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Meat Goat Facilities

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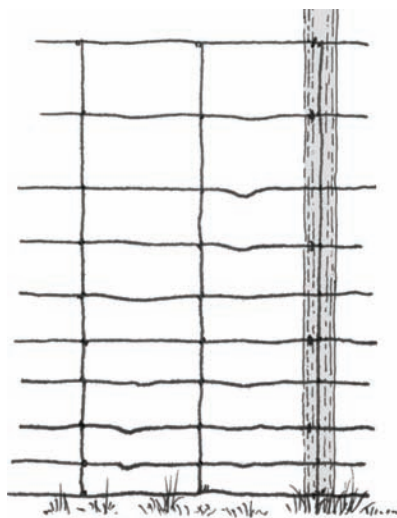
Fencing

When a person has decided to go into the business of raising goats after researching the other factors which stand to affect the success of their operation, consideration must be given to containing the animals. Goats are one of the more difficult species of livestock to contain. The natural curiosity and inquisitive nature must be considered. An effective fence that will safely and effectively contain goats in their designated area over the long term is an important factor in fence construction.

The costs of construction must be taken into consideration. In most situations the perimeter fences of a property will be of a permanent nature. Division and cross fences lend themselves to adjustable modes of construction. There are many fencing material and construction options available, and some will be mentioned in terms of their effectiveness.

Conventional fencing

The conventional fencing for goats is a fence constructed of net, woven, or mesh wire. The work skills required to build a suitable net wire fence are greater than those required for other types; however, the expected service life of a net wire fence is longer than that of other types of fencing. Construction costs are higher



Conventional fencing.
Drawing by K. Williams.

due to the materials needed and the time required for construction.

Variables to be taken into consideration are materials cost and construction skills of the producer. Consideration may be given to the availability of local fencing contractors and their rates. Conventional fences are generally permanent so extensive planning needs to go into their route and location prior to starting construction.

Guidelines and materials for constructing conventional fencing

Wood, steel pipe, or T-posts may be used for the construction of the corner H-braces, line or stretch braces, and for line posts, respectively. Materials, which are available in the producer's home area at the most economical cost, should be considered. Producers may have access to resources such as timber they might harvest for posts, or possibly pipe available for use as fence posts at salvage rates on their property. Staples for attaching wire to wooden posts and tie wire or pre-formed clips to attach the net to steel posts are also needed.

Permanent corner braces should be of the H-brace type of construction. Additional bracing in the form of a "jake leg" or angle brace may be used for greater strength. A minimum post installation depth of 30 inches is recommended in dirt holes, and a 12 inch minimum post hole depth when building fencing in rock is recommended. When building in rocky areas where digging



Permanent corner brace.

Meat Goat Herd Health Procedures and Prevention

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Introduction

The goal of a herd health program is to improve the goat herd's productivity through general husbandry, nutrition, parasite control, vaccination, and environmental management. An understanding of various management practices and common diseases on the farm is necessary to accomplish this goal. An effective herd health program is an essential part of a successful goat management program. Good feeding and breeding will not result in maximum production if goats are not kept in good health. Conversely, good nutrition and herd management will greatly reduce the complexity and cost of the herd health program.

Herd health programs are always described in very general terms and then modified to fit individual herds. The exact makeup of any program depends on the herd size, purpose of having the herd, and the production goals of the owner. For the most part, goats are managed as small groups of five to a hundred animals per herd. There are relatively very few large commercial goat herds with numbers above 500 head in the United States. Large herds may have problems associated with high density of animals and continuous turn over. Small herds tend to have higher nonproductive/productive ratios than do larger herds. This is because small herd owners often keep animals that would normally be culled in large commercial herds. Often, the net result

is the maintenance of animals with chronic illnesses that may serve as reservoirs of disease.

Since each herd is different, each owner should work with his/her veterinarian to create an individual herd health plan. Keep good records for each animal regarding medications, vaccinations, dewormers, diseases, breeding, culling etc., and use this information to plan your herd health program. Preventive medicine is usually less expensive than treating the disease as the highest economic returns are realized when disease problems are at a minimum. Many diseases have similar symptoms and a producer should work with a veterinarian familiar with common goat diseases. A veterinarian familiar with goats has the training and experience needed to provide diagnosis and recommend animal health products used in goats to treat these conditions.

General Herd Health Considerations

An obvious key to a successful meat goat operation is having a healthy, productive herd. Herd health can be affected by a number of factors including genetics, environment, nutrition, and management, among others. The purchase of healthy animals and the provision of a healthy environment with proper nutrition, sanitation, biosecurity measures, and preventative health care are necessary in establishing and maintaining a healthy herd. However, goats can be affected by a variety of diseases and no matter how diligently one follows a strict herd health regime, from time to time animals will become ill.

