Buckeye Meat Goat Newsletter

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Our Mission: To enhance the production and marketing of meat goats through educational and practical experiences.

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Nutrient Requirements of Goats by Jean-Marie Luginbahl

The goat is not able to digest the cell walls of plants as well as the cow because feed stays in their gastrointestinal tract for a shorter time period. A distinction as to what is meant by "poor quality roughage" is necessary in order to make decisions concerning which animal can best utilize a particular forage. Trees and shrubs, which represent poor quality roughage sources for cattle, because of their highly lignified stems and bitter taste, may be adequate in quality for goats. Goats will avoid eating the stems, but don't mind the taste and will benefit from the relatively high levels of protein and cell solubles in the leaves of these plants. On the other hand, straw, which is of poor quality due to high cell wall and low protein, can be used by cattle but will not provide maintenance needs for goats because goats utilize the cell wall even less than cattle.

Goats must consume a more concentrated diet than cattle because their digestive tract size is smaller relative to their maintenance energy needs. When the density of high quality forage is low and the stocking rate is low, goats will still perform well because of their grazing behavior, even though their nutrient requirements exceed those of most domesticated ruminant species. Total digestible nutrients (TDN) and protein requirements to the chemical composition of feeds shown in Table 1 should give producers an idea of how to match needs and appropriate forages. For comparison, low quality forages have 40 to 55% TDN, good quality forages have from 55 to 70% TDN, and concentrates have from 70 to 90% TDN.

High quality forage and/or browse should be available to does during the last month of gestation and to lactating does, to developing/breeding bucks, and to weanlings and yearlings. Female kids needed for reproduction should be grazed with their mothers during as much of the milk feeding period as possible and not weaned early. When the quality of available forage and browse is limited or is of low quality, a concentrate supplement may be considered to maintain desired body condition, depending on cost:benefit. Whole cottonseed makes an excellent supplement for goats when fed at no more than 0.5 lb/head/day. Dry does and non-breeding mature bucks will meet their nutritional requirements on low to medium quality forage (10-12% protein and 50-60% TDN).

Providing free choice a complete goat mineral or a 50:50 mix of trace mineralized salt and dicalcium phosphate is advisable under most situations. Selenium is marginal to deficient in many areas. Therefore, trace mineralized salt or a complete mineral mix containing selenium should always be provided to the goat herd year around. It is sometimes advisable to provide a mineral mix that contains 20-25% magnesium oxide to reduce the risk of grass tetany when heavy milking goats are grazing lush small grain or grass/legume pastures in early lactation. Copper requirements for goats have not been definitively established. Growing and adult goats are less susceptible to copper toxicity than sheep, however, but their tolerance level is not well known. Young, nursing kids are generally more sensitive to copper toxicity than mature goats, and cattle milk replacers should not be fed to nursing kids. Mineral mixes and sweet feed should contain copper carbonate or

copper sulfate because these forms of copper are better utilized by the goat than copper oxide.

Suggested Supplemental Feeding Program For Goats

When goats are raised on browse, abundant forage should be made available to allow goats to be very selective and to ingest a high quality diet that will meet their nutritional requirements. When forage or browse is limited or low in protein (<10%), lactating does (and does in the last 30 days of gestation) and developing/breeding bucks should be fed 1.0 lb/day of a 16% protein mixture (77:20:2.5:0.5 ground corn : soybean meal : goat mineral : limestone). Alternatively, ground corn and soybean meal can be substituted by whole cottonseed for lactating does. Low to medium concentration of protein (>10%) will meet requirements of dry does and non-breeding bucks. When forage of browse is limited or low in protein (<10$), weanlings and yearlings should be fed ½ to 1/0 lb/day of the 16% protein mixture. Goats can be forced to eat very low quality feed including twigs, tree bark, etc., but producers should be aware that this practice will hurt the productivity of superior meat and fiber goats.

Grazing Management for Goats

Grazing of forage generally provides the least expensive way of supplying nutrients to animals. Therefore, it is advantageous to develop a year round forage program which allows for as much grazing as possible every month of the year. However, good pasture management involves much more than simply turning the animals to pasture. The principles of controlled grazing of goats or sheep are similar to those used for cattle. The primary goal is to have control of the animals' grazing pattern so that one can dictate the degree of defoliation and the frequency of defoliation. To obtain efficient animal production over a number of years, the needs of the plants as well as the needs of the animals must be taken into consideration. The development of a successful forage systems/grazing management entails:

1. Adjusting the number of animals grazing a certain areas (stocking density) of pasture because some forage must be left at the end of the grazing period to maintain adequate plant production. Otherwise, overuse will weaken the plants and regrowth will be slower. Adjusting the stocking rate requires experience because forage growth is not uniform throughout the year or from year to year.

