this area are relatively simple. This is due to the nature of the feeds they ordinarily consume and the synthesis of vitamins in the rumen.

Water

Water functions in the animal body in a number of ways:

- helps to digest food
- regulates body temperature
- lubricates tissue
- transports waste from the body

Fiber

Adequate fiber and/or quality forage promotes good health and better performance. Fiber adds bulk to the diet and keeps the rumen properly functioning, as it increases rumination and salivation. The rumen of sheep and goats functions best when the daily diet includes a high concentration of slowly degradable fiber ingredients known as roughage. Extended chewing of the fibrous material helps to keep the acidity in the rumen within a range that benefits the fiber-digesting microbes. This is commonly known as the cud-chewing process.

The digestive interaction of fiber stimulates the muscles in the wall of the rumen to contract and expand, which essentially stirs up the material in the rumen. These forage products include any type of hay, silage, or fresh forage. Cottonseed and soybean hulls often are utilized as a form of fiber in feed rations.

Implementing a Nutritional Program

To meet the nutritional requirements of each animal at its particular stage of life, producers must combine feed ingredients into the least costly but most efficient ration. The following tables provide estimates of the daily nutrient needs of sheep and goats.

Table 1. Daily Nutrient Requirements of Sheep (Per Animal)

Body Weight (lb.)	Avg. Daily Gain (lb.)	Dry Matter (lb./head[a])	% Body Weight	Total Protein (lb.)	TDN[b] (lb.)	Calcium (lb.)	Phosphorous (lb.)	Vitamin A (IU)	Vitamin E (IU)
Early-weaned Lambs, Moderate Growth Potential[c]									
22	0.44	1.1	5.0	0.38	0.9	0.008	0.004	470	10
44	0.55	2.2	5.0	0.37	1.8	0.012	0.005	940	20
66	0.66	2.9	4.3	0.42	2.2	0.015	0.007	1410	20
88	0.76	3.3	3.8	0.44	2.6	0.017	0.008	1880	22
110	0.66	3.3	3.0	0.40	2.6	0.015	0.008	2350	22
Early-weaned Lambs, Rapid Growth Potential[c]									
22	0.55	1.3	6.0	0.35	1.1	0.011	0.005	470	12
44	0.66	2.6	6.0	0.45	2.0	0.014	0.006	940	24
66	0.72	3.1	4.7	0.48	2.4	0.016	0.007	1410	21
88	0.88	3.3	3.8	0.51	2.5	0.019	0.009	1880	22
110	0.94	3.7	3.4	0.53	2.8	0.021	0.015	2350	25
132	0.77	3.7	2.8	0.53	2.8	0.018	0.010	2820	25

Table 1. Daily Nutrient Requirements of Sheep (Per Animal) (cont.)

