

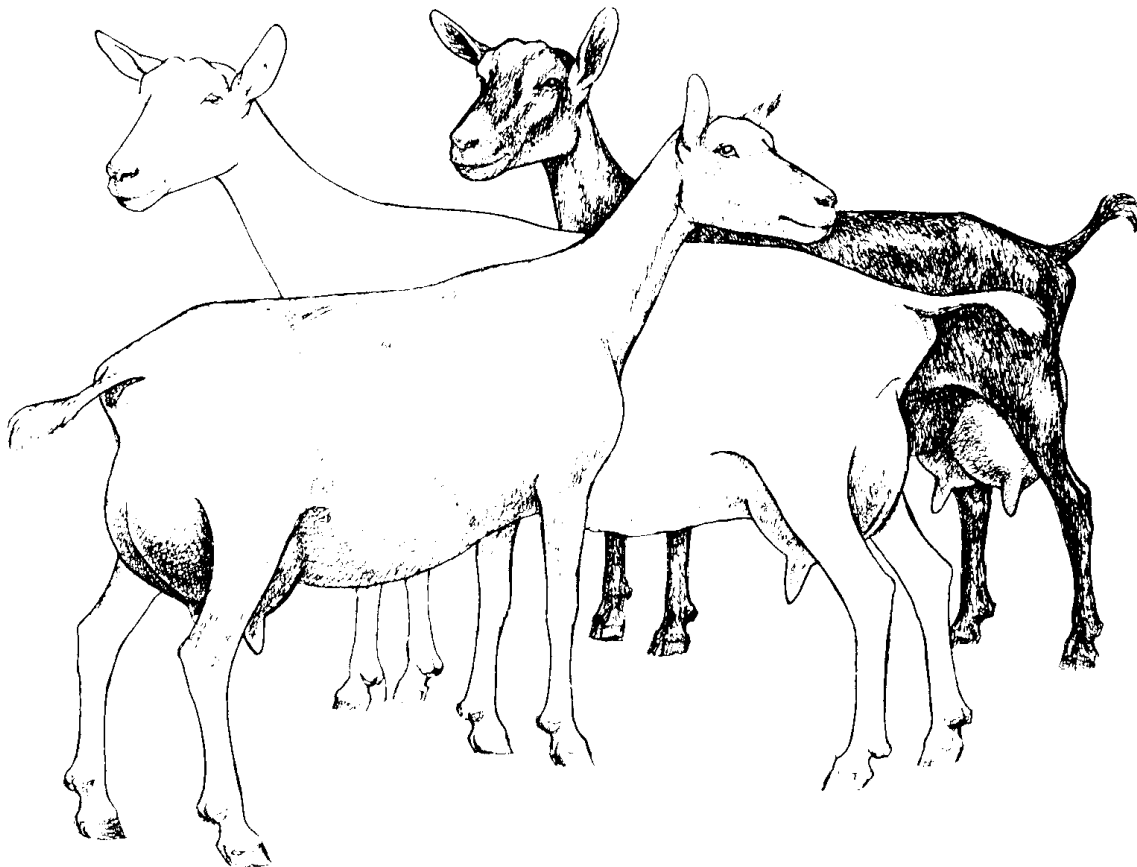


NUTRIFAX

NUTRITION NEWS AND INFORMATION



GUIDELINES TO FEEDING AND MANAGEMENT OF DAIRY GOATS



*Brian Tarr Ruminant Nutritionist
Maple Leaf Animal Nutrition*

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Feeding behaviour

Goats are ruminants. Given the choice, goats prefer to browse than graze. Goats are fastidious and very selective feeders. Under extensive feeding conditions this has considerable advantage in terms of diet selection. They select out the more nutritious parts of a pasture and browse. This is generally the top leafy portion of the plants and more succulent leaves. An advantage of this feeding behaviour is that goats are exposed to a lower worm burden compared to cattle and sheep that graze down much lower on pasture.

Goats select through the forages (hay) they are fed, choosing the more nutritious parts and rejecting coarse stalky material. This typically results in a 10 to 20% feed refusal and waste. Good feeder design will help reduce overall feed waste. It is important to provide adequate bunk / feeder space to ensure that all animals have an opportunity to consume feed. Interestingly, goats tolerate bitter secondary plant compounds better than other species and more readily consume those feeds.

Dry matter intake

Dry matter intake (DMI) tends to increase with increasing dietary protein level but decrease with increasing energy density. The energy density of the ration, milk yield and body weight are the variables used to best predict the DMI of goats. Average dry matter intake of lactating dairy goats is 5% of body weight. This means that goats have a faster turnover rate and shorter retention time compared to dairy cows. High producing, lactating goats consume nearly twice as much feed per unit of body weight compared to lactating cows.

