

Value of kelp meal for goats and sheep

Michael L. Thonney 27 February 2016

Recent discussions on [sheepgoatmanagement-L](#) prompted this evaluation of kelp for goats and sheep. Nutrient concentrations from three web sites for kelp were entered into a spreadsheet and averaged (Table 1). Then ppm of vitamins were converted to IU/lb to be consistent with units still used for suggested levels of vitamins. Then the pounds (and also ounces) of kelp needed to supply the suggested levels of nutrients were computed based upon maximum estimated dry matter intakes of 4% for a 150-lb doe or ewe.

Kelp has relatively high concentrations of cobalt and iodine. Copper is low, which is generally good for sheep, but would not help to meet the copper requirements of goats. Kelp is very high in salt, which is probably why it is consumed readily by goats and sheep when first offered. The variation in nutrient composition of kelp is high so kelp sources should be analyzed by a feed laboratory to know how much to feed as a supplement for certain nutrients.

Table 1. Nutrient composition of kelp.

Animal weight: 150 lb Intake: 4.0% body wt = 6 lb DM = 6.67 lb feed

Nutrient	Units	North	Fertrell	Throvin	Average	Average (change vitamins to IU)	Suggested in complete diet for high milk production	Pounds of kelp needed per 100 lb of diet for each nutrient ^a	Pounds of kelp/day for each nutrient	Oz kelp/day
		American Sealife Kelp Meal	North Atlantic Kelp Meal	Icelandic Geothermal Kelp						
Water	%	10.7		9.0	9.9	9.9				
Protein	%	5.7		8.5	7.1	7.1	16.00			
Fat	%	2.6	2.0	2.0	2.2	2.2				
Ash	%	15.4		29.0	22.2	22.2				
Calcium	%	1.9		2.1	2.0	2.0	0.39	19.50	1.3	21
Phosphorus	%	0.2		0.3	0.3	0.3	0.29			
Potassium	%	1.3	2.0	2.7	2.0	2.0	0.80	40.00	2.7	43
Magnesium	%	0.2		0.8	0.5	0.5	0.18	36.00	2.4	38
Manganese	%	0.1		0.0	0.1	0.1				
Salt	%	6.0	9.0	10.7	8.6	8.6	0.20	2.33	0.2	2
Sulfur	%	1.6		2.8	2.2	2.2	0.26	11.82	0.8	13
Iron	ppm	895		622.0	758.5	758.5	50.00	6.59	0.4	7
Zinc	ppm	35.0		12.0	23.5	23.5	33.00			
Iodine	ppm	624	300	780.0	568.0	568.0	140.00	24.65	1.6	26
Copper	ppm	6.4		4.0	5.2	5.2	10.00			
Cobalt	ppm	12.3		4.0	8.2	8.2	0.20	2.45	0.2	3
Selenium	ppm	0.4		0.5	0.5	0.5	0.30	66.67	4.4	71
Vitamin E	ppm	225		110.0	167.5	76	43.00	56.60	3.8	60
Vitamin A	ppm	45		0.4	22.7	0.017	1,113.00			

^aAssuming kelp is the only source of the given nutrient.

A Fertrell kelp sample was submitted to Dairy One for analysis by Jim Gibbs, who kindly forwarded the results for inclusion in this revised document (Table 2). Digestible dry matter (DDM; TDN in the report) is about the same as that of good quality hay, but the NDF (fiber) concentration was lower so the potentially fermentable NDF (pfNDF) was below the level suggested for diets for lactating does or ewes. The ash value is very high.

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That is partly because of the high salt concentration (calculated from the sodium concentration reported by Dairy One).

Table 2. Dairy One analysis of Fertrell kelp

Nutrient	Units	Analysis	Suggested for complete diet for high milk production	Pounds of kelp needed per 100 lb of diet for each nutrient	Pounds of kelp/day for each nutrient ^a	Oz kelp/day
Water	%	9.4				
All below are per unit of dry matter						
Protein	%	6.8	16.00			
DDM	%	60.0	75.00			
NDF	%	46.4				
MFL	%	13.0				
INDF	%	27.0				
pfNDF	%	19.4	30.00			
Fat	%	2.2				
Ash	%	22.2				
Calcium	%	1.2	0.39	32.77	2.2	35
Phosphorus	%	0.2	0.29			
Potassium	%	2.8	0.80	28.88	1.9	31
Magnesium	%	0.8	0.18	21.95	1.5	23
Manganese	ppm	28.0				
Salt	%	8.0	0.20	2.50	0.2	3
Sulfur	%	na	0.26			
Iron	ppm	415.0	50.00	12.05	0.8	13
Zinc	ppm	33.0	33.00	100.00	6.7	107
Iodine	ppm	na	140.00			
Copper	ppm	2.0	10.00			
Cobalt	ppm	1.2	0.20	17.24	1.1	18
Selenium	ppm	0.1	0.30			

^aAssuming kelp is the only source of the given nutrient.