Body Weight (lb.)	Avg. Daily Gain (lb.)	Dry Matter (lb./head[a])	% Body Weight	Total Protein (lb.)	TDN[b] (lb.)	Calcium (lb.)	Phosphorous (lb.)	Vitamin A (IU)	Vitamin E (IU)
Lambs Finishing, Age 4–7 Months[c]									
66	0.65	2.9	4.3	0.42	2.1	0.014	0.007	1410	20
88	0.60	3.5	4.0	0.41	2.7	0.014	0.007	1880	24
110	0.45	3.5	3.2	0.35	2.7	0.012	0.007	2350	24
Replacement Ewe Lambs[d]									
66	0.50	2.6	4.0	0.41	1.7	0.014	0.006	1410	18
88	0.40	3.1	3.5	0.39	2.0	0.013	0.006	1880	21
110	0.26	3.3	3.0	0.30	1.9	0.011	0.005	2350	22
132	0.22	3.3	2.5	0.30	1.9	0.010	0.005	2820	22
154	0.22	3.3	2.1	0.29	1.9	0.010	0.006	3290	22
Replacement Ram Lambs[d]									
88	0.73	4.0	4.5	0.54	2.5	0.017	0.008	1880	24
132	0.70	5.3	4.0	0.58	3.4	0.018	0.009	2820	26
176	0.64	6.2	3.5	0.59	3.9	0.019	0.010	3760	28
220	0.55	6.6	3.0	0.58	4.2	0.018	0.010	4700	30
Ewes									
Maintenance									
110	0.02	2.2	2.0	0.21	1.2	0.004	0.004	2350	15
132	0.02	2.4	1.8	0.23	1.3	0.005	0.005	2820	16
154	0.02	2.6	1.7	0.25	1.5	0.005	0.005	3290	18
176	0.02	2.9	1.6	0.27	1.6	0.006	0.006	3760	20
198	0.02	3.1	1.5	0.29	1.7	0.006	0.006	4230	21
Flushing: 2 Weeks Prebreeding and First 3 Weeks of Breeding									
110	0.22	3.5	3.2	0.33	2.1	0.012	0.006	2350	24
132	0.22	3.7	2.8	0.34	2.2	0.012	0.006	2820	26
154	0.22	4.0	2.6	0.36	2.3	0.012	0.007	3290	27
176	0.22	4.2	2.4	0.38	2.5	0.013	0.007	3760	28
198	0.22	4.4	2.2	0.39	2.6	0.013	0.008	4230	30
Nonlactating, First 15 Weeks of Gestation									
110	0.07	2.6	2.4	0.25	1.5	0.006	0.005	2350	18
132	0.07	2.9	2.2	0.27	1.6	0.007	0.005	2820	20
154	0.07	3.1	2.0	0.29	1.7	0.008	0.006	3290	21
176	0.07	3.3	1.9	0.31	1.8	0.008	0.007	3760	22
198	0.07	3.5	1.8	0.33	1.9	0.009	0.008	4230	24
Last 4 Weeks of Gestation (130%–150% Lambing Rate Expected)									
110	0.40	3.5	3.2	0.38	2.1	0.013	0.010	4250	24
132	0.40	3.7	2.8	0.40	2.2	0.013	0.011	5100	26
154	0.40	4.0	2.6	0.42	2.3	0.014	0.012	5960	27

Table 1. Daily Nutrient Requirements of Sheep (Per Animal) (cont.)									
Body Weight (lb.)	Avg. Daily Gain (lb.)	Dry Matter (lb./head[a])	% Body Weight	Total Protein (lb.)	TDN[b] (lb.)	Calcium (lb.)	Phosphorous (lb.)	Vitamin A (IU)	Vitamin E (IU)
Last 4 Weeks of Gestation (130%–150% Lambing Rate Expected) (cont.)									
176	0.40	4.2	2.4	0.44	2.4	0.014	0.013	6800	28
198	0.40	4.4	2.2	0.47	2.5	0.014	0.014	7650	30
Last 4 Weeks of Gestation (180%–225% Lambing Rate Expected)									
110	0.50	3.7	3.4	0.43	2.4	0.014	0.007	4250	26
132	0.50	4.0	3.0	0.45	2.6	0.015	0.008	5100	27
154	0.50	4.2	2.7	0.47	2.8	0.017	0.010	5950	28
176	0.50	4.4	2.5	0.49	2.9	0.018	0.013	6800	30
198	0.50	4.6	2.3	0.51	3.0	0.020	0.014	7650	32
First 6–8 Weeks of Lactation, Suckling Singles									
110	-0.06	4.6	4.2	0.67	3.0	0.020	0.013	4250	32
132	-0.06	5.1	3.9	0.70	3.3	0.020	0.014	5100	34
154	-0.06	5.5	3.6	0.73	3.6	0.020	0.015	5950	38
176	-0.06	5.7	3.2	0.76	3.7	0.021	0.016	6800	39
198	-0.06	5.9	3.0	0.78	3.8	0.021	0.017	7650	40
First 6–8 Weeks of Lactation, Suckling Twins									
110	-0.13	5.3	4.8	0.86	3.4	0.023	0.016	5000	36
132	-0.13	5.7	4.3	0.89	3.7	0.023	0.017	6000	39
154	-0.13	6.2	4.0	0.92	4.0	0.024	0.018	7000	42
176	-0.13	6.6	3.8	0.96	4.3	0.025	0.019	8000	45
198	-0.13	7.0	3.6	0.99	4.6	0.025	0.020	9000	48
Last 4–6 Weeks of Lactation, Suckling Singles									
110	0.10	3.5	3.2	0.38	2.1	0.013	0.010	4250	24
132	0.10	3.7	2.8	0.40	2.2	0.013	0.011	5100	26
154	0.10	4.0	2.6	0.42	2.3	0.014	0.012	5960	27
176	0.10	4.2	2.4	0.44	2.4	0.014	0.013	6800	28
198	0.10	4.4	2.2	0.47	2.5	0.014	0.014	7650	30
Last 4–6 Weeks of Lactation, Suckling Twins									
110	0.20	4.6	4.2	0.67	3.0	0.020	0.013	4250	32
132	0.20	5.1	3.8	0.70	3.3	0.020	0.014	5100	34
154	0.20	5.5	3.6	0.73	3.6	0.020	0.015	5950	38
176	0.20	5.7	3.2	0.76	3.7	0.021	0.016	6800	39
198	0.20	5.9	3.0	0.78	3.8	0.021	0.017	7650	40
Ewe Lambs									
Nonlactating, First 15 Weeks of Gestation									
88	0.35	3.1	3.5	0.34	1.8	0.012	0.007	1880	21
110	0.30	3.3	3.0	0.35	1.9	0.011	0.007	2350	22
132	0.30	3.5	2.7	0.35	2.0	0.012	0.007	2820	24
154	0.28	3.7	2.4	0.36	2.2	0.012	0.008	3290	26