The onus of detecting sick animals or animals undergoing nutritional or other stress falls on the owner or caretaker and can only be accomplished by daily observation. The producer should observe unrestrained animals in order to learn how his animals look and behave in a normal manner. This includes general appearance and movement, normal behavior patterns, fecal consistency, eating behavior, teeth, body parts, etc. Any deviation from a goat's "normal" appearance



Healthy kids.

Internal and External Parasites of Goats

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Effects on Herd Production

Parasitism, and gastrointestinal nematode parasitism in particular, is arguably the most serious constraint affecting small ruminant production world-wide. Economic losses are caused by decreased production, cost of prevention, cost of treatment, and the death of infected animals. It is difficult by any form of major survey or other estimation to establish precise figures on losses incurred in production from infection and disease. Even minimal accuracy of loss estimates is difficult because production diseases or disorders may result from interaction with nutritional and environmental stresses, management methods, concurrent diseases, genetic predispositions, or other factors. Periodic reports on such losses from governmental agencies and others always range into millions of dollars per year and include all phases of production.

Problems with nematode parasitism are often classified as production disease (i.e. chronic subclinical condition affecting productivity such as weight loss, reduced weight gain, reproductive inefficiency, etc.). A summary of diagnostic laboratory necropsies in Kentucky showed that worms accounted for 90% of the deaths in 428 goats submitted. Since goats and sheep share the same parasites, a recent publication of the USDA-APHIS-VS provided some data on the magnitude of the problem. Sixty-two percent of 5,174 sheep producers surveyed in the United States identified stomach/intestinal nematodes as a major concern. These losses were compounded in the southeastern region (Alabama, Arkansas, Georgia, Florida, Kentucky, Louisiana, Mississippi, Maryland, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia) of the U.S. because climatic conditions are generally more conducive to the growth and establishment of large nematode parasite populations. Seventy-five percent of 467 sheep producers surveyed in this region identified stomach/intestinal nematodes as a major concern.

There is no similar data for goats, but it can be expected to be relatively the same. However, it should be noted here that is more so the case when goats

are managed as grazers. When goats are managed as browsers, exposure to nematode parasites is reduced and subsequently the effects are not as severe. The nematode of particular concern is the Barber-pole worm (*Haemonchus contortus*). The tremendous egg-laying capacity of *H. contortus* is maintained by feeding on blood by both immature and mature stages. Severe blood loss can occur, resulting in anemia, loss of appetite, depression, loss of condition, and eventual death. Other worms contribute to 'production disease' as they usually do not kill, but affect the animal's ability to increase and/or maintain production (i.e. weight, reproduction, etc.).

External parasites, for the most part, are a nuisance and can cause reduced weight gain and weight loss simply because the animal spends more time and energy combating them than feeding. Physical injury occurs when irritation and scratching result in open wounds that then can become infected or subject to infestation with fly larvae.

Nutrition Interaction

The effects of parasitic infection can be influenced by the nutritional status of the host. It is well known that well-fed animals can better withstand parasite infection than animals on an inadequate diet. It is also true that parasites interfere with the ability of the host to utilize nutrients efficiently. Therefore, it is important to understand this see-saw effect. The better an animal is fed the better it is able to tolerate increasing infection levels, but eventually a point may be reached, depending on the worms and conditions involved, where parasitism overwhelms the host's ability to function properly. To satisfy body demands, most nutrients are absorbed from the gut during digestion and additional nutrients are available as needed from body reserves. The term nutrient partitioning refers to the process of directing the flow of nutrients to where they are most needed at the current time. Depending on the host's age and sex, season of the year and exposure to various potential infectious (parasitic and otherwise) agents, nutrients are partitioned for growth, breeding, pregnancy, lacta-

Meat Goat Nutrition

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Introduction

Proper nutrition is essential for the health and productivity of all animals and is the basis of successful production systems. A well planned and executed preventive health program cannot overcome problems that are created by poor nutrition. Nor can advanced reproductive technologies overcome nutritional limitations of reproduction. Therefore, nutrition of the goat is of paramount importance for successful goat production. Nutrition is the science of providing nutrients to animals in adequate amounts and in forms that the animals will consume. For sustainable and profitable production, these nutrients must also be provided in a cost-effective manner.

The ruminant stomach

Goats are ruminants, animals with a four-compartment stomach, as are cattle, sheep, and deer. The compartments are the reticulum, rumen, omasum, and abomasum (true stomach). Monogastric or simple-stomached animals such as humans, dogs, and cats consume food that undergoes acidic breakdown in the stomach and enzymatic digestion in the small intestine where most nutrients are absorbed. In ruminants, feed first undergoes microbial digestion in the reticulum and rumen (together often called the reticulo-rumen) prior to acidic digestion in the abomasum and enzymatic digestion and nutrient absorption in the small intestine. It is the microbial digestion in the reticulo-rumen that allows ruminants to consume and utilize grass, hay, leaves, browse, etc.