DMI peaks between 8 to 12 weeks postpartum. Dry matter intake is affected by parity and breed. Average DMI differences between breeds is as high as 15%. For example, Alpine goats have higher DMI than Nubian goats. Multiparous goats have higher DMI than primiparous goats – as much as 40% higher.

Milk Production

Goats peak at 5 – 5.5 l / day at 6 to 8 weeks into lactation. They typically decline at 10 – 15% after that but some producers have managed to get excellent persistency and reduced the rate of milk production decline. Breed, parity and stage of lactation affect milk production.

Official lactation is 305 days with average production at 2.5 l / doe / day. However, most lactations are actually only 200 to 250 days. It is possible to produce at higher levels of milk with excellent quality animals and proper feeding and management. Recent five year production averages (93 – 98) for the top dairy producing goats were:

LaMancha	1590 litres	4.02% BF	Alpine	1585 litres	3.42% BF
Saanen	1504 litres	3.16% BF	Toggenburg	1497 litres	2.95% BF
Nubian	1235 litres	4.47% BF			

Forage feeding guidelines

Non-producing goats, bucks out of breeding season, dry yearlings and non-lactating does can be fed moderate quality hay, 11 to 12% protein.

Most producers feed good quality hay with medium to high protein level. Goats are particularly sensitive to molds and mycotoxins – avoid moldy feed! Feeding corn silage, haylage or baleage, which are more susceptible to mold, can be particularly hazardous. In addition, goats are susceptible to listeria, a problem associated with fermented forages.

Guidelines on dairy goat ration selection

<u>% Protein in the roughage</u>	<u>% Protein in Dairy Goat Ration for:</u>	
	<u>High production</u>	<u>Low production</u>
15% and over <i>Excellent legume hay or excellent pasture</i>	14%	12%
12 to 15% <i>Legume-grass hay or good pasture</i>	16%	14%
10 to 12% <i>Good grass hay or fair pasture</i>	18%	16%
Less than 10% <i>Fair quality hay or poor pasture</i>	20%	18%

In practical dairy goat feeding, the 16% dairy goat ration is the most widely used for lactating goats.

Grain feeding recommendations

The does are usually fed the lactation ration close-up for 14 to 20 days and then the ration is gradually increased to the desired level over 14 days after kidding. Care must be taken not to put does off feed.

Since sophisticated ration balancing programs are not available, simplified grain feeding recommendations for lactating goats are given below.

<u>Days in milk</u>	<u>kg grain ration</u>	<u>kg milk</u>
0 to 100	1 kg for every	2.0 to 2.5
100 to 200	1 kg for every	2.6 to 3.0
200 to 300	1 kg for every	3.5 to 4.0

These are general guidelines and feeding rates may have to be adjusted to suit particular situations. Body condition, for example, may influence the feeding rates. Higher feeding rates will help maintain or improve body condition; lower grain feeding rates may help prevent over conditioned does in late lactation. Feeding fat (5% dietary fat) resulted in higher milk fat %.

Feeding grain at 0.3 kg / feeding is most desirable to prevent problems with acidosis. Under many practical feeding situations it is difficult to comply with this guideline as animals are fed twice per day at milking. However, grain feeding must not exceed 0.7 kg / feeding (1 ½ lbs / feeding).

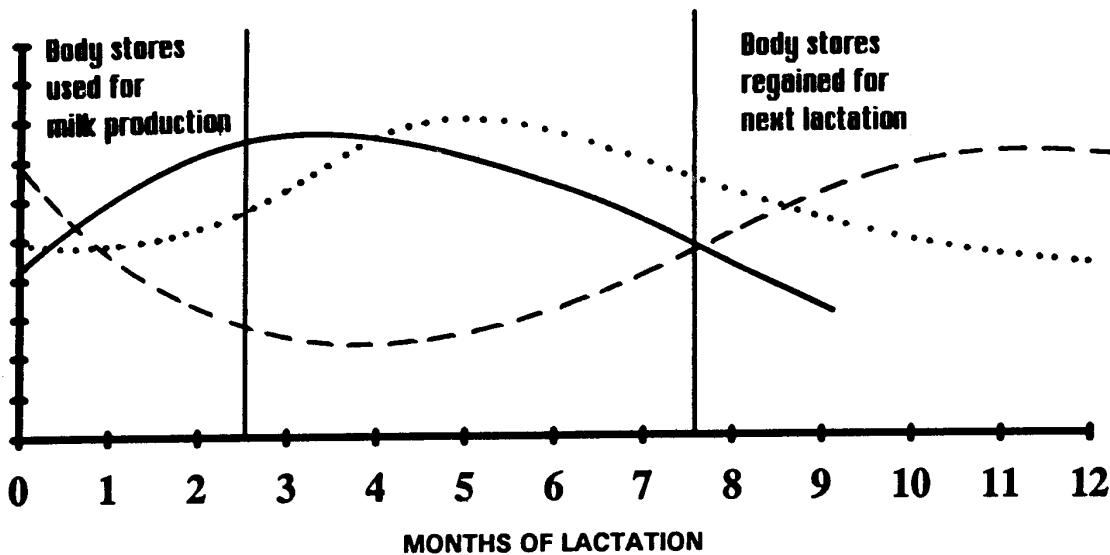
Goats prefer coarsely ground or whole grains in their rations. However, these rations allow more opportunity for selective feeding by does. Molasses can be used to “hold” rations together and ensure more uniform intake. Pelleted rations are also well accepted by goats. Avoid feeding moldy grain.