Table 1. Daily Nutrient Requirements of Sheep (Per Animal) (cont.)									
Body Weight (lb.)	Avg. Daily Gain (lb.)	Dry Matter (lb./head[a])	% Body Weight	Total Protein (lb.)	TDN[b] (lb.)	Calcium (lb.)	Phosphorous (lb.)	Vitamin A (IU)	Vitamin E (IU)
Last 4 Weeks of Gestation (100% –120% Lambing Rate Expected)									
88	0.40	3.3	3.8	0.41	2.1	0.014	0.007	3400	22
110	0.35	3.5	3.2	0.42	2.2	0.014	0.007	4250	24
132	0.35	3.7	2.8	0.42	2.4	0.014	0.008	5100	26
154	0.33	4.0	2.6	0.43	2.5	0.015	0.009	5950	27
Last 4 Weeks of Gestation (130% –175% Lambing Rate Expected)									
88	0.50	3.3	3.8	0.44	2.2	0.016	0.008	3400	22
110	0.50	3.5	3.2	0.45	2.3	0.017	0.008	4250	24
132	0.50	3.7	2.8	0.46	2.5	0.018	0.009	5100	26
154	0.47	4.0	2.6	0.46	2.5	0.018	0.010	5960	27
First 6–8 Weeks of Lactation, Suckling Singles (Wean by 8 Weeks)									
88	-0.11	3.7	4.2	0.56	2.5	0.013	0.009	3400	26
110	-0.11	4.6	4.2	0.62	3.1	0.014	0.010	4250	32
132	-0.11	5.1	3.8	0.65	3.4	0.015	0.011	5100	34
154	-0.11	5.5	3.6	0.68	3.6	0.016	0.012	5450	38
First 6–8 Weeks of Lactation, Suckling Twins (Wean by 8 Weeks)									
88	-0.22	4.6	5.2	0.67	3.2	0.018	0.012	4000	32
110	-0.22	5.1	4.6	0.71	3.5	0.019	0.011	5000	34
132	-0.22	5.5	4.2	0.74	3.8	0.020	0.014	6000	38
154	-0.22	6.0	3.9	0.77	4.1	0.020	0.015	7000	40

Source: National Research Council, 2007.
[a]To convert dry matter to an as-fed basis, divide dry matter values by the percentage of dry matter in the particular feed.
[b]One pound TDN (total digestible nutrients) = 0.91 Mcal DE (digestible energy)
[c]These are the maximum weight gains expected.
[d]These lambs are intended for breeding, so maximum weight gains and finish are of secondary importance.
[e]Values are applicable for ewes in moderate condition. Fat ewes should be fed according to the next lower weight category, and thin ewes at the next higher weight category. Once the desired or moderate weight condition is attained, use that weight category through all production stages.