The reticulum and rumen form a large fermentation vat that contains microorganisms, mainly bacteria, that breakdown and digest feedstuffs, including the fibrous component of grass, forbs, and browse that cannot be digested by monogastric animals. Some of the breakdown products produced through digestion of feed by bacteria are absorbed by the animal through the rumen wall and can supply a large part of the energy needs. The rest of the byproducts of digestion, undigested feed, and ruminal microorganisms flow out of the reticulo-rumen into the omasum where large feed particles are trapped

for further digestion and water is reabsorbed. Material then flows into the abomasum where acidic digestion takes place and then to the small intestine for further enzymatic digestion and nutrient absorption.

The rumen provides several advantages to the goat in addition to digestion of dietary fiber. The bacteria in the rumen are capable of synthesizing all B vitamins needed. Bacteria can also synthesize protein from nitrogen recycled in the body, which may be advantageous on low protein diets. For proper ruminal function, goats require a certain level of fiber (measured as crude fiber, acid detergent fiber, or neutral detergent fiber) in the diet. Goats have bacteria in the rumen that can detoxify antinutritional factors, such as tannins. This enables goats to better utilize feedstuffs containing high tannin levels such as those found in browse. There are very few situations in which a goat will not consume adequate fiber, but one is when a very high grain diet is being fed. Inadequate fiber consumption can then lead to several disease conditions. The most important disease condition is acidosis or an extremely low pH in the rumen, causing decreased feed consumption.

When ruminants are born, the first three compartments of the stomach are underdeveloped and the stomach functions similar to that of a monogastric animal. This enables absorption of antibodies in colostrum and efficient utilization of nutrients in milk. As the young ruminant consumes solid feed, especially high in fiber, and the microbial population is established, the rumen is stimulated to develop. The rumen must have an acceptable degree of development for successful weaning.

The greatest asset of goats is the ability and tendency to utilize woody plants and weeds, not typically consumed by other species of animals (e.g., cattle and sheep), converting them into a saleable product. Therefore, these plant species can be inexpensive sources of nutrients and make for a very profitable goat enterprise. Goats typically consume a number of different plant species in any one day and can utilize some poisonous plants because they do not consume enough to be toxic. Similarly, goats are believed to

Pastures for Meat Goats

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Objective of Goat Enterprise, Purpose of Pastures for Goats and Implications for Pasture Management

Feeding may be the highest expense of any meat goat operation. Goats raised for meat need high quality feed in most situations and require an optimum balance of many different nutrients to achieve maximum profit potential. Because of their unique physiology, meat goats do not fatten like cattle or sheep, and rates of weight gain are smaller, ranging from 0.1 to 0.8 lb./day. Therefore, profitable meat goat production can only be achieved by optimizing the use of high quality forage and browse and the strategic use of expensive concentrate feeds. This can be achieved by developing a year-round forage program allowing for as much grazing as possible throughout the year.

Many people still believe that goats eat and do well on low quality feed. Attempting to manage and feed goats with such a belief will not lead to successful meat goat production. Because of nimble lips, goats are selective feeders capable of picking off the most nutritious plant parts. On pasture or rangeland, maximum goat gains or reproduction can be attained by combining access to large quantities of high quality forage that allow for selective feeding.

Considerations to Be Given to Goats for Pastures

Goats are very active foragers, able to cover a wide area in search of scarce plant materials. Their small mouth, narrow muzzle and split upper lips enable them to pick small leaves, flowers, fruits and other plant parts, thus choosing only the most nutritious available feed. As natural browsers and given the opportunity, goats will select over 60% of their daily diet from brush and woody perennials (multiflora rose, saplings, small deciduous trees, black locust, briars, brambles, sumac, privet, honeysuckle), and broadleaf plants (pigweed, dock, horseweed, plantain, lambsquarter, etc.) over herbaceous species such as fescue, bluegrass, orchard-

grass, crabgrass, bermudagrass. The ability to utilize browse species, which often have thorns and an upright growth habit with small leaves tucked among woody stems, is a unique characteristic of the goat compared to heavier, less agile ruminants.

Goats have been observed to stand on their hind legs and stretch up to browse tree leaves or throw their bodies against saplings to bring the tops within reach. Goats are more likely to select plant parts containing tannins than other domesticated ruminant animals. Goats even sometimes climb into trees or shrubs to consume the desired forage. In spite of their grazing preferences, goats can be grazed on pasture alone. The feeding strategy of goats appears to be to select grasses when the protein content and digestibility are high, but to switch to browse when the latter overall nutritive value may be higher. This ability is best utilized under conditions where there is a broad range in the digestibility of the available feeds, giving an advantage to an animal which is able to select highly digestible parts and reject those materials which are low in quality.



Goats can stand on their hind legs and browse tree leaves.