Always use feeders to avoid contamination of the feed. Don't feed goats on the ground. Using well designed feeders also helps reduce feed waste.

Negative Energy Balance

The negative energy balance is similar to that observed in dairy cows. Goats loose weight in early lactation as milk production increases and start to regain the weight when DMI reaches maximum at 8 to 12 weeks post partum.

FIGURE 1. Relationships of milk yield (—), body weight (---) and feed intake (···) of lactating goats.



Dry period feeding

Does are susceptible to milk fever any time from 6 weeks prior to kidding to 10 weeks after. The causes are similar to those affecting cows. It is recommended that the calcium phosphorus ratio be reduced to less than 2:1 by feeding a grassy type hay, low in both calcium and potassium. Distinguish between milk fever and ketosis so that the appropriate treatment can be applied as soon as possible.

During the far off dry period (4 to 5 weeks), goats can be fed a good quality hay (9 to 11% protein). During the last 3 to 4 weeks, both energy and protein need to be supplemented. Feed ½ to 1 kg of grain ration to adapt the rumen to the higher grain feeding during lactation and help avoid complications with ketosis.

Water requirements

Goats need fresh clean water. Goats will refuse contaminated (soiled) water until forced by thirst to drink. If goats are able to defecate in the water, it serves as a source of infection by coccidia and other internal parasites. Water consumption is up to 3 times total dry matter intake. In winter, taking the chill off of the water will encourage higher intakes. Goats drink about 3.5 l of water for every litre of milk produced.

Shur-Gain Dairy Goat Feeding Program

The Shur-Gain range of dairy goat supplements and rations are designed to meet the needs of an increasing number of producers requesting products that are specific to the dairy goat industry. These feeds are formulated to take into account the nutrient requirements of lactating goats as well as the nutrient levels allowed by government legislation. The Shur-Gain products are all based on vegetable proteins only and are urea free.

Many producers have strong preferences for the particular form of the ration they feed. This is usually based on their experiences feeding various types of rations and noting those which have been the easiest to manage and present the least problems. Selective feeding is sometimes a problem. Shur-Gain recognized these needs in designing a feeding program for dairy goat production. The Shur-Gain feeding program offers a wide range of products and product textures giving producers considerable flexibility and choice.

Shur-Gain Dairy Goat Complete Feeds (pellets)

The pelleted rations are best suited to feeding situations where selective feeding is a problem. Feeding these rations ensures that all animals get the ration as formulated.

97167 Shur-Gain 14% Dairy Goat Ration (0% ECP)

97172 Shur-Gain 16% Dairy Goat Ration (0% ECP)

97177 Shur-Gain 18% Dairy Goat Ration (0% ECP)

97182 Shur-Gain 20% Dairy Goat Ration (0% ECP)

Shur-Gain Dairy Goat Supplements

The Shur-Gain dairy goat supplements offer a variety of options for producers. There are a number of different ways that they can be mixed to make up a textured ration. In addition, the supplement can be top dressed to meet requirements. These are best suited to those feeding situations where selective feeding is not a major concern or where producers want to maximize the use of home grown grains.

97157 Shur-Gain 30% Dairy Goat Supplement 200 (0% ECP)

The Shur-Gain 30% Dairy Goat Supplement 200 (0% ECP) along with grains, soybean meal, molasses and roasted soybeans will make the 16%, 18% and 20% Dairy Goat Rations (0% ECP) (TR).