Table 2. Required Nutrient Concentrations of Sheep Rations (Expressed on 100% Dry Matter Basis[a])									
Body Weight (lb.)	Avg. Daily Gain (lb.)	Dry Matter (lb./head[a])	% Body Weight	Total Protein (lb.)	TDN[b] (lb.)	Calcium (lb.)	Phosphorous (lb.)	Vitamin A (IU)	Vitamin E (IU)
Early-weaned Lambs, Moderate Growth Potential									
22	0.44	1.1	5.0	34.5	81.8	73	36	427	9
44	0.55	2.2	5.0	16.8	81.8	55	23	427	9
66	0.66	2.9	4.3	14.5	75.8	52	24	486	7
88	0.76	3.3	3.8	13.3	78.8	52	24	570	7
110	0.66	3.3	3.0	12.1	78.8	45	24	712	7
Early-weaned Lambs, Rapid Growth Potential									
22	0.55	1.3	6.0	27.0	84.6	85	38	361	9
44	0.66	2.6	6.0	17.3	76.9	54	23	361	9
66	0.72	3.1	4.7	15.5	77.4	52	23	455	7

Table 2. Required Nutrient Concentrations of Sheep Rations (Expressed on 100% Dry Matter Basis[a])(cont.)									
Body Weight (lb.)	Avg. Daily Gain (lb.)	Dry Matter (lb./head[a])	% Body Weight	Total Protein (lb.)	TDN[b] (lb.)	Calcium (lb.)	Phosphorous (lb.)	Vitamin A (IU)	Vitamin E (IU)
Early-weaned Lambs, Rapid Growth Potential (cont.)									
88	0.88	3.3	3.8	15.4	75.8	58	27	570	7
110	0.94	3.7	3.4	14.3	75.7	57	30	635	7
132	0.77	3.7	2.8	14.3	75.7	49	27	762	7
Lambs Finishing, Age 4–7 Months									
66	0.65	2.9	4.3	14.5	72.4	48	24	486	7
88	0.60	3.5	4.0	11.7	77.1	40	20	537	7
110	0.45	3.5	3.2	10.0	77.1	34	20	671	7
Replacemen t Ewe Lambs									
66	0.50	2.6	4.0	15.8	65.4	54	23	542	7
88	0.40	3.1	3.5	12.6	64.5	42	19	606	7
110	0.26	3.3	3.0	9.1	57.6	33	15	712	7
132	0.22	3.3	2.5	9.1	57.6	30	15	854	7
154	0.22	3.3	2.1	8.8	57.6	30	18	997	7
Replacement Ram Lambs									
88	0.73	4.0	4.5	13.5	62.5	0.43	0.20	470	6
132	0.70	5.3	4.0	11.0	64.1	0.34	0.17	532	5
176	0.64	6.2	3.5	9.5	62.9	0.31	0.16	606	5
220	0.55	6.6	3.0	8.8	63.6	0.27	0.15	712	5
Ewe Lambs									
Maintenance									
110	0.02	2.2	2.0	9.5	54.5	0.18	0.18	1068	7
132	0.02	2.4	1.8	9.5	54.2	0.21	0.21	1175	7
154	0.02	2.6	1.7	9.6	57.7	0.19	0.19	1265	7
176	0.02	2.9	1.6	9.3	55.2	0.21	0.21	1296	7
198	0.02	3.1	1.5	9.3	54.8	0.21	0.21	1364	7
Flushing: 2 Weeks Prebreeding and First 3 Weeks of Breeding									
110	0.22	3.5	3.2	9.4	60.0	0.34	0.17	671	7
132	0.22	3.7	2.8	9.2	59.5	0.32	0.16	762	7
154	0.22	4.0	2.6	9.0	57.5	0.30	0.18	822	7
176	0.22	4.2	2.4	9.1	59.5	0.31	0.17	895	7
198	0.22	4.4	2.2	8.9	59.1	0.30	0.18	961	7
Nonlactating, First 15 Weeks of Gestation									
110	0.07	2.6	2.4	9.6	57.7	0.23	0.19	904	7
132	0.07	2.9	2.2	9.3	55.2	0.24	0.17	972	7
154	0.07	3.1	2.0	9.3	54.8	0.26	0.19	1061	7
176	0.07	3.3	1.9	9.4	54.5	0.24	0.21	1139	7
198	0.07	3.5	1.8	9.4	54.3	0.26	0.23	1208	7