2. Harvesting ungrazed forages as hay or silage at an immature stage of growth when forage growth is more rapid than it can be grazed. This will provide high quality feed when grazing is not available. Cross fencing will keep animals concentrated on small areas while excess growth accumulate on other paddocks. Under those circumstances, short duration rotational grazing through a series of paddocks, or strip grazing a rapidly growing pasture by allowing animals access to only enough forage to carry them for one day using a movable fence, are alternatives to consider.

3. Overseeding grass pastures with legumes, ryegrass, small grains, or brassicas to extend the grazing season and to provide some high quality feed during the winter and spring.

4. Restricting the use of high quality forage, when in short supply, for the supplementation of other low quality pastures, hay or silage. This can be achieved by letting goats graze high quality forage a few hours at the end of each day, or by grazing the limited high quality supply every other day.

When the aim is to kill or reduce the amount of unwanted vegetation, then greater severity and frequency of grazing is necessary. Goats will actively select major weeds at particular stages of growth. As a rule, effective control of unwanted vegetation can be achieved in two years. Therefore, the advantages of the goat in feeding strategy must be weighed against its disadvantages. Being a browsing animal, the goat stunts tree growth and prevents the regeneration of forests and thus should be managed carefully in areas desired for forests. Goats could be very useful, however, in areas where regrowth of brush and trees is not desirable.

MACREM Farm, the Brooker Family

Mark and Amy Brooker started their goat business much like many others, as a 4-H project for their daughter. Four years later MACREM Farm is a thriving commercial goat farm. **MACREM** stands for: **M**ark, **A**my, **C**ara, **R**achel, **E**rin, and **M**argo. Mark and Amy both agree this is truly a family farm.

MACREM Farm currently has a doe herd of over 120 head. The doe's are Boer, Boer Cross, and dairy mix, which are all bred back to full blood Boer Bucks. The genetics of the bucks are what make this operation profitable. By seeking genetically superior bucks, the carcass characteristics sought for in good market animals is passed on to the kids. Fast growing meaty kids, ready for slaughter in less than 5 months; maximize the potential for profit in this endeavor. MACREM Farm hopes to have their doe herd to 200 by this fall.

The feeding program is designed to minimize the cost of inputs into the doe unit. Amy and Mark use intensive grazing as the primary source of feed and supplement with whole shelled corn and concentrated pellet feed with hay through the winter. This coming winter they intend to use protein tubs with hay to reduce cost even further. Mark and Amy plant forages to enhance the pasture that is available. Through the summer last year, they planted buckwheat, which does very well in dry situations. This summer they plan to try pearl millet, in both cases, summer pasture is followed with a winter rye planting for the fall grazing program. This allows the animals to graze until sometime in December and again starting the middle of March. By cutting down on hay consumption and allowing the animals to harvest the forage really reduces feeding costs. In addition, free choice granular minerals are available at all times to the entire herd.

The breeding program at MACREM Farm has undergone extensive change over the last four years. The program is now termed "market breeding." This practice was developed by Amy and involves year around breeding. The process is to limit

the breeding of does to match the market needs of the customer. Prior to this practice, all the does were bred at the same time. Kidding started in the late fall and proceeded through March. Now the scheduled kidding arrives practically monthly or every other month. This allows the slaughter kids to be ready for market throughout the entire year. The problem that kept occurring was after the kid crop was sold for market, additional customers orders could not be filled until the next kid crop was ready. By using "market breeding," kids are always ready. Customers can find animals when they need them, not just during the right season.

The marketing plan has also undergone extensive changes over the last four years. The goal initially was "to just sell goats," with no thought as to whom the selling would be to. However, after the first kidding, it was clear that something had to change. Not the right kind of animals for breeding stock, not enough for the commercial market, not the right size or age for 4-H was the problem. The solution was to decide what type of animal was going to be produced at MACREM Farm. Once the animal type was defined, the marketing plan could be defined. Now the Brookers sell commercial goats for slaughter.