	16% Dairy Goat Ration	18% Dairy Goat Ration	20% Dairy Goat Ration	
30% Dairy Goat Supp	200	200	200	
Corn	400	305	280	
Barley	250	305	275	
Roasted Soybeans	100	100	105	
Soybean Meal	--	40	90	
Molasses	50	50	50	
TOTAL	1000 kg	1000 kg	1000 kg	1000 kg

97162 Shur-Gain 35% Dairy Goat Supplement 250 (0% ECP)

The Shur-Gain 35% Dairy Goat Supplement 250 (0% ECP) along with grains, soybean meal, tallow and molasses will make the 16%, 18% and 20% Dairy Goat Rations (0% ECP) (TR).

	16% Dairy Goat Ration	18% Dairy Goat Ration	20% Dairy Goat Ration	
35% Dairy Goat Supp	250	250	250	
Corn	345	320	292	
Barley	345	315	291	
Tallow	15	15	16	
Soybean Meal	--	55	106	
Molasses	45	45	45	
TOTAL	1000 kg	1000 kg	1000 kg	1000 kg

Appendix A. Reproduction

Goats are seasonal breeders with natural breeding occurring in the fall through winter (September through February). Many producers use artificial means to get does to breed out of season.

Estrus cycle averages 21 days with a range being 15 to 24 days. Does show standing heat for up to 18 hours. Typical signs of heat are pronounced tail wagging, restlessness, bleating, loss of appetite, lower milk production, mounting other animals, red or swollen vulva and mucous discharge.

Doelings start cycling as early as 4 months of age. They can be bred at 7 months of age or when they have reached 32 kg (70 lbs.) body weight.

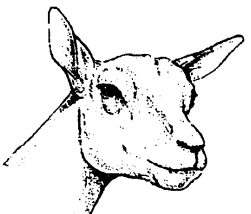
Normal gestation is 150 days with a range of 145 to 155 days being typical. Maiden does usually have singles. Mature does have 1 to 5 kids with most having twins or triplets.

Appendix B. Common dairy goat breeds in Canada



The Alpine

The Alpine is a medium size Swiss breed. They are hardy, adapt well to a variety of climates and have excellent lactation records. They can be a variety of colours.



The Saanen

The Saanen is the largest dairy breed of Swiss origin and has the highest milk production. They excel on high quality forage and adequate grain feeding. They are usually plain white or a light cream colour.



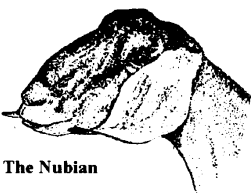
The Toggenburg

The Toggenburg is the smallest of the Swiss breeds, adapts well to all climates and is a good milk producer. They are brown with very distinctive white markings.



The LaMancha

The LaMancha are relatively small breed, excellent dairy animals and good milk production. They can be any colour or combination of colours. The small ears are distinctive of this breed.



The Nubian

The Nubian is a dual purpose breed with the lowest milk production of all the common breeds. These animals are particularly heat tolerant. The large pendulous ears are a distinctive feature of this goat.

/6.

Appendix C. Housing goats

Goats require well-constructed facilities to ensure that they remain where intended. Housing must be clean, well ventilated but draft free. The housing must be dry – goats don't take well to wet conditions and often become ill. Goats are able to tolerate cold temperatures making specific heating unnecessary. Many producers keep their animals on deep straw bedding so that the environment is comfortably warm. Loose housing or group pens are typical of housing for goats.

Shelter requirements

<u>Animal</u>	<u>Square meters</u>	<u>Square feet</u>
Kid (hand fed)	0.3 – 0.5	3 – 5
Feeder goats	0.6	6
Doe with 1 – 3 kids	1.2 – 2.5	12 – 25
Dry doe	1.0	10
Pregnant doe	1.5	15
Buck	2.5 – 4.0	25 – 40

Water space

	<u>Square meters</u>	<u>Square feet</u>
Lactating does	0.1 / 20 head	1 / 20 head
All others	0.1 / 40 head	1 / 40 head

Hay feeder space

<u>Animal</u>	<u>Length/head (mm / inches)</u>	
Does	400	(16)
Replacements / feeders	300	(12)

	<u>Height at throat (mm / inches)</u>	
Does & bucks	450	(18)
Replacements / feeders	350	(14)

Approximate hay and grain budget for goats

	<u>Hay</u>	<u>Grain</u>
	<u>kg/head/day</u>	<u>kg/head/day</u>
Milking does	2.0	1 - 2
Dry does	1.5	
Late gestation	1.5	0.5 – 1.0
Flushing does	1.5 – 2.0	0.5
Buck	1.5 – 2.0	0.5 (breeding)
Replacements	1.0 – 1.5	0.25 – 0.5
Feeders	1.0	0.5 – 1.5

Straw (bedding) requirements (kg/head/day)

Does & buck	0.35
Replacements / Feeders	0.12