Table 2. Required Nutrient Concentrations of Sheep Rations (Expressed on 100% Dry Matter Basis[a]) (cont.)									
Body Weight (lb.)	Avg. Daily Gain (lb.)	Dry Matter (lb./head[a])	% Body Weight	Total Protein (lb.)	TDN[b] (lb.)	Calcium (lb.)	Phosphorous (lb.)	Vitamin A (IU)	Vitamin E (IU)
Last 4 Weeks of Gestation (130% –150% Lambing Rate Expected)									
110	0.40	3.5	3.2	10.9	60.0	0.37	0.29	1214	7
132	0.40	3.7	2.8	10.8	59.5	0.35	0.30	1378	7
154	0.40	4.0	2.6	10.5	57.5	0.35	0.30	1490	7
176	0.40	4.2	2.4	10.5	57.1	0.33	0.31	1619	7
198	0.40	4.4	2.2	10.7	56.8	0.32	0.32	1738	7
Last 4 Weeks of Gestation (180%–225% Lambing Rate Expected)									
110	0.50	3.7	3.4	11.6	64.8	0.38	0.19	1148	7
132	0.50	4.0	3.0	11.2	65.0	0.38	0.20	1275	7
154	0.50	4.2	2.7	11.2	66.7	0.40	0.24	1416	7
176	0.50	4.4	2.5	11.1	65.9	0.41	0.30	1545	7
198	0.50	4.6	2.3	11.1	65.2	0.43	0.30	1663	7
First 6–8 Weeks of Lactation, Suckling Singles									
110	-0.06	4.6	4.2	14.6	65.2	0.43	0.28	923	7
132	-0.06	5.1	3.8	13.7	64.7	0.39	0.27	1000	7
154	-0.06	5.5	3.6	13.3	65.5	0.36	0.27	1082	7
176	-0.06	5.7	3.2	13.3	64.9	0.37	0.28	1193	7
198	-0.06	5.9	3.0	13.2	64.4	0.36	0.29	1296	7
First 6–8 Weeks of Lactation, Suckling Twins									
110	-0.13	5.3	4.8	16.2	64.1	0.43	0.30	943	7
132	-0.13	5.7	4.3	15.6	64.9	0.40	0.30	1052	7
154	-0.13	6.2	4.0	14.8	64.5	0.39	0.29	1129	7
176	-0.13	6.6	3.8	14.5	65.1	0.38	0.29	1212	7
198	-0.13	7.0	3.6	14.1	65.7	0.36	0.29	1285	7
Last 4–6 Weeks of Lactation, Suckling Singles									
110	0.10	3.5	3.2	10.9	60.0	0.37	0.29	1214	7
132	0.10	3.7	2.8	10.8	59.5	0.35	0.30	1378	7
154	0.10	4.0	2.6	10.5	57.5	0.35	0.30	1490	7
176	0.10	4.2	2.4	10.5	57.1	0.33	0.31	1619	7
198	0.10	4.4	2.2	10.7	56.8	0.32	0.32	1738	7
Last 4–6 Weeks of Lactation, Suckling Twins									
110	0.20	4.6	4.2	14.6	65.2	0.43	0.28	924	7
132	0.20	5.1	3.8	13.7	64.7	0.39	0.27	1000	7
154	0.20	5.5	3.6	13.3	65.5	0.36	0.27	1082	7
176	0.20	5.7	3.2	13.3	64.9	0.37	0.28	1193	7
198	0.20	5.9	3.0	13.2	64.4	0.36	0.29	1296	7