A few 4-H project animals are marketed to local youth, and a very few breeding animals can be purchased for the commercial market herd. The focus is on carcass quality, and yield. The clients are a variety of ethnic cultures located in the Columbus, Dayton, and Cincinnati areas. They sell a large number of animals to the Somali markets in Columbus. These animals are processed at a local plant near Amy and Mark with ODA inspection. The animals are blessed and slaughtered by the Halal process. With the ability to provide animals year around and offer a Halal slaughter, the ethnic cultures really appreciate Mark and Amy's efforts. Mark is currently in process to become a licensed livestock dealer. Anyone with additional animals to be sold for slaughter can contact Mark and Amy at 937-383-1200. The Brookers intend to start including lamb in the weekly slaughter process as soon as possible.

What Do Goats Graze? By Terry Hutchens, Extension Associate for Goat Production

Goats have been classified as intermediate selector feeders. Which means that goats have plant preferences that extend to many different plants. However, these preferences are dependant upon forage amount, geographical location, and seasonal variation within the same region. The objective of the goat is to feed upon the highest quality forage available. On the average, African Boer goats have been observed browsing 60% of the feeding time and grazing 30%. Yet, when weather conditions change the quality hierarchy, Boer goats may browse 27% to 86% of the feeding time depending on abundance and quality of the browse. In addition to weather, Boer goats prefer to browse in the morning and graze in the late afternoon. Goats in general graze from the top of the pasture height downward and graze tall feed first. Tall feeds are often weeds and seed heads. These tall feeds are grazed to the side on a horizontal plan with the ground and perpendicular to the forage. Unlike sheep and cattle, goats do not like to graze down into the forage canopy where the

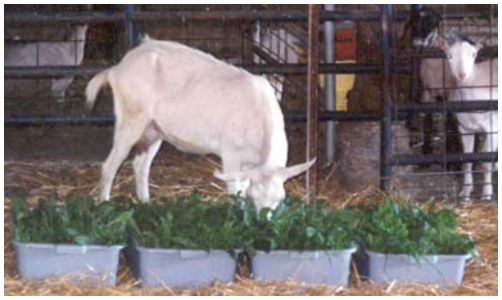
clovers reside. This would explain the increase in white clover content of pastures after being grazed by goats. White clover is near the bottom of the preferred list for goat grazing. I have personally seen goats graze tall fescue within 1 inch of the ground, carefully avoiding lush white clover plants within the pasture mix. A cattle farmer may classify goats as a renovation tool and use for removing weed and grass competition from clover renovated pastures.

In a manner of summarizing the above, the following statements can be made about how goats graze. Goats will predominately browse until quality and quantity of the forage becomes limiting. As both quantity/quality decline grazing of grasses and forbs dominate the preference. Secondly, rumination and time spent ruminating decrease with reduction in forage. On the contrary, as forage quantity/quality declines standing and walking activities increase. Reduction in rumination and rest-time increase energy maintenance level for grazing goats, thus reduces the amount of energy available for growth and productivity.

These observations confirm that goat productivity is directly related to the availability of superior quality and desirable forage. Once the forage component becomes compromised productivity declines. However, it is important to note that goats graze differently than do cattle. When a variety of forage plant choices are available for goats, little or no forage compotation or overlap will occur. Overlap will occur on pastures made up of one or two predominate pasture species and in these cases stocking rates become an important aspect of grazing management. Therefore, severe slopes covered with brush and brambles exclude cattle from certain sections of the farm while goats may see areas containing a smorgasbord of culinary opportunity.

A Salad Bar for Goats by Megan R. Burgess

The meat goat industry is the fastest growing animal industry in the United States. Goat producers must consider ways to maximize production while still maintaining operation efficiency. One way to increase goat production is to maximize daily feed intake, and an efficient and relatively inexpensive way to do this is through the grazing of forages.



At The Ohio State University, we are investigating factors that may affect the rate of forage intake by goats. One theory we are trying to confirm is if the physical arrangement of forage species in the field affects animal intake rate. Preliminary, results have indicated that goats consume the greatest amount when the forage species are offered individually and spaced close together, like a buffet or salad bar. Conversely, goats eat the least amount of forages when they are mixed such that multiple species can be taken in a single bite.

We are also testing which forage species goats prefer. In one study we found

chicory and red clover to be the most preferred species, while crabgrass and birdsfoot trefoil were the least preferred forage species. Other forage species used in the study include orchardgrass, white clover, alfalfa, and plantain.

Our measurements also include forage yield because, in addition to intake, yield is an important component of production efficiency. This study strives to give direction to producers who may be establishing or reseeding a field for grazing. Our studies will be continuing this summer.

