

# **Meat Goat Breeds, Breeding Management, and 4-H Market Goat Management**

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## **Goats in the World**

It is a surprise for most US Citizens to learn that goats are so prominent and widely distributed in the world. In fact, we have traditionally known about goats through fairy tales or cartoons in our society. If we do know of goats, it is usually because someone in the family had a goat as a child and they remember how much fun/trouble they were around grandpa's farmyard. We may have even known that there were dairy goats at the petting zoo or game farm or even at various county or state fairs. Perhaps we were aware of a dairy goat farm that was featured in the paper somewhere around the state or country and that goat cheese was getting to be more popular or that goat milk is now being sold at WalMart instead of just the health food coop. Europe produces 20% of the world's goat milk. A country like France, with 3500 large dairy herds and 1.1 million goats, produces the most in Europe but this is still only 5th in the world for production. In fact, the dairy goats that many people are only beginning to know only comprise 5% of the world's goats. So, with dairy goats we are talking about the tip of the goat iceberg here. The real unseen quantity of goats in the world and people who raise and consume them is in meat goats

So the other 95% of the world's goats are meat goats. The total number of goats in the world is somewhere around 6-700 million. Of those, the main goat producers are in countries we know little about. Asia (China & India) accounts for 61% of the world's goats, Africa for 29%, and South America for 4%. Which means the rest of us in North America, Europe, and Australia combined only have about 6% of the world's goats. If we don't know much about the world's goats, we are about to learn a lot more because that world is coming closer to us every year.

## **Breeds of Meat Goats**

We typically utilize 7 breeds of dairy goats and 6 breeds of meat goats in this country. Worldwide there are nearly 500 different breeds. Many of these are intriguing in terms of what kind of production they are capable of and what they could bring to our breeding programs. However, I will only mention a few, and I will concentrate on the ones that are most common here in the United States. Despite the interest we might have in those other breeds out there, as a practical matter at time of great concern over foot and mouth disease and scrapie, I doubt that we will be seeing the importing of new breeds to this country soon. The main breeds I will talk about are the Spanish Goat, the Myotonic Goat, the Kiko, the Nubian, the Boer Goat, and the Pygmy Goat.

Spanish - The Spanish goat is believed to have been brought to America by Spanish explorers. It is interesting to note that in Europe, when they talk about the origin of

modern goats there, they talk about the goats brought by the Moors and the Saracens that invaded from northern Africa. These goats were left in Europe as the Europeans drove out the Moors. In America, a similar thing happened as some goats escaped from the introductions by the Spanish and some were released as other sources of meat were found. There were goats in Oklahoma and Texas as early as the 1540s and they have been bred and raised in Texas since the 1700s. With their feral nature, they are very hardy and fairly disease resistant. Colorwise, there isn't a consistent pattern but they are small to medium sized, weighing 120-220 lbs as mature bucks and 65-100 lbs as mature does. Average daily gain is 0.2 to 0.3 lbs and kidding rate is 150-170%.

Myotonics - The Myotonic Goat is another breed that has a somewhat vague history in this country, but is a breed that was developed in North America. They are known by a number of other names such as Stiff Legs, Fainting Goats, Tennessee Fainting Goats, or Fall Down Goats. The reason they are known this way is that they have an inherited trait of myotonia that causes their leg muscles to tense and tighten when they are startled. This causes them to fall over and lie still for 10-20 seconds. The recessive gene that creates the myotonia works in their favor as a meat goat with the muscling that this develops. Also, reportedly their loin eye muscle tends to be of a greater diameter. Usually they are black and white but I have seen red and white ones at the Prairie View Experiment Station in Texas. They are not good climbers or jumpers, which supposedly makes them easier to keep. A mature buck would weigh between 100-175 lbs and a mature doe from 75-125 lbs. They have an easier time kidding than some breeds and a high kidding rate of around 190% with good milk production. Their average daily gain is in the range of 0.25 lbs to 0.35 lbs.

Boers - The SA Boer Goat has become very popular in this country. It is, of course, a breed developed in that country but has an interesting origin from a mix of native African goats, Indian goats, European goats, and Angora goats that had been brought into that country. The name comes from the Dutch word, which means farm or farmer. Reportedly selection is fairly well documented and recent starting in the 1820s with a breed registry starting in 1959. Like any good breed it has adaptations suitable to the country where it was developed. It is a very distinctive breed, in its type and coloration, which is always a help in recognizing and propagating a breed. It has drooping ears, a white body, tail, and legs with a reddish brown to black head and neck. It's a large breed with mature bucks weighing 250-350 lbs and mature does at 200-225 lbs. Their kidding rate is nearly 200% with an average daily gain of 0.3-0.4 lbs.