Table 2. Required Nutrient Concentrations of Sheep Rations (Expressed on 100% Dry Matter Basis[a]) (cont.)									
Body Weight (lb.)	Avg. Daily Gain (lb.)	Dry Matter (lb./head[a])	% Body Weight	Total Protein (lb.)	TDN[b] (lb.)	Calcium (lb.)	Phosphorous (lb.)	Vitamin A (IU)	Vitamin E (IU)
Ewe Lambs									
Nonlactating, First 15 Weeks of Gestation									
88	0.35	3.1	3.5	11.0	58.0	0.39	0.23	606	7
110	0.30	3.3	3.0	10.6	57.6	0.33	0.21	712	7
132	0.30	3.5	2.7	10.0	57.0	0.34	0.20	806	7
154	0.28	3.7	2.4	9.7	59.5	0.32	0.22	889	7
Last 4 Weeks of Gestation (100%–120% Lambing Rate Expected)									
88	0.40	3.3	3.8	12.4	63.6	0.42	0.21	1030	7
110	0.35	3.5	3.2	12.0	62.9	0.40	0.20	1214	7
132	0.35	3.7	2.8	11.3	64.9	0.38	0.22	1378	7
154	0.33	4.0	2.6	10.7	62.5	0.38	0.23	1487	7
Last 4 Weeks of Gestation (130%–175% Lambing Rate Expected)									
88	0.50	3.3	3.8	13.3	66.7	0.48	0.24	1030	7
110	0.50	3.5	3.2	12.9	65.7	0.49	0.23	1214	7
132	0.50	3.7	2.8	12.4	67.5	0.49	0.24	1378	7
154	0.47	4.0	2.6	11.5	62.5	0.45	0.25	1490	7
First 6–8 Weeks of Lactation, Suckling Singles (Wean by 8 Weeks)									
88	-0.11	3.7	4.2	15.1	67.5	0.35	0.24	919	7
110	-0.11	4.6	4.2	13.5	67.4	0.30	0.22	924	7
132	-0.11	5.1	3.8	12.7	66.6	0.29	0.22	1000	7
154	-0.11	5.5	3.6	12.4	65.4	0.29	0.22	991	7
First 6–8 Weeks of Lactation, Suckling Twins (Wean by 8 Weeks)									
88	-0.22	4.6	5.2	14.5	69.5	0.39	0.26	869	
110	-0.22	5.1	4.6	13.9	68.6	0.37	0.20	980	
132	-0.22	5.5	4.2	13.4	69.1	0.36	0.25	1091	
154	-0.22	6.0	3.9	12.8	68.3	0.33	0.25	1166	

Source: National Research Council, 2007.
[a]Values in table 2 are calculated from the daily requirements in table 1 ÷ DM intake.

Table 3. Daily Nutrient Requirements of Goats (Per Animal)								
Body Weight (lb.)	Dry Matter (lb./head[a])	% Body Weight	Total Protein (lb.)	TDN[b] (lb.)	Calcium (lb.)	Phosphorous (lb.)	Vitamin A (IU)	Vitamin E (IU)
Maintenance								
22	0.63	2.80	0.05	0.35	0.002	0.002	400	84
45	1.08	2.40	0.08	0.59	0.002	0.002	700	144
67	1.46	2.20	0.11	0.80	0.004	0.003	900	195
90	1.81	2.03	0.14	0.99	0.004	0.003	1200	243
112	2.13	1.90	0.17	1.17	0.007	0.005	1400	285
134	2.44	1.82	0.19	1.34	0.007	0.005	1600	327
157	2.76	1.80	0.21	1.50	0.009	0.006	1800	369

Table 3. Daily Nutrient Requirements of Goats (Per Animal) (cont.)

Body Weight (lb.)	Dry Matter (lb./head[a])	% Body Weight	Total Protein (lb.)	TDN[b] (lb.)	Calcium (lb.)	Phosphorous (lb.)	Vitamin A (IU)	Vitamin E (IU)
Maintenance (cont.)								
179	3.05	1.70	0.23	1.66	0.009	0.006	2000	408
202	3.32	1.64	0.26	1.81	0.009	0.006	2200	444
224	3.58	1.60	0.28	1.96	0.011	0.008	2400	480
132	3.7	2.8	12.4	67.5	0.49	0.24	1378	7
Additional Requirements for Late Pregnancy (All Goats)[c]								
	1.56		0.18	0.87	0.004	0.003	1400	213
Additional Requirements for Growth: Weight Gain at 0.11 Lb Per Day (All Goats[c])								
	0.40		0.03	0.22	0.002	0.002	300	54
Additional Requirements for Growth: Weight Gain at 0.22 Lb Per Day (All Goats[c])								
	0.79		0.06	0.44	0.002	0.002	500	108
Additional Requirements for Growth: Weight Gain at 0.33 Lb Per Day (All Goats[c])								
	1.19		0.09	0.66	0.004	0.003	800	162
Additional Requirements for Milk Production Per Pound at Different Fat Percentages (% Fat)								
3			0.13	0.73	0.004	0.003	3800	760
3			0.14	0.74	0.004	0.003	3800	760
4			0.15	0.75	0.004	0.003	3800	760
4			0.16	0.76	0.007	0.005	3800	760
5			0.17	0.77	0.007	0.005	3800	760
5			0.18	0.78	0.007	0.005	3800	760
Additional Requirements for Mohair Production by Angora at Different Production Levels (Lb)								
4[d]			0.02	0.04				
9[d]			0.04	0.07				
13[d]			0.06	0.11				
18[d]			0.07	0.15				