Fencing for Goats

Goats can be controlled with 4-5 strands of smooth electrified wire. The wire spacings can vary from 6 to 8 inches near the ground to 8 to 12 inches for the top strands. Perimeter fence height should be at least 42 inches tall. A high wire, or an offset wire set one foot inside the fence near the top, may be needed if goat jumping is a problem. As a rule, goats will crawl rather than jump a fence, so the bottom wire should be kept close to the ground. A grounded barb wire laid along the ground will help with predator control, especially in mountainous areas. Training animals to respect electric wire fences can be done effectively by forcing animals to stay in a small paddock which encourages them to "test" the wire.

Woven wire (6" x 6" opening) is effective, but costs at least twice that of a 5-strand electric fence. Further, horned goats frequently become caught in the wire. To address this problem with existing fences, an electric wire offset about 9 inches from the woven wire fence and about 12 to 15 inches from the ground will reduce the number of animals caught in the woven wire fence. However, this practice also reduces control of the forage growth on the fence line. Woven wire with a 6" x 12" opening is a new and cheaper alternative than the woven wire with a 6" x 6" opening, that does not require an electric offset wire. Horned goats usually do not get caught or, if caught, they are able to free themselves because of the larger opening.

Boundary fences should control all stock at all times. However, interior fences may be made of 3 to 4 wires, assuming animals are well trained. Because goats like to climb, the corners of fences should not have the diagonal bracing for posts or the animals will climb out of the pasture. Corner posts should be driven with a deadman of H-braces.

Goat: The Other Red Meat

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ANR Athens County

Yes, I'll have a hot roast goat sandwich and my son will have a goat burger with cheese and pickles. While this is a scene not likely to be played out in many of our main street restaurants any time soon, ethnic restaurants and markets offer a huge potential for goat meat. Readers of this newsletter and/or persons who have attended one or some of the various meat goat educational meetings around Ohio will realize that ethnic markets are driving the demand for goat meat.

People who come to the U.S. from other countries are often accustomed to eating goat meat. They eat it because they are familiar with it (tradition) and/or for religious holidays and customs. While many of us tend to think of goat meat in

terms of our “traditional” uses/cuts, like burgers, roasts, and steaks, ethnic populations use goat meat differently. Our Ohio Meat Goat Task Force is finding that ethnic populations do not use goat meat according to the traditional USDA cuts of meat, nor do they buy goat meat in this way. They buy meat on a carcass or split carcass basis. They prepare and cook goat meat differently than we would beef. Many traditional ethnic dishes make use of goat meat cut into chunks, and served in a soup or with rice to increase the number of people that can be fed from a given weight of meat.

From a nutritional standpoint, goat is providing some healthful reasons to look at it as the other red meat. According to an article written by Dr. John Addrizzo, M.D., of the Staten Island Medical Center and member of the New York Empire State Meat Goat Producers Association, goat meat has about ½ the calories of beef and lamb and 40% of the same sized serving of pork. The protein content of goat meat is similar to other meat types. With regard to fat, goat meat has a 50 to 65% lower fat content than beef, and between 42 to 59% less fat than lamb. Goats do not produce a marbled (fat interspersed within a muscle) meat, so any fat along a cut of meat can be easily trimmed. While the cholesterol content of goat meat is similar to that of beef, lamb, pork and chicken, the saturated fat portion is much lower. Dr. Addrizzo says this is important because blood cholesterol level depends less upon the intake of cholesterol from foods and more on the amount of saturated fats consumed. Since goat fat has a higher ratio of unsaturated fats to saturated fats compared to beef and lamb, this indicates a healthier fat. In addition, goat meat has higher levels of iron, potassium and thiamine with a corresponding lower sodium level, when compared to a similar serving size of beef, pork, lamb or chicken.

Another factor to take into account with goat meat is preparation and cooking. Due to its low fat content and lack of marbling, goat meat can loose moisture and toughen up if cooked at high temperatures and under dry conditions. Most ethnic groups that regularly consume goat meat know the importance of cooking goat meat slowly. Often a marinade or paste is also used on the meat before cooking. If goat meat is to make a transition into mainstream U.S. markets, consumers will need to learn these same lessons.

Goat meat has a flavor similar to beef and venison, and when prepared and cooked properly will be tender. Numerous consumer studies have shown most people will have a more favorable impression of, and be more likely to try, goat meat if some other name is used. For this reason, restaurants that do offer goat meat are likely to do so by calling it chevon or cabrito.

With a growing ethnic population in the U.S. from backgrounds that are accustomed to goats as a meat source, and as the healthful benefits of goat meat become more widely known among the general population, demand for meat goats should continue to increase.