Kikos - The Kiko was developed in New Zealand (some say Australia) by crossing native flocks with imported dairy breeds. Selections were based on twinning and growth rates, along with its ability to forage and survive in range conditions. The mature buck weighs 100-150 lbs and the most common color is white or cream, though all colors are seen in the breed.

Nubians - The Nubian is actually better described in its origin as an Anglo-Nubian. It was developed as a dual-purpose breed in England using Indian meat and European milk breeds. It has been in the US since the late 1890s and is the most popular dairy breed in

this country. They have a very distinctive type with drooping ears, roman noses, short hair, and powerful-if not irritating-sets of vocal cords. They come in a variety of colors. They are large with the mature buck weighing 175-300 lbs and mature doe from 135-200 lbs. Their kidding rate is between 160-190% (though as a dairy breed they are known for multiple births). They are reported to show average daily gains of 0.16-0.26 lbs, though I know they can commonly do much faster than that as dam-raised kids. Milk production is high relative to the other meat breeds and they tend to be less seasonal in their breeding than the other dairy breeds in this country. As a dairy breed, their butterfat production is much higher than the other breeds.

Pygmies - Pygmy goats are much smaller than other meat breeds. They are true dwarfs with all the characteristics that come with that designation having somewhat oversized heads and stubby limbs. They originate in Nigeria. A full grown buck is around 22" at the withers and in the range of 60-80 lbs. They come in a variety of colors with blue-gray or black common. Often they have an agouti or mottled coloration. Commonly they have distinctive white markings about the muzzle. They are capable of producing 2 lbs of milk per day. They are easily handled so as a project goat they can be quite handy for small children. Despite their cuddly appearance they are all goat with all the good and bad characteristics of other breeds. They are tremendous jumpers and climbers, which is how they browse and survive in their native habitat. I should mention that the Nigerian Dwarf Goat is a distinctive dairy breed. They differ in their type and, despite the name, they are true miniature goats with the same proportions as larger breeds, and without the dwarf characteristics. They are capable of double or even triple the milk production of Pygmy goats and they have very high fat content in their milk.

Other Meat Breeds - A couple of other breeds I would like to mention are the Kalahari goat of South Africa, which is probably in the background of the Boer goat, the San Clemente goat which is good evidence of how a distinct feral breed can rapidly develop, and similarly four breeds known in Brazil: the Somali, the Savanna, the Caninde', and the Buhj.

## **Selection**

All of these breeds point out the characteristics in type that are being selected in meat goats. Selection is the most important decision you will make, whether it is for a particular breed, a particular animal for a project, or in improving your herd and production. Developing an eye for type and condition is so important. As they say, "It's the eye of the stockman that fattens the calf" and that is just as true in goats as it is in cattle. So, I am going to go through a few points of selection for meat goat type and condition scoring as related to meat production.

First, you must know the parts of the goat to be able to recognize good type and body condition. I won't be giving a test but take some time to learn the parts of a goat. These will be referred to by breeders, judges, buyers, and sellers and you need to know what they are talking about. The parts of a goat all relate to the desirable traits of all meat goats. Certainly, not all desirable traits are related to conformation, but this is where it

starts and, as far as markets and consumers go, this is where it ends. At the very least, you should be selecting for:

- Greater Carcass to Bone Ratio
- More Correct Set and Soundness to Feet & Legs
- Stronger Toplines
- Greater Body Capacity – Length, Depth & Width
- Better Head Characteristics
- More Correct Reproductive Traits

All of these, to some degree, can be seen in your stock's conformation and are things for which you can select. Notice that I have used relative terms to describe these traits. This implies that we are always comparing past to present, one animal to another in your herd, or deciding which animal or lines we are going to use in our breeding programs as we look to the future. This also means that to know where we are going, we must know where we are now. Likewise, to know how far we have come, we must know where we have been.