Source: National Research Council, 2007.
[a] To convert dry matter to an as-fed basis, divide dry matter values by the percentage of dry matter in the particular feed.
[b] One pound TDN (total digestible nutrients) = 0.91 Mcal DE (digestible energy)
[c] Requirements in addition to those for maintenance
[d] Annual fleece yield (lb)

Table 4. Required Nutrient Concentrations of Goat Rations (Expressed on 100% Dry Matter Basis[a])

Body Weight (lb.)	Dry Matter (lb./head[a])	% Body Weight	Total Protein (lb.)	TDN[b] (lb.)	Calcium (lb.)	Phosphorous (lb.)	Vitamin A (IU)	Vitamin E (IU)
Maintenance								
22	0.63	2.80	7.93	55.55	0.351	0.245	660	133
45	1.08	2.40	7.40	54.62	0.204	0.143	660	133
67	1.46	2.20	7.53	54.9	0.302	0.211	660	133
90	1.81	2.03	7.73	54.69	0.244	0.171	660	133
112	2.13	1.90	7.98	54.93	0.310	0.217	660	133
134	2.44	1.82	7.77	54.92	0.270	0.189	660	133
157	2.76	1.80	7.61	54.35	0.319	0.223	660	133

Table 4. Required Nutrient Concentrations of Goat Rations (Expressed on 100% Dry Matter Basis[a]) (cont.)								
Body Weight (lb.)	Dry Matter (lb./head[a])	% Body Weight	Total Protein (lb.)	TDN[b] (lb.)	Calcium (lb.)	Phosphorous (lb.)	Vitamin A (IU)	Vitamin E (IU)
Maintenance (cont.)								
179	3.05	1.70	7.54	54.43	0.289	0.187	660	133
202	3.32	1.64	7.83	54.52	0.265	0.186	660	133
224	3.58	1.60	7.82	54.5	0.307	0.215	670	134
Additional Requirements for Late Pregnancy (All Goats)[c]								
	1.56		0.12	0.55	0.003	0.002	900	136
Additional Requirements for Growth: Weight Gain at 0.11 Lb Per Day (All Goats[c])								
	0.40		0.08	0.006	0.004	750		136
Additional Requirements for Growth: Weight Gain at 0.22 Lb Per Day (All Goats[c])								
	0.79		0.08	0.003	0.002	630		136
Additional Requirements for Growth: Weight Gain at 0.33 Lb Per Day (All Goats[c])								
	1.19		0.08	0.004	0.003	670		136
Additional Requirements for Milk Production Per Pound at Different Fat Percentages (% Fat)								
3			0.13	0.73	0.004	0.003	3800	760
3			0.14	0.74	0.004	0.003	3800	760
4			0.15	0.75	0.004	0.003	3800	760
4			0.16	0.76	0.007	0.005	3800	760
5			0.17	0.77	0.007	0.005	3800	760
5			0.18	0.78	0.007	0.005	3800	760
Additional Requirements for Mohair Production by Angora at Different Production Levels (Lb)								
4[d]			0.02	0.04				
9[d]			0.04	0.07				
13[d]			0.06	0.11				
18[d]			0.07	0.15				

Source National Research Council, 2007.
[a]Values in table 4 are calculated from the daily requirements in table 3 ÷ by DM intake
[b] One pound TDN (total digestible nutrients) = 0.91 Mcal DE (digestible energy)
[c]Requirements in addition to those for maintenance
[d]Annual fleece yield (lb)

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For more information, contact your county Extension office. Visit www.aces.edu/directory.

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