### **Tools for Selection**

So I want to suggest that using the simple principles of measurement and record keeping, can be your road to improvement and progress. This can be as elaborate or as basic as you can handle. Some measurement methods are:

- Live Weights
- Carcass Characteristics
- Appraisal Scoring
- Body Condition Scoring
- Production Trials
- Comparative Competitions

Live Weights - At a minimum, you should be live weighing your goats: at birth, at weaning, and at some set age-say 16 weeks. This measure of production can then be related to feed efficiency, feed type, breeding, and herd management in general.

Carcass Characteristics - Next, you should be evaluating carcasses whether it be carcass weight to live weight, loin cross-section, loin length, rear leg circumference, or whatever in some sort of production testing.

Appraisal - Appraisal systems are available to actually score the conformation of a particular animal. Taken alone this can be useful as a comparison, but when summarized through the daughters of sires or dams, this can be quite telling and provide a basis for more rapid herd improvement. Breed or production associations often can help with this in having a scorecard or appraisers to evaluate your animals and your herd. In absence of that, one can always establish their own program. A simple component of this can simply be keeping a photographic record.

Body Condition – Condition scoring is commonly used tool in all breeds of meat animals. Again it gives you a sense of where you are at with you management program for herd health, feeding, housing, and breeding.

Production Trials – These can be national or regional programs that are single site competitions or regional competitions. It generally involves some combination of weighing, carcass evaluation, and feed efficiency measurement. If it is part of a competition, it can serve as a great advertising tool for the sale of breeding stock. The factors considered in these trials may be weighted differently in a final scoring. For example, carcass to bone ratio may count for 35% of the score and rear leg circumference may count for 20%, or vice-versa depending upon the system.

Comparative Competitions – As mentioned above, these can involve farm trials, but also could be show competitions at fairs, club shows, in published journals or even on-line. Though one is subjecting their animals and themselves to public scrutiny, there is commonly the benefit of getting someone else’s opinion that can help overcome farm blindness. Of course, winning is great both for advertising and sales, as well as the ego and providing encouragement that all your work in getting you someplace. If the result is not as good as you would hope, at least it could steer you in a direction that could be more fruitful for you. Shows are a great place to meet other breeds, learn more about goats, and find out more about management in all its aspects. Depending upon adult guidance, it can be a great learning experience for youth.

## **Record-Keeping**

This can be regarded as a painful experience but a necessary one that will yield great results. It can be as simple as your own memory for those few that have remarkable skills in remembering things, but for most of us it involves writing things down. I recommend starting out with just a few items to get started. As mentioned, recording weights at different stages is a good start. All of this does mean you need to have an identification system in place, whether it is tagging or tattoos. Tagging is easier, but tattooing will last longer, particularly in goats that are extremely creative in finding ways to tear out ear tags. Computers and spreadsheets are great for record keeping because it provides a clear, legible record that allows easy cross-referencing and summarizing. However, if you want nothing to do with computers, pencil and paper are tried and true and they seldom crash, though goats are particularly fond of paper. Card files on individuals can be kept for vaccination and health records, withdrawal times, patterns in health problems, or breeding records. Feed costs are very important to keep track of because it is a measure of efficiency and production as well as the bottom line. So whether you are doing data entry or throwing receipts in a shoebox, keep track.

## **Setting Objectives**

There are many things for which to select in developing your herd. A smaller, purebred breeding herd program might focus on longer-term objectives, while a “commercial

operation might shoot for different, shorter-term goals. However, in both cases, the goal is production and profit. Certainly goals might include things that go beyond confirmation and meat production. Improved milk production, ease of kidding, survivability, health, behavior, breeding efficiency, etc. are all factors that are under consideration and could be improved through selection and breeding. Though the underpinning is meat production, breeding for better feet and legs, or better topline, or greater milk production when that is badly needed in a herd, may trump a particular sire and be a reason to choose one over another, even though you may have to give up some production value. In general, I believe it is best to concentrate on no more than two or three traits at a time, until you have accomplished your goal. Sometimes you can get a sire that is a real type changer and can really put his stamp on his kids. By the same token, some doe lines can be extremely strong and changing type through those lines can be very difficult. Depending upon the goals, starting with new does may be the shorter road to success in those cases.

## **Genetics**

The 4-H Meat Goat Program manuals lay out very clear terms that describe improvement approaches in matings. They are:

- Tandem Selection – Concentrating on a particular trait until it has improved to a set point. This is often used in line breeding in dairy goat to strengthen a particular trait.
- Non-Assortative or Complementary Mating – Matching doe and buck lines based on complementary strengths and weaknesses. Some of the top breeders that I know in dairy goat conformation success use this method.
- Independent Culling Levels – Using only animals that meet a certain standard or are in a top certain percentage. This is the basis of the French Milk Production Improvement Program for selecting sires.
- Selection Index – This is the “weighted” method of testing mentioned earlier.
- Heterosis – I have added this to the list because this is an important commercial method for production or other traits. This is the crossbreeding of different breeds of goats, which can lead to a hybrid vigor that is better than either breed alone could achieve. Different breeds in different combinations lead to different results. For example breeding a Spanish buck to Boer does may improve hardiness in the offspring or breeding a Nubian buck to a Kiko may increase size and scale.

## **Breeding Management**

Improvement Potential - Goats have some great advantages over cattle in terms of potential for improvement through a breeding program. First, does can be bred and bucks can be working in their first year, generally at 6-8 months so you can get a sense of improvement through breeding within the first year or year and a half. Second, with multiple births you have more animals to select from in choosing which stock you are going to keep to use in the future. These factors alone are said to account for an improvement potential at a rate four times faster than one could expect with cattle.

Reproductive Characteristics – Goats are generally seasonal breeders though this varies from breed to breed, between individuals, and differs from one climate to another. Shortening day length in the fall, which sets up a yearlong cycle of reproduction, triggers their breeding season. Generally, does will come into estrus or heat for a two to three day period every 18-21 days in the fall until settled. The day-length trigger can be manipulated by putting goats artificial darkness or artificial light to promote off season breeding, which can be an advantage in timing the markets at some point down the line. If this were used, the bucks would also have to be subjected to the same light manipulation since they have a specific rutting season from early fall through early winter. Hormone treatment is also widely used in other parts of the world, at least for dairy goats, to get off-season breeding and ensure a more uniform milk supply through the year. There are some breeders that would try to work in two breeding in three years, which is possible.

Breeding Management - Important to any breeding program is proper nutrition and health management. Does can be “flushed” with “improved” nutrition two weeks prior to the breeding season and lasting 5 weeks in order to increase egg release in increase kidding percentage. On the other hand, too high a plane of nutrition for too long, especially with high quality alfalfa hay can delay the onset of estrus in an entire herd of does. Goat bucks are one of the most accursed animals on earth when it comes to breeding season. They become extremely aggressive and will expend an enormous amount of energy whether or not they are with does, so their nutrition has to lead that effort. To understand that imperative, one has to picture a native herd of does in the wild with a dominant herd sire having to defend a harem of 30-40 does from younger bucks surrounding the harem and continually testing the dominant male. Aggressive behavior is the name of the game and it carries through today. In dairy goats, small breeders tend to keep far too many bucks. So much so that it has been light-heartedly suggested that dairy goats in the US are monogamous breeds. Of course, they are in fact polygamous and a mature buck can handle 30-40 does. Younger bucks would be at a ratio at least half of that.

Following breeding, to narrow the kidding season, you may want to remove the buck from the does. This certainly won't make the buck happy. Bucks with does, unchallenged by other bucks, can become quite docile and live a “normal” existence, even in the breeding season. Generally, you can cut back on the doe's ration to a maintenance level. In fact, it has been suggested that a higher amount of fiber and roughage at this point in the reproductive cycle is important in conditioning the rumen of the doe, so she is ready to efficiently consume more of the higher protein rations as she goes into milk production. The last two months of the 5-month gestation are the most important in resuming a higher plane of nutrition, since that is when the most growth of the fetus occurs and when the doe is gearing up for milk production.

### **The Minnesota Market Goat Management Project**

Minnesota has adopted a national program for Market Goat Management. They have put together a very good-looking set of materials to help youth in learning about market

goats. There are four booklets, Level I, II, and III and a Helper's Guide for Group Activities. In fact, if you have that set of booklets, you understand that I have borrowed heavily from it for this talk today. Goats in general make a great 4-H project since they are simple to handle, they respond well to attention, they can be kept in relatively modest facilities, and you can get exposure to a whole range of activities in a relatively short period of time. The project not only conveys a lot of information about goats and their management, but it also provides many activities that are good for anyone to learn such as record-keeping, planning and organizing, understanding the importance of taking responsibility, safety, giving presentations, learning and building a skill base, understanding animal rights, approaches to competitions and ethics, even managing feelings and achieving and handling success. Copies of the materials are available from your county extension office and I certainly encourage enrollment in this terrific project.